

**TONAL ANALYSIS OF NOMINAL AND VERBAL SYSTEMS
OF NAMWERA DIALECT OF CIYAO**

MASTER'S OF ARTS (PURE LINGUISTICS) THESIS

POMPIDOU ALFRED MAGWIRA

UNIVERSITY OF MALAWI

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BY

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Submitted to the department of Language, Linguistics and Classical Studies in the School
of Social Sciences & Humanities in partial fulfilment of the requirements for the award of
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DECLARATION

I, **the undersigned**, hereby do declare that this is my own work and acknowledgement has been duly made where other sources have been used. No part of this work has been submitted previously for a degree at any other University.

Full Legal Name

Signature

Date

CERTIFICATE OF APPROVAL

The undersigned certifies that this thesis represents the student's work and effort and has been submitted with our approval.

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DEDICATION

I dedicate this thesis to my daughters Tupocela, Samantha and son Rupert.

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It has been a long journey full of constraints, and reaching this far, several people have contributed directly or indirectly to the output of this thesis. It is hard to show my appreciation to everyone by name. The fact is that I am thankful for their contributions.

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ABSTRACT

This thesis aims at analysing the nominal and verbal tonal systems of the Namwera dialect of Ciyao. The data was collected from 6 respondents in Namwera area, Traditional Authority Jalasi in Mangochi district, Malawi, over a period of four days using an interview schedule. Some of the major tonal findings of the study in the verbal system are the following: a) verb stems in Namwera Ciyao, like in most other studied dialects, are toneless; b) the realisation of a high tone (H) is determined by morphology particularly, Tense/Aspect/Mood (TAM) and object markers as well as verbal clause types which may introduce a high tone in various positions in the verb stem; c) some subject markers (SMs) and all tense markers (TMs) are underlyingly H-toned but the H tone may be deleted and hence fail to appear on the surface due to the effect of particular constraints; d) all object markers (OMs) are underlyingly toneless; e) the prefix H does not double to OMs or the first Mora (M) of the verb stem; f) the Mora and not the vowel or the syllable is the Tone Bearing Unit (TBU); g) a number of tone rules, including those involving tone doubling and tone shifting, apply in both the nominal and verbal systems; h) tone doubling/spreading is non-iterative and it is blocked in a macrostem domain as well as the final mora of the verb stem; i) the size of the verb stem matters in the application of tone rules. The study also found that Namwera Ciyao verb stems have five major tone patterns, with some dialectal variations, whereby underlying high tones, normally referred to in the tone literature as Melodic tones, are placed in various positions of the verb stem. These locations are primarily, the first, second and the final mora of the verb stem, but they may also be a combination of the first and the final morae or the second and the final morae. The thesis has adopted Optimality Theory and its use of constraint rankings to account for these tone patterns. It is shown in various parts of the study that by adopting general and independently motivated constraints and a few which are language-specific, we are able to fully account for the complex tone patterns of Namwera Ciyao including some dialectal variations.

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ABBREVIATIONS AND ACCRONYMS

NC	Namwera Ciyao
UNIMAREC	University of Malawi Research and Ethics Committee
OT	Optimality Theory
PB	Proto Bantu
AGR	Agreement marker
CL	Noun class
INFL	Inflection
TAM	Tense-aspect-mood msrkers
SM	Subject marker
OM	Object marker
NEG	Negative marker
TM	Tense marker
CTM	Conditional tense marker
VR	Verb root
APPL	Applicative mood
NA	Nasal assimilation
PNSV	Post nasal stop voicing
HR	Hardening rule
GF	Glide formation
HTD	High tone doubling/High tone domain
HTS	High tone shifting
HPB	High tone Pullback
HTR	High tone retraction
LS	Long spread
PLS	Prefix left spreading
OHTD	Onsetless High Tone Delinking
CS	Contour simplification
FVS	Final vowel shortening
OCP	Obligatory contour principle
TBU	Tone bearing unit

FV	Final vowel
FM	Final mora of a verb stem
MH	Melodic high tone
M1	Initial mora of a verb stem
M2	Second mora of a verb stem
M3	Third mora of a verb stem
M2H	High tone on the second mora of a bimoraic syllable

CHAPTER 1

INTRODUCTION

1.1. Background

Over the years there have been several studies on various aspects of Bantu phonology. The emergence of Autosegmental Phonology in the 1970s (cf. Goldsmith 1976) added more interest in research on Bantu tonology which resulted in the proliferation of publications in this domain of linguistic study (cf. Clements & Ford, 1979, Cheng & Kisseberth 1979, 1980, 1981, Goldsmith, 1981, Odden 1981, Hyman 1982, Massamba 1982, Cassimjee 1986, 1998, Downing 1990, Kisseberth 1992, Odden 1996, Cassimjee & Kisseberth 1998, Mathangwane 1998, Kisseberth & Odden 2003, Bickmore 2007).

There have also been specific studies on Ciyao, a Bantu language spoken in Malawi, southern Tanzania and north-western Mozambique and classified by Guthrie (1967-71) as P21 (cf. for example, Mtenje 1988, 1993, 2002, Odden 1994, Ngunga 1997, 1998, Kisseberth & Odden 2003). The present study provides a tonal analysis of the verbal and nominal systems of the Namwera dialect of Ciyao in Mangochi district.

1.2. Problem statement

Ciyao maintains a high level of mutual intelligibility among the speakers in all three countries where it is spoken. Despite this, there are some notable phonological variations among Ciyao dialects. Tanzania Ciyao for example, has Tunduru, Mangaka, and Ndanda dialects spoken in Masasi district which differ phonologically (Odden 1994). In Malawi, Ciyao is spoken, with notable dialectal variations, in districts like Blantyre, Chiradzulu, Zomba, Machinga, Balaka, Mangochi, Salima, Dedza, Nkhotakota and parts of Ntcheu (cf. Centre for Language Studies Report 2006). In Mangochi district, where the language is widely spoken, there are several dialects, for example, Makanjira, Namwera and Katuli dialects (Centre for Language Studies, 2006). Like Tanzanian Ciyao, the Malawian Ciyao dialects also have notable phonological variations. It is important to note, however, that irrespective of several Ciyao dialects in Malawi, Malawian Ciyao has been analyzed mostly

from a homorganic or holistic perspective and not as specific dialects. In this regard, there is a paucity of research that focuses specifically on particular dialects of this language. This study, therefore, provides a detailed tonal analysis of one of the dialects of Ciyao, Namwera Ciyao, spoken in Mangochi to fill this existing knowledge gap.

1.3. Objectives:

1.3.1. *General objective*

This research aimed at analysing tonal patterns in the nominal and verbal systems of Namwera dialect of Ciyao.

1.3.2. *Specific objectives*

To achieve the above aim, the following were the specific objectives:

- i. To describe in detail tonal patterns and rules which apply in Namwera Ciyao nominal and verbal systems;
- ii. To explain the tonal patterns noted in (i) using the framework of Optimality Theory.

1.4. Significance of the Study

Since there isn't much literature on Malawian Ciyao dialectical analysis, the study will contribute to the growing literature on the topic and it is likely to be a reference point for further research studies on Ciyao and other related Bantu languages since it provides some significant general insights into tonal phenomena in Ciyao and beyond.

CHAPTER 2

METHODOLOGY

2.1. Introduction

This chapter highlights the methodologies used in this thesis. It comprises the research design, sampling techniques, data collection procedures and the data analysis method used.

2.2. Research design:

The study adopted a qualitative research approach to obtain insights into the language. A quantitative approach was not ideal as the main interest of the study was in the quality of the linguistic phenomena investigated and not how often they occurred.

2.3. Sampling techniques:

The study had earlier proposed to select at least five fluent native speakers of the Namwera Ciyao dialect. The five subjects were enough to get the quality data required. Patton (2002) notes that in qualitative research, the subjects' ability to furnish quality data is more important than the quantity of the subjects. In studies of tonology, Marlo (2013) emphasises the need for a researcher to collect data from about 2-3 speakers per language variety due to some limitations in data management for example, resources, access to speakers, and time constraints. He does not recommend working with more than 3-4 speakers of any language variety as the time commitment would be too great to allow covering important data.

However, instead of the initially planned five subjects, the researcher interviewed six subjects to get a detailed analysis of the Namwera dialect of Ciyao while ensuring that the data was well-controlled and managed. The increase adhered to the suggestion by the University of Malawi Research and Ethics Committee (UNIMAREC) on the Ethics Review

of Protocol No. P. 10/21/93 dated 1st November 2021 that it wished the study targeted slightly more participants to appreciate tonal differences. Four of the subjects were fluent native speakers while the other two considered themselves native speakers by their long stay in the Namwera area and having learnt the language at a young age. These two subjects were selected to appreciate the tonal differences existing within the dialect. Hyman (2010, 2014) observed that data from multiple speakers can help clarify transcriptions thereby ensuring the reliability of the results. As such, this thesis used multiple speakers (six) irrespective of the constraints noted by Marlo (2013).

The native speakers were selected through both purposive and snow-bowling sampling. This conforms to Fraenkel and Wallen's (2003) observation that researchers who engage in qualitative research should select a sample they feel will yield the best understanding of whatever they wish to study. The Namwera dialect of Ciyao in Traditional Authority Jalasi, in Mangochi district, was also purposively selected because the Namwera area is one of the places in the district whose speakers have been noted to have a low probability of being influenced by Chichewa or other languages and are, therefore, predominantly monolingual (cf. Centre for Language Studies Report 2006). Although many people in the area are monolingual Ciyao speakers, some native speakers are also bilingual in Ciyao and Chichewa, especially those who have attended formal education, and the researcher's informants fell into this category. Admittedly, the issue of linguistic "purism" or "monolingualism" is debatable and has attracted different views in the sociolinguistics literature. However, we will not delve into that discussion here to avoid being distracted from the main focus of the thesis.

The following is the demographic information for the six respondents. Codes (Arabic numerals) were used to represent respondents' names:

Table 1: Participants' demography

Participants	Age	Sex	Village	Education
OO1	31 – 40	M	Kabuthu	MSCE/O Level
OO2	31 – 40	M	Chilongo	MSCE/O Level
OO3	41+	M	Kamwendo	MSCE/O Level
OO4	20 – 30	F	Kandulu	JUNIOR SECONDARY
OO5	31 – 40	F	Kwilasa	PRIMARY LEVEL
OO6	31 – 40	M	Chiwina	MSCE/O Level

2.4. Data collection procedures:

The research used only interviews as a data collection technique and not observation. This was one way of controlling data for tone analysis. Listening to the participants as they carried out their conversations was not ideal as there would be no control over the data and eliciting of tones would become complex. Marlo (2013) affirms that to understand tonal surface patterns, the factors that affect tonal outputs of the data, for example, subject markers, object markers, verbal affixes and verb tenses, should be tightly controlled and systematically varied. Therefore, observing participants carrying out their normal conversation would mean getting different data some of which would be unnecessary thereby making the study of the Namwera tonal system complex since there would neither be a control on the required data nor systematic variation of phonological shapes. Hyman (2010, 2014) provides three stages for studying a tone system: in stage I, the focus should be on determining surface contrasts by considering words in isolation; in stage II, the aim is to discover any tone alternations by considering short phrases; stage III considers tonal analysis itself, the interpretation of what has been revealed in stages I and II. Through the adoption of these three stages, the researcher carefully controlled the data collection process because one stage feeds into the other.

The researcher used a voice recorder and a structured interview schedule as instruments for data collection. Using the voice recorder and the structured interview schedule helped consolidate the data and further check on accuracy. In the structured interview schedules, the following were written down in Chichewa and read out in Chichewa as well for the participants to give their Ciyao equivalents: infinitives; verb roots; verbal phrases; noun

phrases; adjectives; adverbs; and tense constructions for example, the present, the past, the future tenses and negative verbs.

The researcher visited the respondents in their homes. The recording was initiated at a convenient time as agreed between the researcher and the subjects. During the interviews, the researcher asked respondents to pronounce the Ciyao equivalents of the Chichewa words read to them by the researcher. The words were first pronounced in isolation to determine their surface tones in isolation and then, secondly, the words were put in contexts to determine if there were any tonal alternations triggered by phrase-medial environments. The researcher knew that participants might get tired in the course of the interview and as an extra-linguistic factor, it would affect the quality of the data recorded. To avoid this, the researcher conducted a pretest of the data where the subjects were informed about the anticipated time the interview would last so that they prepare themselves psychologically thereby controlling the fatigue variable. During interviews, the researcher would stop briefly when he noted signs of exhaustion by respondents to avoid a potential negative impact on the tonal quality of the data recorded.

To ascertain the quality of the collected data, the researcher, after transcribing the data, used what is referred to as “member checks” that require the respondent to review transcriptions. He asked the respondents to review the accuracy of the transcribed data and the recordings which they did and confirmed the accuracy of how they pronounced the forms.

2.5. Limitations of the study

No events occurred that we could regard as limitations except one situation when one respondent, a nurse, withdrew due to some commitments at her workplace thereby reducing the number of respondents. However, this extralinguistic factor was not directly linked to the final analysis of results, and therefore it had no impact.

2.6. Organisation of the study

The thesis has five chapters. Chapter 1 is the introduction and comprises sections on the problem statement and research objectives. Chapter 2 provides the methodology. A review

of the literature and theoretical framework are covered in Chapter 3. Chapter 4 provides an analysis and the Optimality theoretical account of the nominal tone system of Namwera Ciyao. The verbal tone system and its Optimality theoretical account are discussed in Chapter 5, and Chapter 6, the final one, is a concluding chapter.

CHAPTER 3

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

3.1. Introduction

This chapter provides a literature review on issues related to Ciyao phonology and also discusses the main aspects of the framework of Optimality Theory.

3.2. Literature review

As stated in section 1.1 above, Ciyao, classified by Guthrie (1967/1971) as belonging to zone P 21, is a Bantu language that is spoken in Mozambique, Tanzania and Malawi (cf. Whiteley 1966, Maho 2003, Nurse & Philippson 2003). Its closest linguistic neighbours are Cimwera (P22), spoken in southern Tanzania, and Símákonde (a dialect of Makonde), a P23 Eastern Bantu language spoken in north-eastern Mozambique and southern Tanzania. About Malawian Ciyao, Kishindo (1997) observes that there are three main dialects: Mangochi Ciyao, Machinga Ciyao and Makanjira Ciyao. However, according to the Centre for Language Studies 1996 report, the Makanjira dialect of Ciyao, in addition to Namwera Ciyao and Katuli Ciyao, is, strictly speaking, part of the Mangochi Ciyao.

Several scholars have studied Ciyao segmental and tonal phonology (cf. Whiteley 1966, on Ciyao in general; Mtenje 1989, 1993, 2002, Magwira 2013, Mtenje & Odden 1990 on Malawian Ciyao; Odden 1994, 1998, Kisseberth & Odden 2003 on Tanzanian Ciyao; Ngunga 1997, 1998, and Hyman & Ngunga 1994 on Mozambican Ciyao, among others). The majority of these studies have focused on segmental and tone rules that apply in the language across different dialects and these include rules involving feature changes in segments, tone deletion, shifting, doubling/spreading and morphologically conditioned tone assignment principles. Some of the general rules and processes highlighted in these

studies will be discussed in more detail later in this chapter. It is worth noting that although tone studies have been conducted on some aspects of Malawian Ciyao, there is no detailed study on the tonology of the Namwera Ciyao dialect hence, the motivation for this thesis.

3.2.1 *A note on Ciyao tone*

Ciyao, like many other Bantu languages, has two level tones, high (H) and low (L), and contour tones which are a combination of level tones on a long syllable (Mtenje 1993, Ngunga 1997, Kisseberth & Odden 2003). In this thesis, we will adopt the most commonly followed convention in Bantu tone studies where a high tone is marked with an acute accent (´) over a tone-bearing unit and a low tone is not marked. That is, vowels with no acute accent are by default considered low-toned. Consider data (1) from Ngunga (1997, p. 17 – 18).

(1) a. CVC-a

- i. ku-pól-á ‘to cool down’
- ii. ku-sék-á ‘to laugh’

b. CVCVC-a

- i. ku-télék-a ‘to cook’
- ii. ku-lókót-a ‘to pick up’

c. CVVC-a

- i. ku-lwáál-á ‘to be ill’
- ii. ku-yíimb-á ‘to swell’

d. CVCVCVC-a

- i. ku-kálámuk-a ‘to be cunning’
- ii. ku-sélélek-a ‘to slide’

The above data have high toned vowels marked while low toned vowels are not marked.

3.2.2 *Lexical tones in nouns*

In contrast to verbs, nouns have lexical tones in Ciyao, just like in other Bantu languages. The tones are contrastive as any vowel of a nominal stem can bear either a high or low tone since H is not triggered by any productive rules of the language (Odden 1994, 1998,

Ngunga 1997). For illustration, consider the Masasi Ciyao data in (2) extracted from Odden (1994).

(2) Lexical tone (Odden 1994, p. 104).

a.	njété	‘salt’	njété jígwííle	‘the salt fell’
b.	chivigá	‘pot’	chivigá chígwííle	‘the pot fell’
c.	Chisúvi	‘leopard’	Chisúvi chígwííle	‘the leopard fell’
d.	chijuni	‘bird’	chijuni chígwííle	‘the bird fell’

As we can see in the data above, the location of high and low tones is unpredictable since these can be realised on any vowel. In Chapter 4, we will show the unpredictability of the tones in Namwera Ciyao nominal and provide an analysis.

3.2.3 Ciyao noun class system

This thesis focuses mainly on tone in the verbal system of Namwera Ciyao. However, the study discusses the nominal tone system since nouns also form part of the tonal component of the Namwera dialect. As in all Bantu languages, Ciyao nouns are distributed according to their class prefixes or agreement patterns that consist of singular and plural pairs (Bickmore 2007). Studies on Ciyao agree that there are 18 noun classes, each determining a primary prefix on the noun and concord prefixes on elements that agree with head nouns (Sanderson 1922, 1954, Whiteley 1961, 1966, Ngunga 1997). The general morphological structure of nouns in Bantu is given in (3):

(3) Morphological structure of Bantu nouns

(Pre-prefix+) Class Prefix + Stem (Ngunga 1997, Bickmore 2007)

Examples of Ciyao nouns are given in Table 2. Also presented in Table 2 are the Proto-Bantu (PB) forms for both nouns and concord prefixes reconstructed by Meeussen (1967).

Table 2: Ciyao noun classes (Ngunga 1997, p. 166)

Class	Noun Prefix		Verb AGR		Enum. AGR		Examples
	Ciyao	PB	Ciyao	PB	Ciyao	PB	
1	mu-	ju-mu-	ju-	ju-	ju-	(u-)	muu-ndu jú-gwiíle 'the person fell'
	mw-						mw-aanáce jú-gwiíle 'the child fell'
	N'						m-palú jú-gwiíle 'the thief fell'
2	va-	ba-ba-	(v)a	ba-	va-	ba-	vaa-ndu ágwiíle 'the people fell'
	a						a-palú á-gwiíle 'the thieves fell'
3	mu-	gu-mu-	wu-	gu-	wu	(u-)	mu-si wú-gwiíle 'the village fell'
	mw-						mw-éésí wú-gwiíle 'the moon fell'
	N'-						ṇ-goómbá wu-gwiíle 'the beams fell'
4	mi	gi-mi-	ji-	gi-	ji-	(i-?)	mi-si jí-gwiíle 'the villages fell'
	my						mi-goómbá ji-gwiíle 'the beams fell'
							mw-éésí jí-gwiíle 'the moon fell'
5	di-	di-ĩ	di-	di-	di-	ĩ-	di-véélé dí-gwiíle 'the breast fell'
	dii-						dii-jela dí-gwiíle 'the hoe fell'
	dy-						dy-oolá di-gwiíle 'the frog fell'
6	ma-	ga-ma-	ga-	ga-	ga-	ma-	ma-véélé gá-gwiíle 'the breasts fell'
							ma-jela gá-gwiíle 'the hoes fell'
7	ci-						ciló-cí-gwiíle 'the night fell'
	c-	ki-ki-	ci-	ki-	ci-	ki-	c-áálá cí-gwiíle 'the finger fell'

8	yi-						yi-ló-yí-gwiíle 'the nights fell'
	y-	bɪ-bɪ-	yi-	bɪ-	yi-	bɪ-	y-áálá yí-gwiíle 'the fingers fell'
9	N-	ji-n	ji-	ji-	ji-	(i-?)	n-juva jí-gwiíle 'the dove fell'
	ø						ø-wuuti jí-gwiíle 'the gun fell'
10	N-	jɪ-n-	si-	jɪ-	si-	ɪ-	m-balati sí-gwiíle (sg.=11) 'the ribs fell'
	ø						n-gomó sí-gwiíle (sg.=11) 'the lips fell'
							n-juva sí-gwiíle (sg.=9) 'the doves fell'
							ø-wuuti sí-gwiíle (sg.=9) 'the guns fell'
11	lu-	du-du-	lu-	du-	lu-	du	lu-valati lú-gwiíle 'the rib fell'
	lw-						lu-wuudí lú-gwiíle 'the white hair fell'
							lw-aawú lu-gwiíle 'the net fell'
12	ka-	ka-ka-	ka-	ka-	ka-	ka-	ka-valati ká-gwiíle 'the small rib fell'
13	tu-	tu-tu-	tu-	tu-	tu-	tu-	tu-valati tú-gwiíle 'the small ribs fell'
14	wu-	bu-bu-	wu-	bu-	wu-	bu-	wu-lávídi wu-gwiíle 'the flea fell'
15	ku-	ku-ku-	ku-	ku-	ku-	ku-	ku-dyá kú-gwiíle 'the eating fell'
16	pa-	pa-pa-	pa-	pa-	pa-	pa-	pa-ntwé pá-gwiíle 'the top of the head fell'
17	ku-	ku-ku-	ku-	ku-	ku-	ku-	ku-ntwé kú-gwiíle 'the head rest fell'
18	mu-	mu-mu-	mu-	mu-	mu-	mu-	mu-ntwé mú-gwiíle 'in the head fell'
	N-						mw-iitala mu-saléele 'in the path is clean'

As can be seen in Table 2, all class prefixes are typically toneless and this is a similar case in Namwera Ciyao as will shown in Chapter 4.

As in other Bantu languages, class 15 in Ciyao is used for verbal infinitives which can function morpho-syntactically as nouns (Ngunga, 1997). Classes 16 -18 are locatives. Nouns in class 9 have no clear plural. The plurality is marked by the agreement marker /sí/ in class 10, and for other nouns in the same class 9 (singular), for example, [ɲuúmba] ‘house’, they take a plural marker /ma/ in class 6 [majuúmba] ‘houses’ (cf. Ngunga 1997 for further details).

The prefix /di-/ for class 5 is a Mozambican Ciyao form whose variant in most Malawian dialects is /li-/ hence, /li-jelá/ ‘hoe’, /li-ndanda/ ‘egg’, li-wágó/ ‘axe’, li-jóká ‘snake’ and /li-gáanga/ ‘stone’ etc. The prefix /va-/ for class 2 is /wá-/ or /wa-/ in most Malawian dialects.

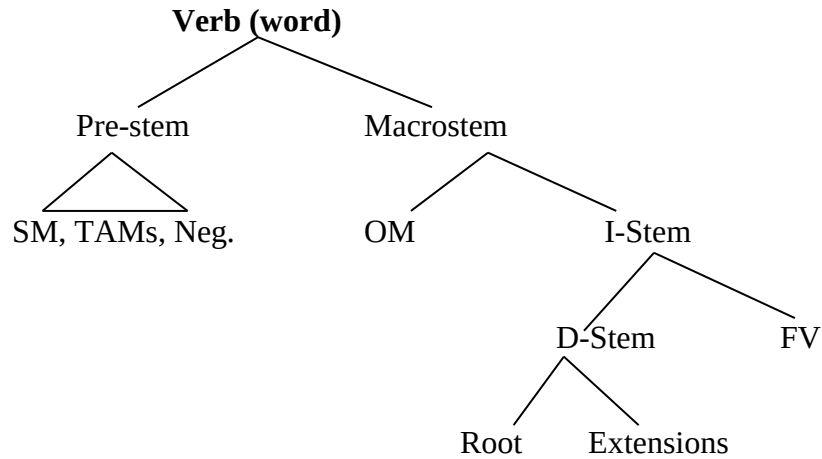
3.2.4 *The verbal tone system*

Unlike in nouns, there is no lexical contrast between high and low tones in Ciyao verbs. One general characteristic of Bantu languages is that verbal tone patterns largely depend on the tense-aspect morphology of the verb stem. That is, apart from underlying high tones, high (H) tones are assigned by morphological factors such as Tense, Object, Aspect and Mood markers to various domains in the verb. Additionally, there are productive tonal rules that contribute to verbal tonal distribution (see section 3.2.7 below for some details). The combination of morphological factors and general tonal rules makes H tone assignment predictable for the surface realization of the outputs in most Bantu languages (cf. Hyman & Ngunga 1994, Downing 1996, Odden 1998, Kisseberth & Odden 2003, Bickmore 2007, Marlo 2013, Bickmore 2014, Downing & Mtenje 2017, Mkochi & Bickmore 2021).

3.2.5 *The verb structure*

For a clear understanding of tonal alternations in Bantu verbs, it is crucial to know what constitutes the Bantu verbal structure. Provided in (4) is a widely adopted hierarchical morphological representation of the Bantu verb structure which ignores clitics (adapted from Meeussen 1967, Ngunga 1997, Kisseberth & Odden 2003, Marlo 2013).

(4) Bantu verb structure



The Bantu verb structure (word) in (4) consists of two main constituents: the pre-stem (inflectional prefixes) and the macrostem. The pre-stem, bearing inflectional morphemes, (also referred to as “Inflection” -INFL) consists of prefixes such as negative markers, subject markers (SM) and tense-aspect-mood markers (TAMs). The macrostem (M-Stem) comprises an object marker and the inflected verb stem (I-Stem) also called the morphological stem (Bickmore 2007, Marlo 2013, Mkochi & Bickmore 2021).

There are several arguments in support of grouping the OM with the inflectional verb stem to form the macrostem as a constituent. One of the arguments is that this structure serves as a domain for several phonological processes, including aspects of tone assignment and constraints on tone rules and their application. Specifically, it has been shown in many Bantu languages that the macrostem defines the domain over which inflectional tones are realised (Kisseberth & Odden 2003, Marlo 2013).

The inflected verb stem is composed of (1) the Derivational Stem (D-stem), the core lexical part of the verb word, and (2) the obligatory final vowel (FV) which is often /-a/ or /-e/ depending on the verbal mood (indicative or subjunctive) (Downing & Mtenje 2017, Mkochi & Bickmore 2021). The D-stem comprises two components: the obligatory verb root and optional extensions which express processes like causation, applicativeness, passivization, reciprocity and intensity.

The application of the verb structure in (4) to specific languages may involve some alterations to match the characteristics of different languages. For example, Ngunga (1997) shows that in Makonde (P.23), Nyanja/Chichewa (N.31) and Shona (S.10) there are prefixes for TMs in the indicative mood while in the imperative there is no prefix. In other languages such as Makhuwa (P.31), some TMs of the indicative mood are prefixes and others are suffixes while in the imperative mood, there is no SM.

3.2.5.1. *Verb + extensions*

The verb stem contains a root, derivational morphemes (extensions) and a final vowel. In Ciyao, Hyman and Ngunga (1994) provide the verb structure which is illustrated in (5) and which we adopt in its entirety.

(5) **Verb structure in Ciyao** (Hyman & Ngunga, 1994, p. 34)

- a. NEG. (TM) SM (TM) (NEG) {(OM) [Root–(X)–FV]_{Stem}}_{Macrostem}
- | | | | | | |
|------|-----|-----|------|-------|------|
| ŋga- | ni- | ju- | -a- | -ŋga- | -n- |
| | ci- | a- | -ci- | -ka- | -tu- |

(X refers to derivational extensions)

In (5b), we provide an illustration of the Namwera Ciyao verb stem which reflects the structure adopted in (5a) above.

- b. Namwera Ciyao verb stem reflecting the structure:

/nka-si-n-ka-mbaga-ku-a-jigal-il-a/ [ŋgasiŋgambaga kwaajigalila]

NEG-TM-1SG-TM-JUST-CONT-3OM-bring-APPL-FV

‘I will not just be bringing for her/him/them.’

It should be noted that all the constituents in the structure above, except the verb root and the final vowel, are optional.

Table 3: Ciyao verb extensions as reported in four different studies (Ngunga 1997, p. 147).

Extensions	Ngunga (1998)	Sanderson (1922)	Sanderson (1954)	Whitley (1966)
Applicative	-il-/el-	Applied: -ila, -el	Prepositional: -la, -ela	Oblique: -il-/el-
Causative	-aasy-, -isy/- esya, -y-	-isya, -esya	-isya, -esya, -sya, -nya (mya), -icisya (-ecesya)	-aasy-, -y-, -i-
Intensive	-isy-/esy-	-isya, -esya	isya, -esya	-isy-, -esy-
Passive	-w-	-wa, -ilwa	-ilwa, -wa, -elwa	-w-
Reciprocal	-an-	-na, ngana, -igana, -egana	-ana, -angana, -igana (-egana)	-an-
Reversive	-ul-/ol-	-ula, -ukula, -ikula (-ola)	Conversive: -ul-, -ol-	-ul-/ol-
Reflexive	–	-li- (prefix)	–	–
Stative	-k-/ek-	–	-ika, -eka, -uka	–
Potential	-k-/ek-	–	-ika, -eka	Neuter/Potential: -ik, -ek, -k-
Associative	-an-	–	–	–

Underlying phonemic segments in the verb stem structure sometimes undergo phonological processes which significantly alter their surface realizations as will be noted later in the chapter. Much as the focus of this thesis is mainly on tonology, we will still discuss in the next section some of the relevant phonological processes that have a bearing on surface tones.

3.2.6 *Selected Ciyao segmental rules*

Several phonological processes operate in Ciyao where segments are modified to suit phonological environments. This section presents some of the general processes in Ciyao that also apply in Namwera Ciyao and which are important for a thorough understanding of the phonological structure of Ciyao and its interface with tonology.

3.2.6.1 *Nasal Assimilation (NA) and Post Nasal Stop Voicing (PNSV)*

Assimilation is the modification of a sound to make it more similar to another sound in its neighbourhood. Nasal assimilation in Ciyao involves a nasal consonant /N/ becoming homorganic with the following consonant. If the root of a word begins with a voiceless consonant, a rule that we refer to as Post Nasal Stop Voicing (PNSV) voices the oral consonant after a nasal and then the nasal adjusts to the consonant's place of articulation accordingly through assimilation. Note that PSNV only applies in tautosyllabic contexts involving nasal-consonant clusters. The rule does not apply when there is a syllable boundary between the nasal and the following consonant. The application of the two rules is shown in (6) below where the subject prefix nasal /N/ triggers the voicing of the velar stop /k/ of the infinitive prefix /ku/ and then the nasal becomes homorganic with the resultant voiced stop. A dash represents a morpheme boundary.

(6) *Machinga and Mangochi Ciyao (Magwira 2013, p. 17)*

SM-TM-VR-FV		PNSV		NA		PR		gloss
a. /N-ku-wal-a/	>	n-guwala		ɲguwala	>	[ɲguwala]		'I am wearing'
b. /N-ku-lombel-a/	>	n-gulombela		ɲgulombela	>	[ɲgulombela]		'I am marrying'
c. /N-ku-telek-a/	>	n-guteleka		ɲguteleka	>	[ɲguteleka]		'I am cooking'
(VR refers to the verb root)								

PNSV fails to apply in the cases below because of a syllable boundary between /m/ of the subject prefix /mu/ and the infinitive prefix /ku/ arising from the deletion of the subject prefix vowel /u/:

(7) Machinga and Mangochi Ciyao (Magwira 2013, p. 20)

UR		PR	Gloss
a. /mu-ku-wal-a/	>	[ṁ-kuwala]	‘you are wearing’
b. /mu-ku-walang-a/	>	[ṁ-kuwalanga]	‘you are reading’
c. /mu-ku-wulag-a/	>	[ṁ-kuwulaga]	‘you are killing’
d. /mu-ku-lombel-a/	>	[ṁ-kulombela]	‘you are marrying’

3.2.6.2 Palatalisation

In Ciyao, as in many other Bantu languages, velar stops change to palatals when followed by front vowels. Thus, /k/ and /g/ change to palatal affricates /č/ and /j/ respectively, when followed by the mid-front vowel /e/ and the high vowel /i/ in contexts like the perfective tense as illustrated below.

(8) Mozambican Ciyao data (Ngunga 1997, p. 93)

2PL.SM –TM – VR –FV/TM		Surface Forms	Gloss
a. /tu-a-telek – e/	>	[twaateleče]	‘we cooked’
b. /tu-a-pelek – e/	>	[twaapeleče]	‘we gave’
c. /tu-a-jaang-il-e/	>	twaajaanjile]	‘we answered’
d. /ŵa-a-ŵalaang-il-e/	>	[ŵaawalaanjile]	‘they counted’

3.2.6.3 Imbrication

According to Ngunga (1997), this phonological process applies in the perfective tense. It involves inserting the tense-aspect marker (TAM) –ile or –ele based on the vowel between the final consonant of the verb base and the preceding vowel. When the TAM is inserted, some phonological processes take place. Thus, there is /l/ deletion followed by glide formation, vowel deletion, or vowel merger (fusion). In all these processes, a vowel is lost. To compensate for the lost vowel, the surviving one is lengthened. That is, in cases where /a/, /o/ and /u/ are followed by /e/ or /i/, the coalescence process produces [ee], [wee] and [wii] respectively (Ngunga 1997, Maho 2003). The output is a structure with the following vowel sequences:

(9) Imbrication vowel sequences

- a. oi > wee
- b. ai > ee
- c. ei > ee
- d. ii > ii
- e. ui > wii

Consider the data in (10) for illustration where the perfective tense marker –ile (in bold) is inserted between the final consonant of the verb root and the vowel that precedes the final consonant.

(10) Mozambican Ciyao (Ngunga 1997, p. 301)

Verb root	gloss	underlying form	/l/ deletion	Perfective forms
a. wulag-	‘kill’	/wula- il -g-e/	/wula- i -g-e/	[-wuleeje]
b. pelek-	‘give’	/pele- il -k-e/	//pele- i -k-e/	[-peleeče]
c. lokot-	‘pick up’	/loko- il -t-e/	/loko- i -t-e/	[-lokweete]
d. pomol-	‘pound’	/pomo- il -l-e/	/pomo- i -l-e/	[pomweele]
e. –puumul-	‘breath/rest’	/puumu- il -l-e/	/puumu- i -l-e/	[-puumwiile]

As can be seen in (10a-b), after /l/ deletion, the penultimate vowel sequences /ai/ and /ei/ change to [ee] while the vowel sequence /oi/ in (10c-d) change to /wee/ and /ui/ in (10e) changes to [wii]. The change of velar stops /g/ and /k/ to /j/ and /č/ respectively, is due to palatalisation, as already discussed earlier in (8).

3.2.6.4 Hardening (HR)

In Mozambican and Malawian Ciyao, the labial velar glide /w/ is realised as a voiced bilabial stop /b/ when it follows a moraic (non-syllabic) nasal. Likewise, the alveolar lateral /l/ changes to /d/ when preceded by a nasal consonant. The data in (11) illustrate this. The verbs have a morphological structure: Subject-Verb Root-Final Vowel.

(11) Malawian Ciyao /w/ hardening: w>b & l>d (Magwira 2013, p. 26, Mtenje 2000, p. 7)

Underlying forms		surface Forms	gloss
a. /N-wugul-e/	>	[mbugule]	‘I should open’

- | | | | | |
|----|--------------|---|------------|------------------------|
| b. | /N-walang-e/ | > | [mbalanje] | ‘I should read’ |
| c. | /N-lum-e/ | > | [ndume] | ‘I should bite’ |
| d. | /N-ling-e/ | > | [ndinje] | ‘I should try/measure’ |

(/N/ stands for the first person singular subject prefix)

For other Ciyao dialects like Mangochi Ciyao, a separate rule of post nasal /l/ deletion precedes /l/ hardening and thus bleeds it. Consequently, there is no hardening. The forms in (11c & d) therefore, appear as [nume] and [ninje], respectively (Magwira 2013).

Mtenje (2000) observes that when a syllabic nasal precedes the labial velar glide in Malawian Ciyao, hardening fails to apply because the rule is sensitive to the presence of a syllable boundary as the examples in (12) show where the vowel /u/ of the subject prefix /mu/ is deleted and the bilabial nasal maintains its syllabicity (the dot represents a syllable boundary).

(12) Malawian Ciyao: Hardening fails (Mtenje 2000, p. 9)

	Surface forms	underlying forms	gloss
a.	m.-wale	</mu-wal-e/	“you should dress up”
b.	m.- wutuče	</mu-wutuk-e/	“you should run”
c.	m.-walanje	</mu-walang-e/	“you should read”
d.	m.-wine	</mu-win-e/	“you should dance”

3.2.6.5 Spirantization and /N/ deletion

Spirantisation is a process that changes stops or spirants to fricatives before a front vowel /i/ (Kreidler 1989). In Malawian Ciyao, the stops /d/ and /g/ change to /s/ before a high front vowel. One of the contexts in which this change is triggered is when the perfective tense marker /-ile/ is added to a verb stem (Magwira 2013). Another rule that closely interacts with spirantization in Ciyao is nasal deletion (/N/deletion) which deletes the nasal /n/ before the fricative /s/. These two rules apply in a feeding order where spirantization precedes (hence feeds) nasal deletion thus changing the sequence, nasal plus /g/, into [s] as shown in (13). The verb stem has the structure: SM-VR-FV.

(13) **Mozambican & Malawian Mangochi Ciyao Spirantisation and N-deletion** (Ngunga 1997, p. 94, Magwira 2013, p. 29)

Underlying forms	Spirantisation	N-deletion	Gloss
a. /tu-tend-il-e/ >	tu-tensil-e >	tutesile	‘wehave done’
b. /tu-lek-il-e/ >	tu-lesil-e >	N/A	‘we have left’
c. /a-jonang-il-e/>	a-jonansil-e >	ajonasile	‘s/he/they has/have damaged’
d. /a-walang-il-e/ >	a-walansil-e >	awalasile	‘s/he/they (has/have) read’
e. /a-wilang – ile/ >	a-wilansil-e >	awilasile	‘s/he/they (has/have) called’

(/tu/ is the first person plural subject prefix and /a/ marks the third person singular or plural subject prefix)

In (13), spirantisation changes the stops /d/, /k/ and /g/ to the fricative /s/ when followed by the high front vowel /i/ in the perfective tense. N-deletion applies in (13a, c, d & e).

3.2.6.6 Vowel Coalescence

One of the common strategies for resolving hiatus in most Bantu languages is vowel coalescence which involves a fusion of either two alike vowels that follow each other to form one single vowel or two different vowels one of which is low, to form a single vowel of a different quality from those that provided the input (Ngunga 1997). In all contexts, hiatus is avoided and the vowel that comes out is bimoraic through compensatory lengthening. Consider the following data from Mozambican Ciyao.

(14) **a. Vowel coalescence: identical vowels (Ngunga 1997, p. 24)**

i.	[i+i > ii]:	díí-ná (cl.5)	</di-íná/	‘name’
		díí-só (cl.5)	</di-ísó/	‘eye’
ii.	[u+u > uu]:	m-buut-il-e muundúú.né	/muundú úné/	‘I hit a person’

iii.	[e+e > ee]:	-cee.l-e	</-ke+el-e/	‘it has dawned’
		-nyee.le	</-nye+el-e/	‘defecated’
iv.	[a+a > aa]:	kaa.náce (cl.12)	</ka+anáke	‘small child’

b. Vowel coalescence: non-identical vowels (Ngunga 1997, p. 25)

i.	[a+i > ee]:	mée.só (cl.6)	/ma-ísó/	‘eyes’
		mée.nó (cl.6)	/ma-ínó/	‘teeth’
ii.	[a+u > oo]:	moó.ngu (cl.6)	/ma-úngu/	‘pumpkins’
		móó.vá (cl.6)	/ma-úvá/	‘days’
iii.	[a+e > ee]:	géé.swéélá (cl.6)	/ga-éswéélá/	‘white’
iv.	[a+o > oo]:	moó.la (cl.6)	/ma.ólá/	‘frogs’

3.2.6.7 Glide Formation (GF)

Another strategy for resolving hiatus in Bantu languages is glide formation. It involves high vowels changing into corresponding glides when followed by another vowel. Normally, high vowels /u/ and /i/ change into glide /w/ and /y/, respectively, where the glide maintains the roundness and backness feature values of the high vowel. This process also applies in Ciyao as shown in the the examples in (15a & b) below.

(15) Glide formation across morphemes (Ngunga 1997, pp. 27–28)

a. i+V > yVV

i.	[i+u > yuu]:	dyuúngu	/di-úngu/	‘pumpkin;
		: dyúúvá	/di-úvá/	‘day sun’
ii.	[i+e > yee]:	myéésí	/mi-ésí/	‘moons’
iii.	[i+a > yaa]:	dyaa	/di-a/	‘eat’
		: pyaa	/pi-a/	‘burn’

b. u+V > wVV

i.	[u+i > wii]:	mw-iisi	/mu-isi/	‘pestle’ c.f. mi-isi ‘pestles’
ii.	[u+e > wee]:	mw-éésí	/mu-éésí	‘moon(s)’

	:	mw-eela	/mu-ela/	‘elephantiasis of scrotum’
iii.	[u+a > waa]:	gw-aa	/gu-a/	‘fall’

In the above data, GF applies across morphemes (word internally) in nouns but it can also apply in verbs as shown in (16) below.

(16) Glide formation: verb internally (Namwera Ciyao data)

	SM-TM-VR-FV	surface forms	gloss
a.	/mu-a-lombel-e/ >	[mwaalóómbeéle]	‘you married’
b.	/mu-a-telek-e/ >	[mwaatéleéče]	‘you cooked’
c.	/mu-a-wulag-e/ >	[mwaawúleéje]	‘you killed’
d.	/si-a-wugal-e/ >	[syaawúgeéle]	‘they closed’
e.	/si-a-wutuk-e/ >	[syaawútwiíce]	‘they ran’

In (16a-c), the /u/ of the 2nd person pronoun changes into the glide /w/ when followed by the past tense marker /a/ and the glide agrees in rounding with the high vowel /u/ whilst in (16d-e), /i/ changes into the glide /y/ under similar circumstances.

To sum up, this section has highlighted several segmental processes that apply in Ciyao which will assist in our understanding of verbal tonology data that will be discussed in later sections of the thesis. The processes discussed include Nasal Assimilation, Post-nasal Stop Voicing, Palatalisation, Imbrication, Hardening, Spirantisation, N-deletion, U-deletion, Vowel Coalescence and Glide Formation. The next section deals with the most commonly attested tone rules of Ciyao.

3.2.7 Ciyao tone rules

Ciyao has some general tonal rules that apply in the derivation of surface forms. This section discusses the following rules: High Tone Doubling (HTD), Tone Shifting (TS), Long Spreading (LS), Prefix Left Spreading (PLS), Contour Simplification (CS), Onsetless High Tone Delinking (OHTD), and Tone Retraction (TR).

3.2.7.1 High Tone Doubling /Spreading (HTD)

This is one of the rules in Bantu tonology which, depending on the language, spreads H to a vowel, syllable, or mora which immediately follows it (Bickmore 2007; Bickmore &

Kula 2013; Downing 2009; Goldsmith 1976; Mkochi & Bickmore 2021; Odden 1994, 1998; Odden 2015; Rolle & Bickmore 2022). This rule implies that even though a high tone may be initially associated with a given mora, in most cases it will be realized not just on that mora but on other Tone Bearing Units (TBUs) to its right (less often left) (Kisseberth & Odden 2003). The conditions for the application of this rule are variable across languages. (cf. Downing & Mtenje 2017 for Chichewa, Odden 1989 for Makhuwa and Makonde, Downing 1990 for Jita, Hyman 2011 for Nguni, Miti 2001 for Cinsenga, among others). Tone spreading can be bounded or unbounded. It is bounded in cases where the high tone spreads only once to a TBU that follows it and unbounded where it spreads to several TBUs across an entire domain, for example, a word or a phrase. Bounded tone spreading occurs in languages like Chichewa (cf. Downing & Mtenje 2017), Kikerewe (cf. Odden 2015), some contexts in Bemba (cf. Bickmore & Kula 2013; Kula & Bickmore 2015), some dialects of Makhuwa (cf. Cassimjee & Kisseberth 1999), among others, while unbounded spreading takes place in some environments in Bemba (cf. Bickmore & Kula 2013; Sharman & Meeussen 1955), Cilungu (Bickmore 1989, 2007) and Nguni (cf. Hyman 2011) among others. Let us consider the application of HTD in specific languages as shown in (17-18).

(17) High Tone Doubling: Kikerewe and Shona (Odden 2015, pp. 21–22)

Bounded in Kikerewe (Odden 2015, p. 21)		Unbounded in Shona (Odden 2015, p. 22)	
Verb stems	Glossing	Verb stems	Glossing
a. kulúma	to bite	a. kutórá	to take
b. kulúmá Magajáne	to bite Magajáne	b. kutórésá	to make/take
c. kulúmána	to bite each other	c. kutóréséra	to make/take for
d. kulúmílana	to bite for each other	d. kutórésérana	to make/take for each other

(18) High Tone Doubling: Chichewa, Bemba and Cilungu

Bounded HTD in Chichewa (Downing & Mtenje, 2017, p. 147)		
Verb stems		Gloss
a. [kuméenya]	/ku-méeny-a/	to hit
b. [kuyáng'aana]	/kuyáng'aana	to look at
c. [kufótókoza]	/ku-fótókoz-a/	to explain
d. [kutémbénuz-a]	/ku-témbénuz-a/	to turn over

Unbounded HTD in Copperbelt Bemba (Sharman & Meeussen 1955, p. 394)		
Surface forms	URs	Gloss
a. [bákáfíká]	/bá-ka-fik-a/	They will arrive
b. [tùléésáámílíshá]	/tu-lée-sambilish-a/	We are teaching
Unbounded HTD in Cilungu (Bickmore, 1989, p. 348)		
Surface form	URs	Gloss
[Pààndé ná Múlééngà]	Pandé na Mulenga/	Pande and Mulenga

n (17) above, in Kikerewe, H spreads one mora to the right if another mora follows while in Shona, H spreads up to two morae. In Chichewa, H doubles when the targeted mora is followed by at least a foot as shown in (18). In Cilungu, the H tone spreads up to the penultimate syllable of the whole phrase while in Bemba H tone spreads up to the end of the word. The above tonal patterns signify that different languages specify different constraints on HTD applications.

3.2.7.2 Cases where HTD applies in Ciyao

There are various cases where HTD applies in Ciyao namely, within a syllable, a word and across word boundaries.

One of the cases in which HTD operates within a syllable concerns a long syllable. For example, it applies in a long penultimate syllable when followed by a final H-toned mora as in (19).

(19) HTD within a syllable (Namwera Ciyao data)

	Surface forms	Underlying Forms	Gloss
a.	[kusúúmá]	/ku-suum-a/	‘to buy’
b.	[kuléémbá]	/ku-leemb-a/	‘to write’
c.	[kuwúúlá]	/ku-wuul-a/	‘to undress’

The infinitive tense above assigns H to the first and final morae of the verb stem and the H on the first mora in turn spreads to the second mora of the long syllable. The spreading is possible because the final mora is H toned otherwise, HTD would be blocked if the final mora was low toned.

Another case where HTD also applies within a syllable is when there is a long syllable in the antepenultimate position. Unlike in the cases in (19) above where the H on the penult spreads to the second mora of the long syllable only when the final mora is H toned, here the H triggered by the tense is allowed to spread onto a long antepenult even when the H tone is followed by a low mora (level H followed by L) as in [kulóómbelá] /ku-loomb-el-a/ ‘to marry’ and [kupííkaná] /ku-piikan-a/ ‘to listen’ (Namwera Ciyao data).

With these differences in HTD application on long syllables, we conclude that in Ciyao the penult has a level H when followed by an additional H on the final mora and that a level H can also be observed in the antepenult even when followed by a toneless mora. Odden Odden (1998) also observed a similar pattern in Tanzanian Ciyao and noted that the long syllable has a level H when the penult is in a phrase medial position as in ‘chíínji[káláánje nyama’ ‘I will fry the meat’.

In Ciyao, doubling can also spread H to a word-final mora provided that H is in a phrase medial position. In [akúsáteléka] /a-kúsa-telek-a/ ‘s/he cooks’, HTD fails to apply on /ka/ since the verb is in a word-final position but in [akúsáteléká ugali] /a-kúsa-telek-a ugali/ ‘s/he cooks nsima’, the H now doubles to the final mora of the verb stem because the stem is in a phrase medial position.

HTD also applies across word boundaries in Ciyao when an H tone which is linked to the final mora of the verb stem is allowed to spread to the next word as shown in (20).

(20) Tone Doubling across a word boundary: Namwera Ciyao data

Surface forms	underlying forms	gloss
a. twaa-wúgalagá	/tu-a-wugalag-a/	‘we were closing’
b. twaa-wúgalagá lítaánga door’	/tu-a-wugalag-a lítaánga/	‘we were closing the door’
c. wá-leémbagá	/wá-leembag-a/	‘s/he was writing’
d. wá-leémbagá cíkaláta letter’	‘wá-lembag-a cíkaláta/	‘s/he was writing a letter’

The data in (20a, c) show that both the final and the initial morae of the verb stem are H-toned. In isolation, the nouns in (20b, d) are toneless on the initial mora as indicated at the underlying level. However, at the surface level, the final mora H of the verb stem doubles to M1 of the next word, hence, the appearance of H on the initial morae of the nouns in (20b, d). This illustrates that spreading is allowed across word boundaries in Ciyao.

3.2.7.2.1 Non application of HTD in Ciyao verbs

The HTD rule does not spread H to the final mora of the verb stem in Ciyao. This is due to a Non-finality constraint which disallows prepausal H tones (Odden 1998). The verb stems involved are those with short penultimate vowels. High tones which result from HTD are not permitted on the final mora because a Non-finality constraint prohibits the spreading of H when the target mora of the verb stem is in a phrase final position as noted in ‘cháá[ji-líme’ ‘he will cultivate them’ and ‘chíná[sí-táve’ ‘I will build them’ in Masasi Ciyao (Odden 1994, p. 102) where the penult H tones fail to spread to the final morae in both cases. It should be mentioned that the final H in [kusúúmá] /ku-suum-a/ ‘to buy’ or [kuléémbá] /ku-leemb-a/ ‘to write’ (NC) is acceptable, although the forms are prepausal, because it is not realised as a result of HTD but because of an infinitive tense assigns a Melodic H to that position (see sections 5.3.1-5.3.5 for further details of melodic H tone assignment in various tenses). In non-optimality Theoretic accounts of this tonal behavior, Odden (1990) and Mtenje (1993) proposed for Tanzanian and Malawian Ciyao respectively, that prepausally, the final mora should be regarded as extraprosodic (extra metrical) and thus invisible to HTD. This implies that H tones that appear on the final mora in phrase final positions are only through grammatically assigned H tones and not HTD.

Another case where HTD fails to apply is in relation to the prefix H which is not allowed to spread to the verb stem in Ciyao (Odden 1998). It has also been observed by Kisseberth (2003) that in Ciyao, HTD is not iterative. That is, the rule does not apply to its own output and thus the H tone only doubles once. This means that high tone spreading in Ciyao is bounded. This is in sharp contrast to languages like Shona, Bemba and Cilungu where, as observed in section 3.1.7.1 above, H is allowed to spread more than once and, sometimes, unboundedly throughout an entire domain.

There is yet another context in which HTD is blocked. This is in a second mora of a long penultimate syllable when the following mora is low toned as in ‘ŋganíná[chi-súuma]’ ‘I didn’t just buy it’ (Odden 1998, p. 286) where the first H of the verb stem [súuma] does not double within the long syllable because the final mora is low-toned. In contrast, in [akúléembá] ‘s/he is writing’, the H of the long penult spreads to the second mora since the latter is followed by H on a final mora.

3.2.8 High Tone Shifting (HTS)

This process pushes a high tone both to the right (or left) in various contexts (Downing 2014, Downing & Mtenje 2017). In Ciyao, the H may shift both to the left or right. In section 5.4 on OM effects on H tone, it will be shown that the attachment of an OM to the verb stem has the effect of forcing H to shift one mora to the left. The result of HTS in Ciyao is that the TBU that sponsors the H tone completely loses it.

3.2.8.1 Long Spread (LS)

The rule spreads a high tone of the first mora (M1) of a long syllable of a verb stem to the next mora (Odden 1990, Mtenje 1993). Hyman and Ngunga (1994) specifically refer to the rule as Long Spread Right and the condition is that the H spreads to the second mora of its long syllable whenever it is followed by a low tone. Mtenje (1993) further states that LS is a special (restricted) type of H-tone spreading since it only applies to long vowels within the stem as in [kuwíláánjila] ‘to call for’ and [kuwáláánjila] ‘to count for’ where H on M1 of the verb stem doubles to the first mora of a bimoraic syllable and the following mora is low toned. Odden (1990) stresses the need to restrict the application of LS to stems because sometimes falling tones are found in prefix domains where LS does not apply. Mtenje (1993, p. 183) provides examples in Malawian Ciyao where LS fails to apply in prefixes as in [tínjí[ikagá] ‘I will be coming’ where the H on /njí/ does not spread to the next mora although it is followed by a low tone.

3.2.8.2 Prefix Left Spreading (PLS)

Prefix Left Spreading doubles the H of the M2 of a bimoraic syllable of the prefix to the first mora (Mtenje 1993). Hyman and Ngunga (1994) have termed it Long Spread Left (LSL). The data in (21) illustrate the application of PLS (LSL).

(21) **Examples of PLS (Namwera data)**

Underlying forms	surface forms	gloss
a. /ku-áng-a/>	/kwaáng-á/> [kwáángá]	‘to respond’
b. /ku-ás-a/>	/kwaás-á/ > [kwáásá]	‘to throw away’
c. /ku-ím-á/>	/kwiím-á/ > [kwíímá]	‘to stand’

In the data above, the infinitive tense marker *ku-* assigns H to M1 and final mora. The assignment of H to M1 (followed by segmental rules of GF and vowel lengthening which apply to the infinitive prefix) creates a rising tone followed by H on the final mora. This tone sequence which yields forms with a rising tone such as *[kwaángá] ‘to respond’, *[kwaásá] ‘to throw away’ and *[kwiímá] ‘to stand’, is not allowed in Ciyao. In such kind of verb forms, Mtenje (1993) notes that a rule of Prefix Left Spreading applies to spread the H tone leftwards to level the H tone.

3.2.8.3 *Contour Simplification (CS)*

This rule delinks the left branch of a high tone when associated with the second mora of a syllable. Ngunga (1997) observes that the rule is restricted to CVC sequences which may be preceded by either a CV mora (CVCVC) or when it is initial in intonational phrases. Hyman and Ngunga (1994) refer to the same phenomenon as Absorption. Examples of CS are given below.

(22) **Mozambican Ciyao** (Hyman & Ngunga 1997, p. 146)

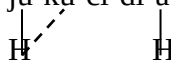
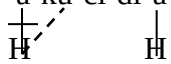
ngani-ju-piikan-a	Input
 H	
ṅgani-ju-piikan-a	H tone spreading
 H	
ṅgani-ju-piikán-a	H delinking
 H	
[ṅgani-ju-piikán-a]	
‘he didn’t hear’	

In the derivation in (22), H is assigned to the second mora of a long syllable of the verb stem by a tone rule which applies in this tense (see details of this morphological tone assignment in section 5.2 of chapter 5). The H tone doubles to the next mora. Later, the left branch of the H is delinked. In this case, the contour tone has been simplified from a rising to a level low tone.

3.2.8.4 Onsetless H delinking

This rule delinks the first branch of a high tone from an onsetless word initial mora (Hyman & Ngunga 1994, 1997) as shown in the example in (23) where the SMs /jú/ and /á/ are underlyingly H-toned. The root -dí- ‘eat’ is also H-toned.

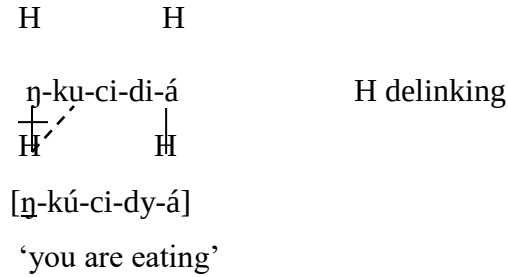
(23) Mozambican Ciyao (Hyman & Ngunga 1994, p. 30)

- a. ju-ku-ci-di-a

 [jú-kú-ci-dy-á]
 ‘he is eating it’
- b. a-ku-ci-di-a

 [a-kú-ci-dy-á]
 ‘they are eating it’

As it can be observed in the above data, when the SM has an onset as in (23a), the initial prefix H spreads to the tense marker /-ku-/ whilst when the SM is onsetless as in (23b), the H also spreads to the tense marker /-ku-/ but its left branch H is delinked. If there was no delinking, the surface form would have been *[ákúci dyá]. Hyman and Ngunga (1997) state that sometimes, the SM /N̩/ ‘you’ behaves like an onsetless prefix where the H delinks from the syllabic nasal as shown below.

(24) Mozambican Ciyao (Hyman & Ngunga 1997, p. 147)

- | | |
|--------------------------|------------------|
| N̩-ku-ci-di-a | Input |
| | |
| H H | |
| | |
| n̩-ku-ci-dy-á | H tone spreading |
| | |
| | |



3.2.8.5 High Tone Retraction (HTR)

A regular rule in Ciyao, just like in other Bantu languages, which delinks a high tone from the verb stem final mora and re-links it to the second mora of a long penultimate syllable (Mtenje 1993). Hyman and Ngunga (1994) refer to the same rule as H Pullback (HPB). The application of the rule results in a rising contour on the penultimate syllable and a low tone on the stem final mora as in [naáliíle] /ni-á-liilé/ ‘I ate’ (Odden 1994, p. 103) and [náápííkeéne] /ni-á-piikeené/ ‘I heard’ (Mtenje 1993, p. 186). Notice that the two forms differ in tones, especially the prefix H. The first form has a rising contour whilst the second has a level H. This is just a matter of variation between Tanzanian Masaasi Ciyao and Malawian Ciyao but the application of the retraction rule is the same in the two dialects.

3.2.8.6 Final Vowel Shortening (FVS)

This is a rule that removes the word-final length together with the H that is associated with that length (Hyman & Ngunga 1994). That is, in contexts where a high tone is assigned to M2 of a final bimoraic syllable, that H is not phonetically realized as shown in the example below.

(25) Mozambican Ciyao (Hyman. & Ngunga 1994, p. 32)

- | | | |
|----|------------------------------------|------------------------------------|
| a. | η-ga-ni-ju-di-a | Input |
| | H

η-ga-ni-ju-di-á

H | Melodic H Docking |
| c. | η-ga-ni-ju-dy-aá | Gliding & Compensatory Lengthening |
| |

H | |

- d. η -ga-ni-ju-dy-a Final Vowel Shortening and H deletion
 |
 H
- e. [η -ga-ni-ju-dy-a]
 ‘He didn’t eat’

In the derivation above, the vowel /i/ glides to [y] and is followed by compensatory lengthening. The compensatory lengthening is followed by the final vowel shortening to wipe out the final mora together with its H.

What follows is on the general role morphology plays in high tone placement in Bantu languages. This will help us understand our discussion in Chapter 5 on how high tones are assigned in the verbal morphology of Namwera Ciyao.

The surface realisation of tones in most Bantu languages like Ciyao is determined or contributed by several factors. First, they are influenced by lexical tones which are underlyingly associated with various morphemes in a language and undergo general tonal processes such as doubling (spreading), shifting, deletion, etc. (Kisseberth & Odden 2003, Odden & Bickmore 2014). Second, surface verb tones in Bantu languages are determined by additional grammatical tones often referred to as “Melodic” tones. These are generally characterized as additional tones to underlying H-tones that give surface tonal alternations in verbs and are primarily contributed by grammatical categories like tense/aspect/mood (TAM), object and other markers (Marlo 2013, Downing 2014, Kisseberth & Guérois 2014, Marlo & Odden 2014, Odden & Bickmore 2014, Odden 2015, Downing & Mtenje 2017, Rolle 2018, Mkochi & Bickmore 2021).

In Guthrie's P Zone languages, there is a counting system in H tone assignment which is dictated by morphology (cf. Hyman & Ngunga 1994, Odden 1994, Bickmore 1997, Kisseberth & Odden 2003, Mtenje 2006, Downing & Mtenje 2017). A H tone is assigned, among other locations, to the following positions in the verb stem: initial mora (M1), second mora (M2), third mora (M3), final mora (FM), M1 and final mora or M2 and final mora. According to Odden (1998) and Kisseberth and Odden (2003), in Ciyao, high tone assignment targets the first, second and final stem morae depending on the tense involved. In Chapter 5, we will present Namwera Ciyao (NC) data and show how these tonal characteristics feature in the Namwera Ciyao dialect.

Odden and Bickmore (2014) pose a question about where the Melodic Hs come from, and this question is related to the one asked earlier by Meeussen (1961) about the source of tone inflection. Odden and Bickmore (2014) argue that to account for where the Hs come from, we need to follow the typical autosegmental analysis that the H tones are floating tones. Mkochi and Bickmore (2021) also observe that in CiTonga (N.15) a Bantu language spoken in northern Malawi, the H of a prefix is pre-linked underlyingly while the H of suffixes is argued to be floating underlyingly. We, therefore, adopt in this thesis the position that a Melodic H is an underlying floating H ready to be linked with a free tone-bearing unit based on several morphological factors.

3.2.9.1 Factors conditioning presence and docking of Melodic H

Several factors are involved in the analysis of Melodic H. Firstly, Odden and Bickmore (2014) note that the presence and even docking of Melodic H tones is a function of several combinations of inflectional features such as TAMs, polarity (affirmative/negative), clause type (main/relative) and object markers. That is, inflectional features determine the presence or absence of the H tones, and the tones may be subject to spreading, shifting or deletion depending on specific patterns in a language (cf. Polleto 1998, Bickmore 2007, Hyman 2011b, Marlo & Odden 2014, Odden & Bickmore 2014, Downing & Mtenje 2017).

In terms of the location to which a floating Melodic H can dock, (Meeussen 1961) suggested that grammatical Hs may target an initial mora or the second mora or may even completely be missing but operating underlyingly to avoid the root H spreading. While

subscribing to Meeussen's observation, Bickmore (forthcoming) stresses the need to identify the domain for Melodic H tone assignment and proposes the verb stem or macrostem (object prefixes plus stem) as the main domain for such tones. Likewise, Odden and Bickmore (2014) note that the H contributed by a TAM prefix targets the verb stem rather than the prefix itself.

Based on these viewpoints and what we earlier said about the role played by inflectional properties, we can conclude that both the domain and the category that sponsors the H tone, such as TAMs, influence the location of the Melodic H and that it targets the verb stem and the macrostem while underlying Hs target other prefixes such as subject and negative markers. We should be quick to point out, as Bickmore and Mkochi (2019) observe, that the docking of the Melodic H is language specific. Let us see some examples that show how TAMs influence the presence and docking of Melodic H tones (the Melodic H is underlined to separate it from a doubled H).

(26) Melodic H in Kimatumbi (Odden 2015, p. 27)

Melodic H on initial vowel of verb stem

- | | | | |
|----|-------------------------|-------------------|-------------------|
| a. | <u>g</u> úndumuka | </gundumuk-a/ | 'to fear' |
| b. | baag <u>ú</u> ndumuka | </baa-gundumuk-a/ | 'they will fear' |
| c. | baag <u>ú</u> ndumwiike | </baa-gundumuk-e/ | 'they are afraid' |

Melodic H on final vowel of verb stem

- | | | | |
|----|-------------------------|----------------------|--------------------|
| a. | baatígundumuk <u>á</u> | </baatí-gundumuk-a/ | 'they feared' |
| b. | eendaágundumuk <u>á</u> | </eendaá-gundumuk-a/ | 'they are fearing' |

Melodic H on V3 of verb stem

- | | | | |
|----|------------------------|--------------------|-----------------------------|
| a. | bagundum <u>ú</u> ke | </ba-gundumuk-e/ | 'they should fear' |
| b. | kabagundum <u>ú</u> ka | </kaba-gundumuk-a/ | 'while they were
afraid' |

In the above data, all the verb stems are underlyingly toneless. The H tones on the verb stem are a result of the Melodic H assignment which is determined by the specific grammatical tense/aspect/mood of the constructions. Consequently, the Melodic H is

linked to vowels in various positions of the verb stems such as initial, third and final vowels depending on the relevant morphological categories.

The second factor is that Melodic H tones get assigned in Bantu languages to positions in the verb stem based on a mora or vowel counting system. A Melodic H may be on the first, second, third, or final mora of a verb stem or a combination of these positions. Therefore, more than one position may be targeted by Melodic H tones. For example, Cilungu, a Zambian Bantu language (classified by Guthrie as M14), has a Melodic H tone linked to the final TBU of the verb stem, the second TBU and a second mora of the final vowel (cf. Bickmore 2007, 2014).

(27) Melodic H docking in Cilungu (Bickmore 2007)

a. H placed on FM

aa-ngá-mú-sukilil-á </a-ngá-mu-sukilil-a/
 C1.SM-POT-C1.OM-accompany-FV
 ‘we can accompany him/her’

b. H placed on M2

y-aa-cí-mú-sukíl-íil-e </i-á-cí-mu- sukilil-e/
 C4.SM-PAST-RCT-C1.OM-accompany-PST
 ‘they (C4) recently accompanied him/her’

c. H placed on M2 and FM

tú-lá-sukí líl-áná </tú-la-sukilil-an-a/
 1P.SM-FUT-accompany-RECP-FVKkk
 ‘we will accompany each other’

We can observe in (27) that all morae are toneless underlyingly except the TAM prefixes /ngá/, /cí/ and /tú/. In (27a), the Melodic H is associated with the final mora of the verb stem. In (27b), it is linked to the M2 of the verb stem which doubles to the next mora, and in (27c), the Melodic H is linked to the M2 and FM of the verb stem. The M2 H doubles up to the penult. These differences in Melodic H location are due to differences in TAMs that contribute to the Melodic H.

Downing and Mtenje (2017) provide detailed examples showing that a Melodic H tone in Chichewa targets the first, penultimate and final positions in the verb stem while Hyman and Ngunga (1994), Ngunga (1997) and Odden (2015) argue that a Melodic H in Ciyao is assigned to the first, second and final morae positions in the verb stem. Bickmore (forthcoming) provides the following summary of examples of languages that show some targeted TBUs within the verb stem:

(28) A summary of languages showing targeted TBUs

- | | |
|--------------------|--|
| a. 1st mora | Jita, Kuria, Nyala-W, Orungu, Simakonde, Wanga |
| b. 2nd mora | Cilungu, Copperbelt Bemba, Makhuwa, Fipa, Idhakho,
Kamba, Kuria, Namwanga, Totela |
| c. 3rd mora | Makhuwa, Kuria |
| d. 4th mora | Kuria |
| e. Antepenult mora | Bena |
| f. Final mora | Bassa, Bakweri, Cilungu, Copperbelt Bemba, Makhuwa,
Fipa, Jita, Kamba, Kwanyama, Mbadja, Namwanga, Nyala-
W, Orungu, Totela, Wanga |

Within the macrostem, the TBUs that are targeted as observed by Bickmore (forthcoming) include the first mora (Idhakho, Bena & Makhuwa), the second mora (Makhuwa), the third mora (Makhuwa) and the first mora of the second syllable (Wanga).

Apart from TAMs and mora counting, the docking of the Melodic H in Bantu languages also depends on the size and shape of the verb stem (Marlo 2007, Odden & Bickmore 2014, Downing & Mtenje 2017). When the verb stem is long, chances are high for the stem to bear several H tones unlike when the verb stem is short. The size and shape of the verb stem include considering the number of syllables in the stem, whether it is bimoraic or monomoraic, and whether the verb stem is vowel or consonant initial (Marlo 2007). Let us look at the following examples for illustration.

(29) Short verbs: vowel-initial verbs in Lumarachi (Marlo 2007, p. 8)

	Surface forms	underlying forms	gloss
a.	alyaaká	</a-li-ak-a/	‘he will weed’

- b. bhalyeenyána </bha-li-eny-an-a ‘they will want each other’
c. bhalyaakaakánira </bha-li-ak-an-ir-a/ ‘they will weed for each other’

In Lumarachi, when the verb stems are vowel initial, the Melodic H appears on the mora of the second syllable. With short verbs (bisyllabic or monosyllabic) but consonant initial, the Melodic H appears on both morae in the bisyllabic verbs as in (30a-c) below and appears on the only mora in monosyllabic verbs as in (30d-e).

(30) Short verbs: consonant-initial verbs in Lumarachi (Marlo 2007, p. 171)

Surface forms	underlying forms	gloss
a. naabhéké	</ni-a-bhek-e/	‘he will shave’
b. naakísé	</ni-a-kis-e/	‘he will hide’
c. naakhíné	</ni-a-khin-e/	‘he will dance’
d. naalyé	</ni-a-li-e/	‘he will eat’
e. naanywé	</ni-a-nyu-e/	‘he will drink

For trisyllabic or long verbs, the H tone appears on the first mora of the second syllable and on the next mora. But, if the second mora is the first mora of a long syllable, the H spreads to the next mora as the data in (31d) below show.

(31) Consonant-initial trisyllabic verb stems in Lumarachi (Marlo 2007, p. 8)

Surface forms	underlying forms	glossing
a. naabhukúlé	</ni-a-bhukhul-e/	‘he will take’
b. naakarááŋge	</ni-a-karang-e/	‘he will fry’.
c. naasiindíkhé	</ni-a-sindikh-e/	‘he will watch’
d. naabhukúléeŋge	</ni-a-bhukul-eng-e/	‘he will be taking’

In all forms, there are two H tones on the second and third morae except in (31d) where the H extends to the second mora of a bimoraic syllable. Later in this chapter, we will show that the assignment of the Melodic H in Namwera Ciyao also, among other factors, depends on the size and shape of the verb stems.

3.2.9.2 The role of object markers (OMs) in H tone assignment

Apart from TAMs, mora counting, and size or shape of the verb stem, the OM can also influence the docking of an H tone. The OM can introduce H in the verb stem (Odden 1998, Marlo 2007, Bickmore 2014, Downing & Mtenje 2017). For example, in Chichewa, the OM introduces H in the recent past, past habitual and progressive tenses as shown in the data in (32) below.

(32) Imperative verbs in Chichewa (Downing & Mtenje 2017, p. 139)

Toneless verb	gloss	infinitive verb	gloss
fotokoz-a	"explain"	ku-fótókoz-a	"to explain"

The toneless verb /fotokoz-a/ has H tones in the infinitive tense on /fó/ and /tó/ because the tense assigns H on /fó/ which doubles to /tó/. However, when an OM is attached to a verb stem, it introduces a high tone as in (33) below.

(33) Verb tenses in Chichewa with OM (Downing & Mtenje 2017, pp. 152–153)

Infinitive verb + OM	gloss	recent past + OM	gloss
a. ku-tí-fótokoz-éel-a	"to explain to us"	a-na-tí-fótokoz-éel-a	"They explained to us"
b. ku-mú-fótoz- éel-a	"to explain to him/her"	a-na-mú-fótokoz-éel-a	"He explained to him/her"
Past habitual + OM	gloss		
a. a-ma-ndí-fótokozéel-a	"they used to explain to us"		
b. a-ma-mú-fótokozéel-a	"he used to explain to him/her"		

In all the verb tenses in (33), an H tone appears on the penult /zé/ and is triggered by the OM.

The last factor that contributes to the realisation of tones in the verb stems is the general tonal rules of the language. Consider the data in (34) where Melodic tones are affected by rules like spreading/doubling, shifting, deletion, etc.

(34) Melodic H and tone spreading/doubling in Kikerewe (Odden 2015, p. 21)

Verb stems	gloss
a. ku-lú <u>ma</u>	‘to bite’
b. ku-lú <u>má</u> Magajáne	‘to bite Magajáne’
c. ku-lú <u>mána</u>	‘to bite each other’
d. ku-lú <u>mí</u> lana	‘to bite for each other’

The data above has a Melodic H assigned to the verb stem initial mora. But the verb stem has more than one H. The extra H is due to the application of HTD that doubles H one mora to the right. The data in (35) below show how tone shifting in Jita affects a Melodic H.

(35) Melodic H and tone shifting in Jita (Odden 2015, p. 22)

Verb stems	gloss
a. oku-β <u>ón</u> -a	‘to see’
b. oku-β <u>ón</u> -á-iijonpi	‘to see a bird’
c. oku-β <u>ón</u> -án-a	‘to see each other’
d. oku-β <u>ón</u> -ér-an-a	‘to see for each other’

In the data in (35), the Melodic H targets the initial mora of the verb stem as in (35a). A High tone shifting applies in (35b-d) moving the melodic H one syllable to the right resulting in the sponsor of the tone losing it. As can be seen in the data, the H tone in Jita shifts to the next mora if the sponsor of the H tone is either followed by at least a foot or when the potential recipient is not phrase final as in (35b-d). This condition explains why the H does not shift in (35a).

In the tone analysis of a Bantu language, it is, therefore, necessary, as Odden and Bickmore (2014) argue, to take into account both the Melodic H assignment and the applicable tone rules such as HTD, HTS and deletion, among others

To summarise this section, we have discussed the morphology and tone assignment in other Bantu languages. We have observed that the docking of a Melodic H is influenced by, among others, TAMs, mora counting, size or shape of the verb stem stem, object markers

and general tone rules. All of these will have a bearing on our analysis of NC verbal tonology in Chapters 5.

3.3 Theoretical Framework

Studies of Bantu tone have largely been carried out within a rule-based model of phonology. But, this section highlights the general framework of Optimality Theory (OT) which this study adopted to account for Namwera Ciyao tonology. The section provides the motivation for adopting OT. Unlike the Rule-based Model, OT has the explanatory power to account for complex phenomena such as tone.

Cassimjee and Kisseberth (1998) argue that one of the major challenges of rule-based theories is that rules do not sufficiently reveal the deeper connections between different phenomena and that this approach does not adequately consider the diversity of tone patterns in Bantu languages. They give an example in the Eerati dialect of Emakhuwa where an underlying High (H) spreads onto the following mora through HTD, and once a H tone has doubled, it is delinked from the mora to which it was underlyingly associated. On the contrary, delinking does not occur when the mora in question is itself immediately preceded by a H-toned mora because a preceding H mora "protects" the underlying H-toned mora from being delinked. However, they further state that in the Imeetto dialect of Emakhuwa, HTD happens in just one context: when the mora that is the target of the doubling is followed by a H-toned mora. Thus, a doubled H appears just when it is "protected" by a following H tone. According to them, it seems obvious that there is a single principle that (a) blocks delinking in Eerati and (b) permits H Tone doubling to surface in the Pemba variety of Imeetto. However, it is not clear how rules describing alternations reveal that principle.

On the contrary, Optimality Theory provides clear accounts of various processes involving both segmental and tonal structures. It is output-based in that it considers all surface forms (outputs) in a language as being generated by a system, GENERATOR (GEN, in short) which then subjects them to ranked-violable universal and language-specific constraints for evaluation to choose the optimal candidate while ruling out others (Prince & Smolensky 1993, Cole & Kisseberth 1994, Pulleyblank 1996, McCarthy & Prince 1999, Bickmore 2007, Marlo 2007, Downing 2009, 2014, Mudzingwa & Kadenge 2011, Simango & Kadenge 2014). OT has the explanatory power to provide clear solutions to tone assignment problems in Bantu and other languages (cf. Bickmore 1997, Myers 1997,

Cassimjee & Kisseberth 1999, McCarthy 2001, 2002, Mtenje 2006, Bickmore 2007, Marlo 2007, Bermúdez-Otero 2008, Downing 2009). It is on this explanatory power that this thesis adopted OT theory to account for the tonal phenomena in Namwera Ciyao.

3.3.1 *An overview of Optimality Theory*

Optimality Theory was developed by Prince and Smolensky (1993) and later extended by others to broaden its scope and depth of coverage (cf. for instance, McCarthy & Prince 1993, Cole & Kisseberth 1994, Archangeli & Terence 1997, Myers 1997, Cassimjee & Kisseberth 1998, Kager 1999, McCarthy 2004). The main idea of OT is that unlike derivational theories in Generative Phonology where an output is derived from the underlying level through the application and interactions of a set of ordered rules, OT gets rid of derivational mechanisms. Phonological outputs are freely generated, and the actual output for any input is the most optimal, given the ranking of relevant constraints in that language.

OT works in a way that the underlying forms are conceived as a set of inputs, and are not subjected to phonological processes since in OT there are no rules (McCarthy & Prince 1993, Kager 1999). Instead, a set of infinite candidates is generated by a system referred to as GEN (short for GENERATOR). Once GEN has produced candidates, they are subjected to an evaluation by a set of violable ranked constraints which select the best well-formed output based on its non-violation of the most highly ranked constraints. The ranking of the constraints is language-specific.

There are two basic types of constraints in OT: faithfulness and markedness constraints (McCarthy & Prince 1993). Faithfulness constraints ensure that outputs resemble inputs – requiring all the segments in the input to surface in the output. The specific constraint is MAX whereby segments in the input must correspond to segments in the output (No deletion). Faithfulness constraints also use the constraint DEP that requires all the segments in the output to be present in the input (NO insertion). Whereas MAX and DEP refer to segmental faithfulness, IDENT refers to featural faithfulness which requires that features of segments of the input (not segments) such as place, voice, and manner surface in the corresponding segments in the output (Barlow & Gierut 1999).

Markedness (or well-formedness) constraints refer to the complexity of a given structure relative to another structure (Cains 1969, Greenberg 1981, Jakobson 1968, Maddieson 1984). They require that outputs be unmarked (i.e. represent the expected form) in structure. A markedness relationship ordinarily exists between consonant clusters and single segments (Barlow & Gierut 1999). Within OT, the constraint *COMPLEX, for example, is a markedness constraint that prohibits consonant clusters from occurring.

Faithfulness constraints may be violated to satisfy high-ranking markedness constraints or markedness constraints may be violated to satisfy high-ranking faithfulness constraints (Kager 1999). Constraints are assumed to be innate and universal to all languages while rankings are language-specific.

Apart from the faithness and markedness constraints, OT has alignment constraints (ALIGN). Alignment describes the tendency in languages for certain linguistic features to coincide, such as the location of primary word stress or tone at the beginning of a word (McCarthy & Prince 1993). The alignment constraints for a tone evaluate a form based on how closely the high tone is associated with the edge of the verb stem specified in the particular ALIGN constraint component and the application of a particular ALIGN constraint is based upon the TAMs (Kisseberth & Odden 1998). We may have ALIGN (L) which requires that a high tone be associated with the left edge of some stem whilst ALIGN (R) demands a high tone to be linked to the right edge of the verb stem for an optimal output realisation.

Due to its explanatory power, OT has been used to account for a wide range of phenomena in phonology, morphology and even syntax. In phonology, for example, the theory has been invoked to explain complex issues in both segmental and non-linear representations such as tone (Cassimjee & Kisseberth 1998). OT has also provided insightful accounts of dialectal differences in many languages through constraints reranking (cf. Pulleyblank 1996, Downing 2009, Orie 2001, Cassimjee & Kisseberth 1998, 1999, for some examples). The Optimality Theory has accounted for a single dialectal tonal system and dialectal tonal variations in Bantu languages.

OT has accounted for the verbal tonal system of Isixhosa, a Nguni language spoken in South Africa (Cassimjee & Kisseberth 1998). Consider the data in (36) below.

(36) IsiXhosa (Cassimjee & Kisseberth 1998, p. 61)

- a. N-diya-sebéénz-a (work)
- b. N-diya-fum-áán-a (get)
- c. N-diya-bon-íís-a (show)

In (36), a high tone does not appear on the antepenult but on the penultimate syllable. To account for the occurrence of a H tone on the penult, the constraints in (37) interact.

(37) Constraints (Cassimjee & Kisseberth 1998, p. 30)

- a. NONFINALITY: the right edge of a HD may not be aligned with the right edge of a Prosodic Word.
- b. *MONOMORAIC HD: a HD should not consist of a single mora.
- c. AVOID PROMINENCE: a prominent syllable may not be internal to HD.
- d. ALIGN PWR: align a Prosodic Word to the right

(38) OT Tableau for Isixhosa (Cassimjee & Kisseberth 1998, p. 30):

Linking of a H tone to M2

Candidates	Nonfinality	*MonoHD	Avoid Prom	Align PW R
a. ndiya(se <u>b</u> eenza)	*!			
b. ⇨ndiya(se <u>b</u> ee)nza			*	nza
c. ndiya(se <u>b</u>)béénza		*!		beenza

In the tableau in (38), candidate (a) is nonoptimal because it violates a highly ranked Nonfinality that disallows a H tone to be realised on the final vowel. Candidate (b) is optimal because it satisfies the high-ranked Nonfinality. Candidate (c) is nonoptimal because it violates the high-ranked *MonoHD constraint that prohibits a HD to consist of a single mora.

OT can also account for the Bantu tonal variation. It accounts for tonal variation in Amakhuwa, a Bantu language spoken in northern Mozambique, Tanzania and Malawi (Cassimjee & Kisseberth 1999). Such dialects are Enlai, spoken in Angoch district of

Nampula, and Ikorovere, spoken in the Tunduru district in southern Tanzania. Consider the data in (39).

(39)	Ikorovere dialect	Enlai dialect	gloss
a.	u-(lím-á) ‘to cultivate;	o-(lim-á)	‘to cultivate
b.	u-(ráp-á) ‘to bathe’	o-(rap-á)	‘to bathe’
c.	u-(thúm-á) ‘to buy’	o-(thum-á)	‘to buy’

(40) **Constraints** (Cassimjee & Kisseberth 1999, p. 3):

- EXPRESS: every mora in a HD should be pronounced with a H tone.
- NO MONOMORAIC HD: a HD should not consist of a single mora.
- NONFINALITY (IP): the right edge of a HD should not be located at the right edge of an intonational phrase.
- *(H, NONHEAD): moras that are not domain-heads should not be pronounced on a H tone.

(41) **OT Tableau for Ikorovere dialect** (Cassimjee & Kisseberth 1999, p. 8):

Linking of a H tone to M1 and FM

Candidate	EXPRESS	No Monomoraic HD	Nonfinality	*(H, nonhead)
a. ⇨o-(límá)			*	*
b. o-(lí)ma		*!	*	
c. o-(lí)ma	*!		*	

From the tableau in (41), candidate (a) is optimal as it satisfies the highly ranked constraint (EXPRESS) which requires every mora in a HD to be pronounced with a H tone. Candidate (b) is not optimal because it seriously violates the highly ranked No Monomoraic HD. Finally, candidate (c) is not optimal since it has a fatal violation of the highest-ranked constraint (EXPRESS). Comparatively, let us consider Tableau (42) below for Enlai dialect.

(42) **OT Tableau for Enlai dialect** (Cassimjee & Kisseberth 1999, p. 20):

Linking of a H tone to FM

Candidates	*(H, nonhead)	No Monomoraic HD	Nonfinality	EXPRESS
a. o-(lí)ma		*!		
b. o-(lí)má)	*!		*	
c. ⇒o-(lí)má)			*	*

From the tableau in (42), candidate (c) is optimal as it respects the highly ranked constraint *H, non-head that requires morae that are not heads not be pronounced with a H tone. Candidate (a) is non-optimal since it fatally violates the high-ranked constraint *No Monomoraic HD that demands a HD not to consist of a single mora. Candidate (b) is also non-optimal. It violates the highest ranked constraint *H, nonhead.

Unlike in Ikorovere, in Enlai, the H-sponsor (the underlined vowel) is not pronounced on a H tone – not faithful to the H-sponsors. No pronunciation of the H-sponsor (the underlined vowel) in the Enlai dialect of the Amakhuwa culminates into dialectical variation.

As attested, OT can account for a single dialectal and cross-dialectal analysis. The preceding discussion has demonstrated how OT has accounted for the tonal analysis of IsiXhosa and the two dialects of Emakhuwa. It is based on this capacity of accounting for both single and cross-dialectal analysis that this thesis adopted the Optimality Theory.

Much as our discussion on OT has concentrated on the verbal system, the same general principles can be motivated to account for nominals as well. This study shows in Chapters 4 and 5 how the theoretical machinery of OT can account for both nominal tones and the complex verbal tone patterns in the Namwera dialect of Ciyao. A section that follows highlights the general principles as well as the adopted and proposed constraints that will interact to evaluate candidates in Chapters 4 and 5 for the best optimal outputs in both nominal and verbal tonal systems in NC.

3.3.2 *Accounting for tones in Namwera Ciyao within the Optimality Theory (OT)*

This section provides the general principles and constraints in the theoretical framework of Optimality Theory (OT) to formalise the generalisations made in Namwera Ciyao in both nominal and verbal tonal analysis as we will see in Chapters 4 and 5. In OT, it is assumed that Universal Grammar (UG) has a set of universally ranked constraints on the well-formedness of structures in languages and that individual languages form their grammars based on these constraints. As earlier stated, the ranking of the constraints is language-specific and any variation within or across languages is due to differences in the ranking of the same constraints. To appreciate how OT can account for the tonal patterns and variations in NC through constraints ranking and re-ranking respectively, we provide some basic OT principles as outlined by Kager (1999, pp. 10-13).

- a. Universality: Constraints are universal.
- b. Violability: Constraints are violable, but the violation is minimal.
- c. Optimality: An output is ‘optimal’ when it incurs the least serious violations of a set of constraints, taking into account their hierarchical ranking.
- d. Domination: The high-ranked of a pair of conflicting constraints takes precedence over the lower-ranked one. This is a way to resolve conflicts among the constraints.

Next, we look at how Namwera Ciyao tonal patterns can be accounted for within OT. As earlier discussed in section 3.2.8, Namwera Ciyao H tones are assigned by tenses to both the initial and final mora of the verb stem. This fact entails that H tones can be accounted for by alignment. Alignment requires some linguistic features to coincide, for example, in terms of the location of H tones either at the initial word or the final word (Myers 2004). The constraints demand constituents to share edges whether the right or the left edge (McCarthy & Prince 1993, Kager 2001, McCarthy 2003). Different types of constraints have been proposed in the literature, and we will just cite a few that will be useful.

(43) Alignment constraints (Kager 2001, p.109, Hyde 2012, p. 791, McCarthy 2003, p. 79, Myers 2004, p.250)

- a. ALIGN-R (HD): The right edge of every H tone belonging morphologically to a verb stem is aligned with the right edge of a prosodic word. A violation is incurred where H is detached from the final mora of the prosodic word.
- b. ALIGN-L (HD): The left edge of each H tone is aligned with the left edge of a prosodic word. Align-L is satisfied if H is linked to the leftmost tone bearer of the prosodic word.
- c. *ALIGN-R (HD): The H must not be aligned with the right edge of the head foot. Any H tone alignment with the right edge of the verb stem constitutes a violation.
- d. *ALIGN-L (HD): The H must not be aligned with the left edge of the head foot. A violation is incurred when the H tone is aligned with the left edge of the verb stem.

Note: ALIGN-R (HD) and ALIGN-L (HD) are in opposition with *ALIGN-R (HD) and *ALIGN-L (HD) respectively, because the latter prohibits the alignment of H with the left and right edges of the verb stem, respectively.

Cassimjee and Kisseberth (1998) point out some of the recurring phenomena found in autosegmental analyses of Bantu tonology. Some of them, which we will utilize in our analysis of Namwera Ciyao tonology, are the following:

(44) Namwera Ciyao (NC) tonal characteristics

- a. A high tone on a mora spreads to the next mora on the right;
- b. A high tone on a mora shifts to the next mora on the left;
- c. The spreading or shifting of the H tone affects the immediate adjacent mora.
- d. The Obligatory Contour Principle (OCP) ((see 4c below) has some effects:
 - i. Deletion of an H tone when adjacent to another high tone
 - ii. Failure of an H tone to spread if that spreading would lead to having adjacent H tones
- e. There is also a range of effects associated with the final position:
 - i. Failure of a H tone to spread to the final mora
 - ii. Failure of a H tone to be linked to the final mora

- f. There are some ‘decontouring’ effects such as rising tone simplification where the left branch of a H tone is delinked when associated with the second mora of a syllable.

To account for these phenomena, this thesis will use the alignment, and other constraints shown in (45) which have been adopted from Hyman and Ngunga (1994), Odden (1998), Cassimje and Kisseberth (1999), Kisseberth and Odden (2003).

(45) Other constraints (Odden 1998, p.271, Cassimje & Kisseberth 1999, p. 3, Kisseberth & Odden 2003, p. 88).

- a. EXTEND/SPREAD: The domain of H must extend or spread to the right of its position.
- b. DELINK-H: The domain of H must push to the right and the TBU that sponsors the H tone must completely lose it,
- c. NONFINALITY: a prosodic head of the word must not fall on the word-final syllable. NONFINALITY is similar to *ALIGN-R (HD).
- d. Obligatory Contour Principle (OCP): Adjacent identical H tones are prohibited.
- e. NORISE: A rising contour must not be followed by a H tone.
- f. NOFALL: A falling contour must not be allowed within the stem domain.
- g. Stem H: All verb stems must have an H tone.
- h. Parse-H: An H tone must be linked to a mora.
- i. Parse-L: An L tone must be associated with the penultimate syllable.
- j. LEVEL-L: a long penultimate syllable must be low-toned and to be followed by a low tone.
- k. LEVEL-H: a H-toned long penultimate syllable must not be followed by a low tone.
- l. Initial Left Spreading (ILS): The H tone on an initial mora of a verb stem must spread to the left to level a rising tone.
- m. PREFIX-H SPREAD: An H tone on the prefix must double to the following mora.
- n. *LS(R): An H tone must not spread to the next mora of its long syllable.

- o. PULLBACK: An H tone must not be linked to the final mora when preceded by a long vowel.
- p. *ONSET: Onsetless syllables are not allowed.

We also propose the following constraints: 1) Bimoraic Final Vowel H (BFV-H) also referred to as Final Vowel Lengthening H (FVL-H) requires H to be linked to the second mora of the long final vowel; 2) Possessive H (POSS-H) which demands an H tone to be associated to the possessive marker; 3) DEM-finH obligates a demonstrative marker to surface with a H tone on the final mora.

This section has provided an overview of the Optimality Theory. It has demonstrated why this thesis adopted OT. While derivational theories can indeed account for the data, there has been independent evidence over the past 20 or so years that OT accounts outweigh theories based on derivations due to its explanatory power, and that it is on that independent evidence that we opted for OT. The section also highlighted the constraints that this thesis has adopted from literature and those the researcher has proposed to account for various phenomena in NC such as FVL-H, POSS-H and DEM-finH.

We should mention that we will still provide a few elements of derivation theories, especially in the nominal tonal system to show how the tone phenomenon could as well be accounted for in derivational theories. However, OT rules supreme in the analysis because of its explanatory power demonstrated in section 3.3.

CHAPTER 4

THE NOMINAL TONE SYSTEM

4.1. Introduction

This chapter describes and explains tone patterns in the nominal system of the Namwera Ciyao dialect. It also provides a theoretical account of the tonal system using the Optimality Theory. The study has adopted Hyman's (2010, 2014) three stages of studying a tone system. As pointed out in section 2.3, in stage I, the goal is to determine surface tone contrasts by considering words in isolation; in stage II, the aim is to figure out any tone alternations by considering the words when they occur in short phrases; stage III involves an analysis of the tonal system holistically. The chapter is organized as follows: section 4.2 analyses tone melodies in Namwera Ciyao. The analysis of the noun class system of Namwera Ciyao is in section 4.3. Section 4.4 provides an analysis of NC possessives and demonstratives. The Noun phrases of NC are analysed in section 4.5, and section 4.6 concludes the chapter.

4.2. Nominal tone melodies in Namwera Ciyao

There are various tone melodies in Namwera Ciyao. Like in other Bantu languages, the lexical tones in NC are unpredictable since any mora can be associated with a high tone. We provide supporting examples in Table 4 below where various tone melodies in NC observed from the fieldwork are given to demonstrate the unpredictability of lexical tones in Ciyao noun roots.

Table 4: Tone melody in NC nouns

HLL	LHL	LH	HH	HHH	LL
a-kwéegwe 'mother-in-law'	mweénye 'chief'	ci-juní 'bird'	n-jété 'salt'	m-éésí 'water'	ma-ndanda 'eggs'
a-ngáanga 'grandpa'	maáma 'mother'	n-g'oombé 'cow'	ma-lówé 'words'	li-wáágó 'axe'	pa-kamwa 'mouth'

li-wíwi 'ear'	baába 'father'	lu-gomó 'lip'	m-kónó 'arm'	i-láángó 'domesticated animals'	li-koswe 'rat'
i-máanga 'maize'	my-aási 'blood'	li-taká 'soil'	m-búsí 'goat'	m-jáángú 'friend'	m-pika 'pot'
li-wáasa 'marriage'	c-oóme 'cat'	li-iguló 'afternoon'	n-gúkú 'chicken'	l-íísó 'eye'	n-gondoolo 'sheep'
li-júusi 'two days ago'	m-uúsi 'noon'	li-iwú 'ash'	lu-súló 'river'	l-íínó 'tooth'	
sóomba 'fish'	a-mweéne 'brother'	ma-nyasí 'grass'	li-jóká 'snake'	kwiináání 'up above/the sky'	
ma-gáanga 'stones'	lu-teénje 'fence'	n-guwó 'cloth'			
kalúunga 'hare'	li-taánga 'door'	li-luungó 'knee'			
m-tíko 'steering rod'	lu-wuúndu 'dust'	lu-tuumbó 'abdomen'			
	ma-juúmba 'house'	lu-pulá 'nose'			
	wu-taándi 'flour'	lu-sajó 'foot'			
	li-gwáfa 'guava'	ci-ló 'night'			
	malaáwi 'tomorrow'	waa-ndú 'people'			

As seen in Table 4 above, a high tone in Ciyao nouns, like in other Bantu languages, can be realized on the first, second, and final mora or even on all morae of the nominal roots. Some nouns do not even bear any H tone. It is, therefore, difficult to predict the occurrence of H on a particular mora in nominals since this tone is not assigned by productive rules as is the case in verbs (Mtenje 1993, Odden 1994, Kisseberth & Odden 2003). Ignoring the prefix, which is always low-toned, the tone melodies in Table 5 show the following characteristics:

- There is a group of nouns that has a HL melody where H appears on the first mora and the rest of the morae are low.
- There is a LHL tone melody where the first mora is L followed by H and the rest of the morae are low.
- There is a LH melody with L on the first morae followed by H tone.

- d. There are roots where all morae are low-toned.
- e. The HH and HHH groups of nouns are the same in terms of melody in the sense that all morae are high-toned. They are listed separately because HHH forms have long penultimate syllables.
- f. A rise or fall on the penultimate syllable must always be followed by a low tone on the final mora.
- g. The generalisation arising from point (f) is that no contour tone on the penultimate syllable can be followed by H on the final mora. Therefore, the following forms are not well-formed:
 - i. *magáangá ‘stones’
 - ii. *myáasí ‘blood’
 - iii. *litaángá ‘door’
 - iv. *luteénjé ‘fence’

We now move on to discuss the noun class system in Namwera Ciyao where the preceding tone melodies are attested.

4.3. Noun class system in Namwera Ciyao

In section 3.2.3, we reviewed that there are 18 noun classes in Ciyao, each determining the main prefix on the noun and concord prefixes on elements that agree with head nouns (Sanderson 1922, 1954, Whiteley 1966, Ngunga 1997). Table 5 below shows Namwera Ciyao noun classes together with their tonology and the general morphological structure of nouns in Bantu is shown in section 3.2.3 but repeated in (1) below for convenience.

(1) Morphological structure of Bantu nouns

(Pre-prefix+) Class Prefix + Stem (Ngunga 1997, Bickmore 2007)

Table 5: Namwera Ciyao nouns and their classes

Singular	Plural	Classes	Glossing
mw-aanáce	ŵ-aanáce	Cl. 01/02	child (children)
m-nyaamatá	a-nyaamatá	Cl. 01/02	boy(s)
mw-eénye	mw-eénye	Cl. 01/02	chief(s)
mw-aáli	w-aáli	Cl. 01/02	girl(s)
m-pika	mi-pika	Cl. 03/04	pot(s)

m-twé	mi-twé	Cl. 03/04	head(s)
m-kónó	mi-kónó	Cl. 03/04	arm(s)
li-ŵáágó	ma-ŵáágó	Cl. 05/06	axe(s)
li-jóká	ma-jóká	Cl. 05/06	snake(s)
li-jelá	ma-jelá	Cl. 05/06	hoe(s)
li-juní	ma-juní	CL 05/06	baboon(s)
li-gáanga	ma-gáanga	Cl. 05/06	stone(s)
li-wúpá	ma-wúpá	Cl. 05/06	bone(s)
l-íínó	m-éénó	Cl. 05/06	tooth(teeth)
m-alajá	m-alajá	Cl. 06	shirt(s)
ci-juní	ma-juní	Cl. 06/07	bird(s)
ci-láángó	i-láángó	Cl. 07/08	domesticated animal(s)
c-oóme	y-oóme	Cl. 07/08	cat(s)
ci-máanga	i-máanga	Cl. 07/08	maize cob(s)
ci-kaláta	i-kaláta	Cl. 07/08	letter(s)
ci-ndú	yi-ndú	Cl. 07/08	thing(s)
ci-ló	yi-ló	Cl. 07/08	night(s)
n-gúku	n-gúku	Cl. 09/10	chicken(s)
m-bwá	m-bwá	Cl. 09/10	dog(s)
m-búsí	m-búsí	Cl. 09/10	goat(s)
n-g'oombé	n-g'oombé	Cl. 09/10	cow(s)
n-guúnda	n-guúnda	Cl. 09/10	dove(s)
lu-gomó	n-gomó	Cl. 10/11	lip(s)
lu-kóóngolo	n-góngolo	Cl. 10/11	leg(s)
lu-pulá	m-bulá	Cl. 10/11	nose(s)
lu-kóonji	n-góonji	Cl. 10/11	rope(s)
ka-mwanáce	tu-ŵanáce	CL 12/13	small child/children
u-taándi	u-taándi	CL 14	maize flour
kw-íimbá	ku-ímbá	CL 15	to sing
kw-ééndá	ku-éndá	CL 15	to walk
pa-kamwa	pa-kamwa	16	mouth(s)
kwi-náání	kwi-náání	17	heaven(s)
mu-mgundá	mu-mgundá	18	in the garden

In **Table 5** above, all prefixes for nouns in NC are toneless just like in other Ciyao dialects.

The observation in NC that noun class prefixes are toneless aligns with Kisseberth and Odden (2003) who observe that noun class prefixes are toneless in many languages. However, this differs from other Bantu languages such as Ciwandya and Cisubiya where

some noun class prefixes are H-toned. Ciwandya is a Bantu language spoken in the Chitipa district of northern Malawi and Tanzania while Cisubiya is a Bantu language spoken in the northwestern part of Botswana and the surrounding areas (Mathangwane 2018). See the data in (2a) below:

(2) Ciwandya (Mathangwane & Mtenje 2018, p. 3-4)
(Mathangwane 2018, p. 140, 155)

Cisubiya

a. H on the first vowel of prefix			H on noun class prefixes	
i.	í-siku	‘a day’	íí-vwé	‘stone’
ii.	ú-lwaánda	‘a stomach’	ló-oza	‘feather’
iii.	í-bwe	‘a stone’	sí-lóólo	‘mirror’
iv.	íi-nkhwí	‘firewood’	zí-muní	‘lamps’
v.	ú-paláala	‘a grasshopper’	mú-zí	‘village’
b. H on root vowel only				
vi.	ulu-sóko	‘a river’		
vii.	ivi-lóombe	‘corn’		
viii.	aka-walílo	‘time’		
ix.	aka-páángwi	‘a story’		
x.	umu-wúunda	‘a field’		

As we can see in the above data in (2a), unlike in Namwera Ciyao, all the noun class prefixes in Ciwandya and Cisubiya are H-toned. The prefixes in (2b) are low-toned just like in Namwera Ciyao. The similarity is also noted in the Ciwandya nominal forms in (2aii, v) and in the Cisubiya form in (2aii) where a rise or fall on the penultimate syllable is always followed by a low tone on the final mora. This is also observed in (2b) in Ciwandya where the forms (vii, x) have a falling contour followed by a low-toned final mora. However, the form in (2b ix) for Ciwandya and (2aiii) for Cisubiya contrasts with those in NC. In NC, level H is followed a final H-toned mora but in Ciwandya and Cisubiya, a level H constraint is violated in the above data.

4.4. Possessives and demonstratives in Namwera Ciyao

4.4.1. Possessives

These are markers that show ownership. This ownership could be for one person or many. The following are H-toned possessive markers in Namwera Ciyao which are similar to H-toned possessives observed by Ngunga (2001).

(3) H toned possessive markers in Namwera Ciyao

- a. –aángu (my/mine)
- b. –eétu (our/ours)
- c. –eénu (your/yours)
- d. –aáwo (their/theirs)
- e. –aákwe (his/her/hers/its/)

As seen in (3), the possessive markers have a H tone on the second mora of the long syllable. Various prefixes are attached to the possessive markers but they depend on the agreement markers per noun class, as will be seen later in section 4.5. Comparatively, other Bantu languages have H either on the first or last mora of the noun stem. For example, in Símákonde, possessives have H on the first mora /yáangu/ or /sáangu/ ‘mine/my’ and lyáako/ ‘yours/your’ (Manus 2018) while Chisubiya possessives have H on the final mora /lwaangú/ or /chaangú/ ‘mine/my’ (Mathangwane 2018).

4.4.2. Demonstratives in Namwera Ciyao

These are markers that point at nominals. In NC, like in other Bantu languages, demonstratives are of two categories. The first category denotes the idea of proximity, and the second indicates nominals at some distance. The data in Table (6) show H-toned demonstratives in their classes observed in NC from the researcher’s fieldwork.

Table 6: Demonstratives in NC

Forms at short distance (Here)				Forms at some distance (Far)			
Class		Dem.	Glossing	Class		Dem.	Glossing
1	Sg.	ájú	‘this’ as in /m-nyamatá ajú/ ‘this boy	1	Sg.	ájo	‘that’ as in /m-nyamatá ájo/ ‘that boy
2	Pl.	awá	‘these’ as in	2	Pl.	áwo	‘those’ as in

			/a-nyamatá awá/ ‘these boys’				/a-nyamatá áwo/ ‘those boys’
3	Sg.	aú	‘this’ as in /m-twé aú/ ‘this head’	3	Sg.	áwo	‘that’ as in /m-twé áwo/ ‘that head’
4	Pl.	ají	‘these’ as in /mi-twé ajì/ ‘these heads’	4	Pl.	ájo	‘those’ as in /mi-twé ájo/ ‘those heads’
5	Sg.	ají	‘this’ as in /n-yuúmba ajì/ ‘this house’	5	Sg.	ájo	‘that’ as in /n-yuúmba ájo/ ‘that house’
6	Pl.	así	‘these’ as in /n-yuúmba así/ ‘these houses’	6	Pl.	ásyo	‘those’ as in /n-yuúmba ásyo/ ‘those houses’
7	Sg.	ací	‘this’ as in /c-oóme ací/ ‘this cat’	7	Sg.	áco	‘that’ as in /c-oóme áco/ ‘that cat’
8	Pl.	ayí	‘these’ as in /y-oóme ayí/ ‘these cats’	8	Pl.	áyo	‘those’ as in /y-oóme áyo/ ‘those cats’
9	Sg.	alí	‘this’ as in /li-janí alí/ ‘this baboon’	9	Sg.	ályo	‘that’ as in /li-janí ályo/ ‘that baboon’
10	Pl.	agá	‘these’ as in /ma-janí agá/ ‘these baboons’	10	Pl.	ágo	‘those’ as in /ma-janí ágo/ ‘those baboons’
11	Sg.	alú	‘this’ as in /lu-kóngolo alú/ ‘this leg’	11	Sg.	álo	‘that’ as in /lu-kóngolo álo/ ‘that leg’
12	Pl.	así	‘these’ as in /n-góngolo así/ ‘these legs’	12	Pl.	ásyo	‘those’ as in /n-góngolo ásyo/ ‘those legs’
13	Sg.	aká (dimin.)	‘this’ as in /ka-mwanáce aká/ ‘this small boy’	13	Sg.	áko (dimin.)	‘that’ as in /ka-mwanáce áko/ ‘that small boy’
14	Pl.	atú (dimin.)	‘these’ as in /tu-ŵanáce atú/ ‘these small boys’	14	Pl.	áto (dimin.)	‘those’ as in /tu-ŵanáce áto/ ‘those small boys’

We can observe from Table 6 above that short distance (near) demonstratives are H toned on the second (final) mora while those at some distance (far) are H toned on the first mora.

Comparatively, what happens in NC is the opposite in Símákonde in the sense that short distance (near) demonstratives are H toned on the first morae whilst those showing far distance are H toned on the final morae as can be seen in (4).

(4) Símákonde data (Manus 2018, p. 148-149, Liphola 2001, p. 394)

Short distance		far distance	
a.	lindandoosha ‘ghost’	ipooso	‘gift’
	lindashóshá ááli ‘this ghost’	ípósó aiilá	‘that ghost’
		siloôngo	‘pot’
		sílóngó asiilá	‘that pot’
		vílóngó aviilá	‘those pots’

The data in (4) show that near demonstratives are H toned initially and H-toned on the final morae with far distance demonstratives which is the opposite case in Namwera Ciyao.

4.5. Noun phrases in Namwera Ciyao

The data in this section is organised along groups of speakers who will be put together and referred to as a variety, for convenience. The first group of speakers will be called variety A, and the second variety B. These two different varieties represent two or more speakers.

Generally, noun phrases in Ciyao may comprise a noun + possessive, noun + possessive + adjective, noun + demonstrative, and noun + adjective. According to Hyman (2003), several Bantu languages regard noun + possessive (or modifiers) as a single domain. For example, in Símákonde, a noun followed by a possessive is treated as a single phonological phrase with its head noun (Manus, 2018). Let us now see how nominal H tones are distributed in noun phrases.

4.5.1. Noun phrases with a noun + possessive

These are noun phrases (NPs) that comprise a noun + possessive. The NPs are presented in (5) in citation form and in phrase medial position both at underlying and surface levels to appreciate tone alternations.

(5) Noun + possessive: NC data

In citation form surface forms underlying forms surface forms

	(variety A)		(variety B)	gloss
a. mtwé head'	mtwé wáangu	</m-twé wáangu/>	mtw <u>é</u> wáangu	'my
b. mbwá dog'	mbwá jéenu	</m-bwá jéenu/>	mbw <u>a</u> jéenu	'your
c. cindú thing'	cindú céetu	</ci-ndú céetu/>	cind <u>u</u> céetu	'our
d. malajá shirt/s'	malajá géetu	</ma-lajá géetu/>	malaj <u>a</u> géetu	'our
e. ŋgomó lips'	ŋgomó syéetu	</ŋ-gomó syéetu/>	ŋgom <u>o</u> syéetu	'our

In both NC varieties in data (5), the possessive markers have H on the first mora in the surface forms. As regards the underlying H on the possessive markers, two questions need to be asked. First, where does the H appearing on the first mora in both varieties come from since as seen in section (4.4.1), possessive markers are H toned on the second mora? It is also surprising to note that unlike in variety A, the original noun appears with a low tone in variety B i.e. the output noun loses H. The second question is what happened to the lexical H on the second mora on the possessive marker, and why? To address the first question, this is a typical example of variation. Earlier in section 3.2.7.1, we expounded that various Bantu languages have the phenomenon of tone mobility called High Tone Doubling (HTD) and High Tone Shifting (HTS) which apply both in nouns and verbs where the domain of H expands to the right for HTD and the left for HTS (Odden 2015). Using these two phenomena, we can now account for the data in (5) above to address the first question about the realisation of H tone on the first mora of the possessive marker.

As can be observed in (5), one group of speakers (variety A) applies HTD where H on the final mora of the noun spreads to the first mora of the possessive marker, whilst another group of speakers (variety B), applies HTS where the lexical H of the noun is not realized on that noun but shifts to the possessive marker's first mora, hence, creating varieties within the dialect.

Before addressing the second question about the lexical H on the second mora of the possessive form, we should note that following the application of HTD and HTS in the forms in (5), a level H tone is created on the long penultimate syllable of the possessive marker thus yielding wrong forms like:

(6) Namwera Ciyao data

In citation form	surface forms underlying forms		surface forms	
	variety A		variety B	
	High tone doubling	High tone shifting	gloss	
a. mtwé head'	*mtwé wááŋgu </m-twé wááŋgu/>	*mtw _e wááŋgu	'my	
b. malajá shirt/s'	*malajá géétu </ma-lajá geétu/>	*malaj _a géétu	'our	
c. mbwá dog'	*mbwá jéenu </m-bwá jeénu/>	*mbw _a jéenu	'your	

We earlier stated in (3) that the possessive marker is lexically H-toned on the second mora. When an H tone of the final mora of the noun spreads to the first mora of the possessive marker in variety A, it creates a level H on the penultimate syllable followed by a low tone. Similarly, when HTS applies in variety B, it creates a level H on the penultimate syllable followed by a low tone. This level H on the penultimate syllable followed by a low tone is prohibited in Ciyao (Odden 1998). The application of HTD and HTS in varieties A and B respectively creates these wrong forms.

We can confidently say that we needed the rule of tone doubling to account for the tonal phenomena in possessive noun phrases in (5). We should emphasize that this rule is very central to the tonology of Ciyao to the extent that it applies extensively in many grammatical contexts including those involving verbs. In chapter 5 of this thesis, it will be noted that a lot of the facts in verbal tonology revolve around the application of this rule.

Now, responding to the second question: what happened to the lexical H of the possessive marker? As already stated, Odden (1990, 1998) notes that in Ciyao level H tones which are a result of H spreading are not allowed in penultimate environments when the final vowel

is low, hence, a need for H dissimilation. The most common form of tone dissimilation is the deletion of H immediately after another H tone (Meeussen's Rule) (Odden 2015). In the data under reference in (5) above, the high tone on the final mora of the noun undergoes tone spreading thus putting H on the initial mora of the possessive marker. This creates an undesirable situation where there are two adjacent high tones on the long initial syllable of the possessive marker followed by a low tone on the final mora. To avoid this, the lexical H on the possessive marker is deleted to satisfy Meeussen's Rule which deletes the second H in a sequence of high tones (Downing & Mtenje 2017). The deletion of the H creates a contour tone followed by a low-toned final mora, a sequence permissible in Ciyao. Let us see the derivation in (7 & 8) for some of the forms in the data in (5).

(7) Derivation: variety A

H	H
/mtwe waangu/	
H	H
↑\	
/mtwé waángu/	
H	H H
/mtwé wáángu/	
	+
[mtwé wáangu]	
'my head'	

H	H	Underlying form
/malaja geetu/		
H	H	Tone doubling
↑\		
/malajá géetu/		
H	HH	Tone deletion
/malajá géétu/		
	+	
[malajá géetu]		Surface form
'our shirt'		

(8) Derivation: variety B

H	H
/mtwe waangu/	
H	H
↑\	
/mtwé waángu/	
H	H

H	H	Underlying form
/malaja geetu/		
H	H	Tone shifting
↑\		
/malajá géetu/		
HH		Tone deletion

/mtwɛ wáángu/

 [mtwɛ wáángu]

‘my head’

/malaja géétu/

 [malaja géétu] **Surface form**

‘our shirt’

To account for the H tones within the framework of OT, we argue that, just like in other languages, different rankings of constraints result in dialectal variations in NC. The realisation of the nominal tone pattern in dialect A means that the constraint STEM-H outranks DELINK-H whilst, in dialect B, DELINK-H wins over STEM-H. We evaluate the candidates in the two dialects in the tableaux below using the following ranking: STEM-H » LEVEL-H » SPREAD » DELINK-H (dialect A) and DELINK-H » STEM-H » SPREAD » LEVEL-H (dialect B).

(9) Evaluation of candidates in (4):

Dialect A: linking H to the final mora

/m-twé wáángu/	STEM-H	LEVEL-H	SPREAD	DELINK-H
⇒a) mtwé wáángu				*
b) mtwɛ wáángu	*!			
c) mtwé wáángu		*!		*
d) mtwɛ wáángú	*!			

Dialect B: delinking of H on a final mora

/m-twé wáángu/	DELINK-H	STEM-H	SPREAD	LEVEL-H
a) mtwé wáángu	*!			
⇒b) mtwɛ wáángu				
c) mtwé wáángu	*!			*
d) mtwɛ wáángú		*!		

In the above tableaux (9) dialect A, candidates (b) and (d) are not optimal because they violate a highly ranked STEM-H that demands a stem to be H-toned. Candidate (c) seriously violates LEVEL-H hence not optimal. Candidate (a) is the best optimal output since it respects all constraints.

In dialect B in (9), there is a reranking of the constraints and that candidate (b) is more optimal than (a) because it respects the highly ranked DELINK-H which requires a high tone to be delinked from the sponsor after it has shifted to the next mora. Candidates (c) and (d) are not favoured as they violate highly ranked DELINK-H and STEM-H respectively.

Earlier, we stated that noun phrases in Ciyao may be composed of a noun + possessive + adjective. Let us consider such a combination.

4.5.2. *Noun phrases with a noun + possessive + adjective*

These are extended NC forms whose tonal pattern is shown in (10).

(10) Extended Ciyao forms: NC data

Variety A

Underlying forms	surface forms	gloss
a. /ci-púla caángu cákútémá/	> cip <u>u</u> lá caaŋgu cákútémá	‘my sharp knife’
b. /yi-púla yeénu yéleéwu/	> yip <u>u</u> lá yeenu yéleéwu	‘your long knives’
c. /ŋ-gúku jaáwo jécejéwu/	> ŋguk <u>u</u> jaawo jécejéwu	‘his/her red chicken’
d. /i-máanga yaángu yéwísí/	> imáánga yaaŋgu yéwísí	‘my fresh maize cobs’
e. /kalúunga jwaáwo jwépilíwu/	> kalúúnga jwaawo jwépilíwu	‘their black rabbit’

Variety B

Underlying forms	surface forms	gloss
f. /ci-púla caángu cákútémá/	> cip <u>u</u> lá caaŋgú cákútémá	‘my sharp knife’
g. /yi-púla yeénu yéleéwu/	> yip <u>u</u> lá yeenú yéleéwu	‘your long knives’
h. /n-gúku jaáwo jécejéwu/	> ŋguk <u>u</u> jaawó jécejéwu	‘his/her red chicken’
i. /i-máanga yaángu yéwísí/	> imáánga yaaŋgú yéwísí	‘my fresh maize cobs’
j. /ka-lúunga jwaáwo jwépilíwu/	> kalúúnga jwaawó jwépilíwu	‘their black rabbit’

In the extended forms in (10), tone doubling and tone shifting apply in both NC varieties. The tone shifting rule applies within a word in the nouns in (10a-c & f-h) where the lexical H of the noun shifts one mora to the right (shown in the surface forms by underlining). Tone doubling, which applies in (10d-e & i-j) also within the word (and the syllable), spreads the underlying H to the next mora of long vowels. Notice that in both varieties,

the shifted H does not double to the next mora. To account for this, we follow the position adopted by Odden (1998) and Kisseberth & Odden (2003) that shifted tones do not spread in Ciyao because shifting is a form of movement and spreading/movement is not iterative in this language.

Let us now consider the tone patterns of the possessive markers in the data above. Note that in variety B, the possessive marker, which has a lexically marked H tone on the second mora, now appears on the surface with a high tone on the final mora. On the other hand, in variety A the possessive marker is completely low-toned. This implies that the underlying high tone on the second mora of the possessive form is deleted in variety A while in variety B, it shifts to the final mora of the possessive marker. This is a matter of choice in the two varieties and leads to a dialectal variation.

Like the data in (5) above, to account for the H tones within the framework of OT, different rankings of constraints result in dialectal variations in NC. The realisation of the nominal tone pattern in dialect A is a result of the constraint LEVEL-L outranking POSS-H whilst in dialect B, POSS-H wins over LEVEL-L. We evaluate the candidates in the two dialects in the tableaux below based on the following constraint ranking: LEVEL-L » SPREAD » DELINK » POSS-H. Re-ranking of the constraints derive the correct forms in dialect B: POSS-H » DELINK » SPREAD » LEVEL-L.

(11) Evaluation of candidates:

Dialect A: linking H to the final mora

/ci-púla caángu cákútémá/	LEVEL-L	SPREAD	DELINK-H	POSS-H
a) cipúlá cáangu cákútémá	*!		*	
⇒ b) cipulá caangu cákútémá				*
c) cipúlá caángu cákútémá	*!		*	
d) cipulá caangú cákútémá	*!			

Dialect B: delinking of H on a final mora

/ci-púla caángu cákútémá/	POSS-H	DELINK-H	SPREAD	LEVEL-L
a) cipúlá cáangu cákútémá		*!		*
b) cipulá caangu cákútémá	*!			

c) cip <u>ú</u> lá caáŋgu cákútémá		*!		*
⇒d) cip <u>u</u> lá caaŋgú cákútémá				*

In the above tableaux (11) dialect A, candidates (a), (c) and (d) are not favoured because they violate a highly ranked LEVEL-L that obligates a long penultimate syllable to be low-toned and to be followed by a low tone as well. Candidate (b) is the optimal output because it respects a highly ranked LEVEL-L although it violates a lowly ranked POSS-H that requires a high tone to be associated with a possessive marker.

In dialect B in (11), there is a reranking of the constraints and that candidate (d) is more optimal than (b) because it respects the highly ranked POSS-H which requires a high tone to be associated to a possessive marker. Candidates (a) and (c) are not optimal since they violate a highly ranked DELINK-H.

The next NC noun phrase to be discussed involves a combination of a noun and a demonstrative marker.

4.5.3. *Noun phrases with a noun + demonstrative in NC*

As observed in Table 4, NC has two kinds of demonstratives. Some indicate items that are near to the speaker and these are H-toned on the final mora, while others refer to distant objects. The latter are H-toned on the first mora. Let us consider what happens when demonstratives appear in phrasal contexts as shown in (12).

(12) NC tone melody in noun phrases with demonstratives:

Surface forms	underlying forms	surface forms	gloss
variety A		variety B	
a. aŵá áŋamataááŵá	< /a-ŋamatá aŵá/ >	aŋamatá aŵa	‘these boys’
b. agá málaǵááǵá	< /ma-laǵá agá/ >	malajá aga	‘these shirts’
c. agá máǵaníǵá	< /ma-ǵaní agá/ >	majaní aga	‘these baboons’
d. alú lúgomóólú	< /lu-gomó alú/ >	lugomó alu	‘this lip’
e. así ŋgomóóosí	< /ŋ-gomó así/ >	ŋgomó asi	‘these lips’
f. aǵí númbáǵí	< /n-ǵuúmba aǵí/ >	ǵumbá aǵi	‘this house’

g. ací cóméecí </c-oóme ací/> comé aci ‘this cat’

As seen in the data above, the H-toned demonstrative appears both in the initial and final positions for variety A, while maintaining their H and interposing between them NPs. In Table 2, we showed that in Ciyao, all noun class prefixes are toneless. However, looking at the data in (12), we observe that all the prefixes in variety A are H-toned. There must be, therefore, a rule applied in this context to add a high tone to the noun class prefixes. Since H appears both on the demonstrative and the noun prefix, tone spreading, and not shifting, must have applied to the prefix. Specifically, the H tone of the demonstrative must have spread to the mora of the noun prefix.

It should also be pointed out that there is a segmental phonological operation between the final mora of an NP and the initial mora of the repeated demonstrative marker in the sense that the latter is deleted and the surviving final mora of an NP is lengthened to compensate for the lost mora, thus creating a long penultimate syllable. Following the mora deletion process, the H on the final mora of the NPs then spreads to the lengthened mora as seen in (12a-e). But the question is why should the H spread to the lengthened mora? A possible explanation relates to what we earlier observed concerning contour tones in Ciyao where it was argued that in this language, like in many other Bantu languages, no contour tone is allowed on the penultimate syllable when the final mora is H toned. With this prohibited tone pattern, there should be two possible alternatives that are permissible in Ciyao. It is either the penult is completely low or high but not falling or rising. Tone spreading, therefore, applies in the data in (12) to level the H tones and avoid a contour tone on the penult since the final morae bear H tones.

If we re-examine the data in (12), we note that the two disyllabic nouns in (12f-g), i.e. /c-oóme/ and /n-puúmba/ have H on the second mora in citation form. However, in variety A, the two nouns in [ací cóméecí] and [ájí númbáájí], repeated here for ease of reference, have H on both the initial and final morae in the output, and vowel shortening has also occurred since the underlying long vowels of the initial syllables have been reduced to a single mora. As already discussed, the H on the initial mora of the nouns is a result of spreading the H of the demonstrative marker. The question which needs to be addressed concerns the H on the final mora of the nouns since it was not available underlyingly. We

argue that this must be a result of the tone-shifting rule. The rule shifted the underlying H of the nouns from the second mora of the initial syllable to the final mora and then the demonstrative H spread to the initial mora of the nouns. Note that in a rule-ordering framework, the two rules would be said to have applied in sequential order with shifting being ordered before spreading so that the H on the initial mora of the noun could give way to the demonstrative H to spread to that initial tone-bearing unit. It should be noted that the shifted H on these two demonstrative forms (*ací cóméecí* and *ají núbáají*) cannot undergo tone doubling to level the H tones on the penultimate syllables although there is a violation of the principle that a contour tone on a penult should not be followed by a high tone on the final mora of the word/phrase. The failure of tone spreading to apply here is due to the position already adopted that shifted high tones do not undergo spreading.

In variety B, the demonstrative forms are low-toned. We follow the earlier argument adopted when we discussed extended possessive noun phrases in section 4.5.2 above that in a case like this, the lexical high tone of the demonstrative is deleted in this variety. It is interesting to note, further, that the nouns in variety B, particularly in the forms [*núbá aji*] and [*comé aci*] provide further evidence for the argument that the rule of H tone shifting applied in the corresponding variety A forms [*ací cóméecí*] and [*ají núbáají*]. The point is that there is H on the final morae of the nouns in the variety B forms [*núbá aji*] and [*comé aci*] instead of the initial mora where the H was underlyingly assigned. These surface forms in variety B do not have the underlying H on the initial morae. Instead, the H only occurs on the final morae, a clear case showing that the H has shifted from the initial morae to the final morae.

It should be further noted that in variety B, where there is only one demonstrative marker, its vowel is not deleted. This is in contrast to variety A where the initial vowels of the demonstratives were deleted. We argue that the NP in variety B is made up of two separate phonological words (the noun and the demonstrative) instead of one, as in variety A. In this case, the demonstrative, being a separate phonological word, is not bound to respect the common constraint found in Bantu languages prohibiting a sequence of vowels in separate syllables in a phonological word/phrase. This is why this variety does not resort to vowel deletion.

Sample derivations of some of the forms in as provided in (13) above are given below.

(13) Derivation 1: variety A

H H H
| | |
/aga majani aga/

H H H
| | |
/agá majaní agá /
+

H H H
| | |
/agá majaní gá/

H H H
| | |
/agá majaníigá/

[agá májaníigá]

H H H **Underlying form**
| | |
/alu lugomo alu/

H H H **Vowel deletion**
| | |
/alú lugomó alú/
+

H H H **Vowel lengthening**
| | |
/alú lugomó lú/

H H H **H tone spreading**
| | |
/alú lugomóólú/

[alú lúgomóólú] **Surface form**

(14) Derivation 2: variety B

H H
| |
/majani aga/

H H
| |
/majaní agá/
n/a

H H
| |
/majaní agá/
n/a

H H
| |
/majaní agá/
[majaní aga]

H H **Underlying form**
| |
/lugomo alu/

H H **Vowel Deletion**
| |
/lugomó alú/
n/a

H H **Vowel Lengthening**
| |
/lugomó alú/
n/a

H H **Tone Deletion**
| |
/lugomó alú/
+
[lugomó alu] **Surface Form**

Accounting for the preceding H tone patterns within the OT requires a reranking of the constraints that would result in dialectal variations in NC. For variety A, the constraint SPREAD dominates DEM-finL whilst for variety B, DEM-finL outranks SPREAD. Let us evaluate the candidates in the tableaux below, and we use the following constraint rankings: SPREAD » LEVEL-H » NOFALL » DEM-finL (variety A) and DEM-finL » NOFALL » LEVEL-H » SPREAD.

(15) Evaluation of candidates:

Dialect A: linking H to the final mora

/lu-gomó alú/	SPREAD	LEVEL-H	NOFALL	DEM-finL
a) lu-gomó alu	*!			
b) alú lugomóólú	*!	*!	*	*
⇒c) alú lúgomóólú				*
d) lu-gomó alú	*!		*	*

Dialect B: delinking of H on a final mora

/lu-gomó alú/	DEM-finL	NOFALL	LEVEL-H	SPREAD
⇒a) lu-gomó alu				*
b) alú lugomóólú	*!	*!		*
c) alú lúgomóólú	*!			
d) lu-gomó alú	*!	*!		*

In the above tableaux (15) dialect A, candidates (a), (b) and (d) are nonoptimal since they seriously violate a highly ranked SPREAD that requires a H tone to double to the next mora (to the right). Candidate (c) is optimal because it respects highly ranked constraints although it violates a lowly ranked SPREAD.

In dialect B in (15), there is a reversal of constraints. Candidate (a) is more optimal than (c) because it respects the highly ranked DEM-finL that disallows a high tone to be linked to the final mora of a demonstrative marker. Candidates (b) and (d) are not optimal because they have a fatal violation of a highly ranked Dem-finL.

The last NC noun phrase to be discussed comprises a noun and an adjective.

4.5.4. Noun phrases with a noun + adjective in NC

These are noun phrases that comprise nouns + adjectives. Their tone patterns are shown in (16).

(16) Noun + adjective: NC data				
In Citation form	surface forms	underlying forms	surface forms	
	variety A		variety B	gloss
a. malajá	ma-lajá géjíípi	</ma-lajá géjíípi/>	ma-lajá géjíípi	‘small shirt’
b. maŵágó	maŵágó gámbóne	</ma-ŵágó gámbóne/>	maŵágó gámbóne	‘good axes’
c. mwaanáce	mwaanáce jwáwúlemu	</mwanáce jwáwúlemu/>	mwaanáce jwáwúlemu	‘respectful child’
d. mipika	mipika jéjínji	</mipika jéjínji/	mipika jéjínji	‘many pots’

In both varieties of NC in (16), the surface tone patterns of the noun + adjective phrases are the same as their underlying forms. That is, none of the tone rules discussed earlier apply. Therefore, all lexical H tones are realised on the surface without any changes.

To account for the H tone patterns within the OT, we require the following constraint ranking: STEM » NORISE » LEVEL-H. Let us evaluate the candidates in the tableaux below.

(17) Evaluation of candidates: linking H to the final mora

/ma-lajá géjíípi/	STEM-H	NORISE	LEVEL-H
a) ma-lajá géjíípí		*!	
b) ma-laja géjíípi	*!		
c) ma-laja géjíípi	*!		*
⇒d) ma-lajá géjíípi			

In the above tableaux (17), candidate (a) is nonoptimal because it fatally violates a highly ranked NORISE which demands a rising tone should be followed by a low tone. Candidates (b) and (c) are not optimal since they seriously violate a highly ranked constraint, STEM-

H. STEM-H requires a stem to be associated with a H tone. Candidate (d) is the best candidate because it respects all the constraints.

4.6. Conclusion

This chapter has discussed several issues regarding nominal tonology in the Namwera dialect of Ciyao. Firstly, it has demonstrated that the realization of H tones in NC nominals is unpredictable since lexically, any mora can bear any tone. Secondly, it has been pointed out that Namwera Ciyao nominal tones can be grouped into the following six major tone patterns: HLL, LHL, LH, HH, HHH and LL. Thirdly, we have argued that high tones in noun phrases which comprise several combinations of nouns, possessives, demonstratives and adjectives undergo various rules including those of high tone deletion, shifting and doubling/spreading. Fourthly, some important tonal variations within the Namwera dialect have been highlighted and the chapter has shown how they can be insightfully accounted for within OT and partly under rule based theories.

CHAPTER 5

THE VERBAL TONOLOGY

5.1. Introduction

This chapter describes and explains tone patterns in the verbal system of the Namwera Ciyao dialect. It also gives an account of the tonal system using the Optimality Theory. Although much of the focus will be on constructions with various tenses, we will also provide data that will have other inflectional prefixes attached to the verb roots such as subject markers (SMs), object markers (OMs) and negative markers (NEGs). It will be demonstrated that these, too, affect surface tonal patterns in NC. The chapter is organised as follows: section 5.2 provides melodic tones in Namwera Ciyao verbal morphology, section 5.3 focuses on stem H tone patterns in Ciyao and and section 5.4 deals with OM tonal effects in Namwera Ciyao tenses.

5.2 Melodic tones in Namwera Ciyao verbal morphology

It has been shown in Chapter 3 that morphology plays a crucial role in the assignment of Melodic high tones in Bantu languages. As such, Bantu languages such as Tanzanian Ciyao (Odden 1998), Olusamia (Polleto 1998), Luyia (Ebarb et al. 2014), Kuria (Marlo et al. 2014), and Xitshwa (Ugembe 2017), among others have a predictable verbal tonal system. As is typical of languages in Guthrie's Zone P, unlike in nouns, there is no lexical contrast between high and low tones in Ciyao verbs because all verb roots are underlyingly toneless (Mtenje 1993, Ngunga 1997, Odden 1994) as represented in the data in (1) below and that their tones can be predicted by general rules of the language. In the next sections, our focus will be on exploring how H tones are assigned to verb stems in NC.

(1) Namwera Ciyao verb roots

- a. –walang-a ‘read’
- b. –wečet-a ‘say’

- c. –pikan-a ‘listen’
- d. –lombel-a ‘marry’
- e. –malisy-a ‘finish’

As we see in (1), all the verb roots are low-toned. These low-toned verbs acquire a high tone in a morphological context after syntactic constructions as we will see in section 5.2.

The analysis in this section adopts the verb structure presented in (5) in Chapter 3 and reproduced in (2) below for convenience. In our discussion later in this chapter, we will make a few minor adjustments to this structure to match Namwera Ciyao’s unique characteristics.

(2) Verb structure in Ciyao (Hyman & Ngunga 1994, p. 34)

NEG. (TM)	SM	(TM)	(NEG)	{(OM) [Root–(X)–FV] Stem}	Macrostem
ŋga-	ni-	ju-	-a-	-nga-	-n-
	ci-	a-	-ci-	-ka-	-tu-

5.2.1 The tone bearing unit in Namwera Ciyao

In our analysis of Namwera Ciyao in this chapter, we adopted Hyman and Ngunga's (1994) proposal for the tone-bearing unit (TBU) in Ciyao to be the mora. Let us briefly review the motivation for treating the mora as the TBU instead of the vowel or the syllable.

The first reason for the TBU to be the mora is that in Ciyao a short vowel can be realized as either high or low whilst a long vowel can be realized as either rising or falling as shown in the present perfective tense in (3) where a Melodic H is assigned to the second mora (M2) of the verb stem.

(3) Malawian Ciyao: H placed on M2 (Mtenje 1993, p. 187)

- a. m[m-butwíic-e ‘I have run’
- b. a[lapít-e ‘he has licked’
- c. m[besíl-e ‘I am tired’
- d. a[ugwíil-e ‘he has opened’
- e. tu[gwíil-e ‘we have fallen’

In the data in (3), the target for H tone placement in the perfective tense is the second mora of the verb stem (M2). In (3a, d, e), the linking of H on M2 results in either a falling or rising tone. If the entire vowel or syllable, and not the mora, was the entity being targeted by the Melodic H, we would expect the entire long vowel to be H toned, and the outputs would have been *[m-mbutwííce], *[a-ugwííle] and *[tu-gwííle]. But, that is not the case. Instead, the target is only one part of the long vowel and not the whole vowel. This clearly shows that the focus for the H tone assignment by the tense is the second mora of the verb stem and not the second vowel or syllable.

The second argument for regarding the mora as the TBU involves the target for the rule of High Tone Doubling as shown in (4).

(4) Namwera Ciyao: H placed on M1

- | | | | |
|----|------------|------------------|-------------------|
| a. | kumálíisya | </ku-mal-isya-a/ | ‘to finish’ |
| b. | kusímóonga | </ku-simoong-a/ | ‘to be surprised’ |
| c. | kuwíláanga | </ku-wílaang-a/ | ‘to call’ |

In the data above, there is a Melodic H which is placed on M1 by the infinitive tense. The rule of High Tone Doubling applies to spread the H to the next mora. We notice that HTD targets only the first part of the long vowel (M1). If the H tone doubled to the entire vowel or syllable, both parts of the long vowel in the syllable would have appeared with H tones thus yielding the incorrect forms *[ku-málíísya], *[ku-símóónga] and *[ku-wíláánga]. However, this is not the case. The HTD rule targets only the first part of the long vowel. Thus, tone doubling also provides empirical evidence for the TBU to be a mora in NC. Other languages in which the mora has been argued to be the TBU include Ekegusii (Bickmore 1997), Lumarachi and Lunyala (Marlo 2007), Cilungu (Bickmore 2007, 2014, Rolle & Bickmore 2022) and Bemba (Bickmore & Kula 2013, Kula. & Bickmore 2015).

As pointed out earlier, there is a general observation that H tone assignment in P Zone languages such as Ciyao is based on a mora counting system. Tenses can assign a Melodic H to the first mora (M1), second mora (M2), third mora (M3), final mora or a combination of these positions in the verb stem (Odden 1994, Kisseberth & Odden 2003). This counting system also applies to verbal tone assignments in NC. For purposes of space and clarity,

the NC verb tonal analysis in this chapter will be done following the patterns listed in (5). However, it should be pointed out from the onset that there will be some overlaps in certain tenses in terms of H tone assignment.

(5) A summary of stem – H tone patterns by tenses in Namwera Ciyao

- a. H placed on M1 only (e.g. infinitives & present progressive)
- b. H placed on M1 and final mora (FM) (e.g. infinitives, affirmative present & past Progressive)
- c. H placed on FM only (e.g. affirmative imperative, negative simple past & affirmative near future)
- d. H placed on M2 only (e.g. negative infinitive, affirmative present habitual & present perfect)
- e. H placed on M2 and FM (e.g. negative present conditional & negative past conditional)

We now proceed to discuss the various stem tone patterns in NC in the following sections.

5.3 Stem H tone patterns in NC

Much as there is no H tone contrast in verb stems in NC, since all verbs are underlyingly toneless, some verb stems surface with H tones due to the docking of Melodic H tones.

5.3.1 Pattern I: H tone placed on M1 only

In this pattern, when the H tone is linked to the first mora of the verb stem, the H may spread to a following mora depending on the length of the verb. If the verb stem is bisyllabic, the H tone does not spread to respect the constraint which prohibits a high tone from appearing on the final mora if it is preceded by another high tone. If the penult is bimoraic, the H still does not spread to avoid a situation where a level H is followed by a low tone. The H tone only doubles when the initial mora is on the antepenult. To illustrate this tone pattern, the infinitive and the negative future progressive tenses will be used..

5.3.1.1 Infinitive tense

The infinitive tense is marked by the prefix *ku-* which is the class 15 prefix and is attached to the bare form of the verb. Unlike other infinitives, the infinitive verbs that have H on

M1 only are the ones that end with the causative morpheme -sy-. This morphological fact affects the nature of the stem and tonology. In their discussion of Mozambican Ciyao, Hyman and Ngunga (1994) argued that the causative infinitives do not have a second H tone but only one that spreads when the conditions are met. Consider the NC data in (6) which has the verbal structure TM-VR-FM.

(6) Affirmative infinitive verbs: H placed on M1 only

	Surface forms	underling forms	gloss
a.	kugwíisya	</ ku-gwiis-y-a/	‘to throw/to let it fall’
b.	kuwúusya	</ ku-wuus-y-a/	‘to ask’
c.	kupáasya	</ ku-paas-y-a/	‘to taste’
d.	kusúúmisya	</ku-suum-isy-a/	‘to sell’
e.	kumálíisya	</ku-mal-isy-a/	‘to finish’

In the data above, there is a Melodic H which is placed on M1 by the infinitive tense. In the bisyllabic verb stems in (6a-c), the H does not double since doing so would result in a level H on the penult followed by a low tone which, as already pointed out in Chapter 3, is prohibited in Ciyao. Unlike in the bisyllabic verb stems, the longer stems in (6d-e) have H on M1 which spreads to the next mora since it is in the antepenult position.

The other tense with the same tone melody where a high tone is assigned to M1 only is the negative future progressive as illustrated below.

5.3.1.2 Negative future progressive tense

This tense shows events that will not be taking place continuously after today. The general morphological structure in this tense is NEG-(TM) SM-(OM)-VR-FM. Let us look at the data in (7) with the verbal structure: NEG-(TM)-SM-VR-FV-Cont (ga), where ‘cont (-ga)’ marks ‘continuity’.

(7) Negative future progressive without OM: H placed on M1

	Surface forms	underling forms	gloss
		NEG-SM-VR-Cont	
a.	ngasítúwúgálaga	</nkasí-tú-wugal-ag-a/	‘we will not be closing’

- b. η gasítúwúlágaga </nkasí-tú-wulag-ag-a/ ‘we will not be killing’
c. η gasínlómbélagaga </nkasí-ń-lombel-ag-a/ ‘I will not be marrying’
d. η gasáálíngága </nkasí-á-ling-ag-a/ ‘s/he/they will not be trying/measuring’
e. η gasínónága </nkasí-ná-on-ag-a/ ‘I will not be seeing’
f. η gasíndyága </ nkasí-ń-li-ag-a/ ‘I will not be eating’

(Note that the NEG(TM) [η gasí] and SM [tú, ń, and á] are H toned underlyingly)

In all the forms in (7), the floating Melodic H is linked to M1 only and doubles to the next mora except in (7f) because of the constraint against H spreading to the final mora of the verb stem.

The tone pattern where the H tone is placed on M1 only is also attested in the negative remote future as in [η gasítútéléka] </nkasí-tu-telek-a/ ‘we will not cook’ and [η gasááléemba] </nka-sá-leemb-a/ ‘s/he/they will not write’. Similarly, one finds the same pattern in the affirmative present progressive especially in trisyllabic or longer verb stems as in [m̀kúwógópa] </m̀-kú-wogop-a/ ‘you are fearing’ and [η gúwúlága] </ńku-wulag-a/ ‘you are killing’.

To account for these infinitive verbs with H on the stem-initial mora only using OT, a tableau in (8) provides the interaction of constraints where a STEM-H constraint is highly ranked and should not be violated in an optimal output. The following is a constraint ranking: STEM H » ALIGN-L (HD) » PARSEL-L » EXTEND » NOFALL.

(8) Evaluation of candidates: linking H to the first mora

/ku-simoonga/	STEM-H	ALIGN-L (HD)	PARSE-L	EXTEND	NOFALL
a) ku-símóonga			*!		
b) ku-simoonga	*!	*!			
⇒c) ku-símóonga					*
d) ku-símóonga				*!	

In the above tableau, candidate (a) is not optimal as it violates the highly ranked Parse-L which requires a L tone to be associated with the penult syllable. Candidate (b) is also non-optimal since it fatally violates the highly ranked STEM H and ALIGN-L (HD). The two constraints require all stems to surface with a H tone and the H tone to be linked to the left edge respectively. Although candidate (d) respects ALIGN-L (HD) and Parse-L constraints, it violates EXTEND constraint which requires the H tone to spread to its right. Candidate (c) is the most optimal output because it only violates the lowly ranked constraint NOFALL (by having a falling tone on the penultimate syllable) while respecting the highly ranked constraints.

What follows is the second major tone pattern in Namwera Ciyao which involves the assignment of H to the first and final mora of the verb stem.

5.3.2 *Pattern II: H tone placed on M1 and FM*

The second pattern to be considered is where H is assigned to the first and final mora of the verb stem. Most of the tenses in this tone pattern use the prefix ku-. A sample of tenses to be used to illustrate the pattern include the infinitive, the affirmative simple past, the affirmative past condition and the affirmative future condition.

5.3.2.1 *Infinitive tense*

Just like the other infinitives already discussed in Pattern I, section 5.3.1.1, these verb stems use the class 15 prefix /ku-/ and is attached to the bare form of the verb. In this tense, we start with the verb tone pattern involving long vowels on the antepenultimate or preantepenultimate and not on the penultimate syllable. Consider the NC data in (9) which has the verbal structure TM-VR-FM.

(9) **Infinitives with trisyllabic or longer stems: H placed on M1 and FM**

Surface forms	underlying forms	glosss
a. kulóómbelá	</ku-loomb-el-a/	‘to marry’
b. kupííkaná	</ku-piikan-a/	‘to listen’
c. kukúúmbučilá	</ku-kuumbuk-il-a/	‘to remember’
d. kusáágulá	</ku-saagul-a/	‘to select’
e. kutétémelá	</ku-tetemel-a/	‘to shiver’

f. kukológanyá </ku-kologany-a/ ‘to stir’

In general, Ciyao infinitives assign H to M1 and then various tone rules apply (Mtenje 1993, Hyman & Ngunga 1997, Kisseberth & Odden 2003). Odden (1998) refers to the H which is linked to the mora as primary H which Kisseberth and Odden (2003) define as H associated with tenses before phonological rules like HTD or/and TS apply. We adopt the general position that the Ciyao infinitive tense assigns an underlying Melodic H to M1 and in this regard, the infinitive prefix /ku-/ links its H with M1 in (9). Following this, the remaining task is to account for the H which appears on the FM. Earlier, we adopted the view that there are underlying floating Melodic H tones (the primary H tones) that are associated with specific tenses in various Bantu languages and that these Melodic H tones are added to the verb stem due to inflectional properties of the verb. Likewise, we propose that for the NC data in (9) above, there are two underlying floating Hs. The first H is linked to M1 whilst the second docks onto the final TBU.

As it can also be noted, there is an extra H on the M2 of the long syllable in (9a-d). This H results from HTD where the associated Melodic H on M1 spreads to M2 of a long syllable. Ultimately, the doubled H creates a level H on that long syllable in (9a-d) which is permissible in Ciyao. Odden (1998, p. 269) notes that “Level H and Fall are almost in complementary distribution in Yao, with the Fall mostly limited to the penult whilst level H appears elsewhere”. Based on this observation, this ‘elsewhere’ is the antepenult as in (9a – d).

This pattern exposes variations in NC such that in dialect A the H tone is on the final mora whilst in dialect B there is no H on the final edge. Compare the forms in (9), repeated in (10) as variety A with those shown as variety B.

(10)	variety A	underlying forms	variety B	gloss
a.	kulóómbelá	</ku-loomb-ela/>	kulóómbela	‘to marry’
b.	kupííkaná	</ku-piikan-a/>	kupííkana	‘to listen’
c.	kukúúmbucilá	</ku-kuumbuk-ila/>	kukúúmbucila	‘to remember’
d.	kusáágulá	</ku-saagul-a/>	kusáágula	‘to select’
e.	kutétémelá	</ku-tetemel-a/>	kutétémela	‘to shiver’

- f. kukológanyá </ku-kologany-a/> kukológanya ‘to stir’

In the NC variety B forms in (10), the final morae are low-toned unlike in variety A where they appear with a high tone. We propose that in both varieties there are still two underlying floating Hs. The first one is linked to M1 in both varieties. But, unlike in variety A where the second H is associated with the final mora of the verb stem, in variety B, this underlying Melodic H remains afloat and is later pruned. This explains why the forms appear with low tones on their final morae. Hyman and Ngunga (1994) note that in Mozambican Ciyao, the verb stems of three or more syllables receive H only on M1, which seems to correspond with the pattern in NC variety B.

Note that the tonal variations in NC in these forms only occur when the verbs are phrase final. Phrase medially, as shown in (11), the H-tone on the final mora appears in both varieties.

(11)	variety A	underlying forms	variety B	gloss
a.	kulóómbelá mwaáli	</ku-lombel-a mwaáli/>	kulóómbelá mwaáli	‘to marry a girl’
b.	kusáágulá cimáanga	</ku-sagul-a cimáanga/>	kusáágulá cimáanga	‘to select maize’
c.	kukológanyá likóko	</ku-kologany-a likóko/>	kukológanyá likóko	‘to stir porridge’

The observation in (11) where the H on the final mora is sensitive to the phrasal position is similar to the one made by Kisseberth and Odden (2003). They point out that in Kibondei, a language spoken in the eastern Tanga Region in Tanzania, some verbs fail to realize H on their final morae when they are in a phrase final position. For example, the verbs [ku-dya] ‘to eat’ and [n-a-dya] ‘I am eating’ do not have H on the final mora but the H resurfaces when they appear phrase medially as in [kudyánkónde] ‘to eat food’ and [nadyánkónde] ‘I am eating food’.

To account for the H tones within the framework of OT, we would like to argue that just like in other languages, different rankings of constraints result in dialectal variations in NC. The realisation of the verb tone pattern in dialect A means that ALIGN-R (HD) outranks Nonfinality whilst in dialect B, Nonfinality wins over ALIGN-R (HD). The constraints are ranked in the following: ALIGN-L (HD) » ALIGN-R (HD) » EXTEND » NONFINALITY (variety A) and NONFINALITY » EXTEND » ALIGN-L (HD) » ALIGN-R (variety B)

The evaluation of the candidates in the two dialects is shown in the tableaux below.

(12) Evaluation of candidates: linking H to the first and final mora

Dialect A: linkage of H to a final mora

/ku-saagula/	ALIGN-L(HD)	ALIGN-R(HD)	EXTEND	NONFINALITY
⇒ a) ku-sáágulá				*
b) ku-sáágula		*!		
c) ku-saagulá	*!			*
d) ku-sáagula		*!	*	
e) ku-saagúla	*!	*!	*	

Dialect B: non linkage of H to a final mora

/ku-saagula/	NONFINALITY	EXTEND	ALIGN-L(HD)	ALIGN-R(HD)
a) ku-sáágulá	*!			
⇒ b) ku-sáágula				*
c) ku-saagulá	*!		*	
d) ku-sáagula		*!		*
e) ku-saagúla		*!	*	*

In the above tableaux (12) dialect A, candidate (b) is not optimal because it violates a highly ranked ALIGN-R (HD) constraint which obligates the H tone to be aligned with the right edge of the verb stem. Candidate (c) is not optimal because it seriously violates ALIGN-L (HD) which requires the H to be aligned with the right edge of the verb stem. Candidate (d) violates ALIGN-R (HD) whilst candidate (e) seriously violates ALIGN-L (HD) and ALIGN-R (HD) hence not optimal. Candidate (a) is optimal since it respects the highly ranked alignment constraints although it has violated a lowly ranked NONFINALITY constraint which disallows H on the final mora of the verb stem.

In dialect B in (12), we see the reversal in the ranking of the constraints and that candidate (b) is more optimal than (a) since it respects the highly ranked NONFINALITY constraint whilst candidate (a) seriously violates it and is therefore, non-optimal. Candidates (c), (d) and (e) are also not optimal because they violate the highly ranked constraints of NONFINALITY and EXTEND, respectively.

We now turn to the verb tone pattern involving disyllabic verb stems with long vowels on the penultimate syllable. Unlike the trisyllabic or long verb stems with long vowels on the antepenultimate or preantepenultimate which show variations within NC, the short verbs have long vowels on the penultimate syllable and without tonal variation. There is Level H followed by the H-toned final mora which is allowed in Ciyao. Consider the bisyllabic verb stems in (13).

(13) Infinitive with bisyllabic verbs: H placed on M1 and FM in both varieties

variety A	underlying forms	variety B	gloss
a. kutúúndá	</ku-tuund-a/>	kutúúndá	‘to urinate’
b. kusúúmá	</ku-suum-a/>	kusúúmá	‘to buy’
c. kuwééndá	</ku-ŵeend-a/>	kuwééndá	‘to beg’
d. kukááná	</ku-kaan-a/>	kukááná	‘to refuse/deny/reject’
e. kukáásá	</ku-kaas-a/>	kukáásá	‘to break’

In the data above, there are two H tones on the long penultimate syllable and an H on the FM. As already proposed, the first H on M1 is attributed to the underlying floating Melodic H while the H on the second mora of the long syllable is due to HTD. The H on the final mora of the verb stem is the second Melodic H placed by the tense.

The forms seem to be violating the ParseL constraint which requires a low tone to be associated with the penult syllable. To account for this violation the following ranked constraints interact to derive the best optimal output: ALIGN-L (HD) » ALIGN-R (HD) » EXTEND » PARSE-L.

We now show the evaluation of the candidates in the tableaux in (14) below.

(14) Evaluation of candidates: linking of H to the first and final mora

/ku-ŵeenda/	ALIGN-L(HD)	ALIGN-R(HD)	EXTEND	PARSE-L
a) ku-ŵéenda		*!	*	
b) ku-ŵeénda	*!	*!	*	
c) ku-ŵeéndá	*!		*	
d) ku-ŵéénda		*!		*
e) ku-ŵeéndá			*!	
⇒ f) ku-ŵeéndá				*

In the above tableau (14), candidate (f) is the most optimal output because it does not violate the highly ranked faithfulness constraints ALIGN-L (HD) and ALIGN-R (HD) which require the H tone to be aligned with the left and right edges of the verb stem, respectively. Likewise, EXTEND which requires the spreading of H to the right, is respected. Candidate (a) violates the highly ranked ALIGN-R (HD) constraint and is not optimal. Candidates (b), (c) (d) and (e) fatally violate one or two of the highly ranked constraints thus making them non-optimal.

So far, all the NC data discussed and accounted for above are consonant initial verbs in the infinitive tense. We now discuss infinitives with onsetless verb stems. The assignment of H to the verb stem initial mora in NC creates a rising tone followed by H which is prohibited just like in other Ciyao dialects and other Bantu languages. However, the rising tone becomes Level H through what Odden (1998) and Mtenje (1993) call Initial Left Spreading and Prefix Left Spreading, respectively. The data in (15) and (17) show the pattern and the morphological structure remains TM-VR-FM.

(15) Infinitives with vowel initial stems: H placed on M1 and FM

Underlying forms	MH docking	surface forms	gloss
a. /ku-iŵ-a/>	/kŵííŵ-á/>	[kŵííŵá]	‘to steal’
b. /ku-ík-a/>	/kŵíík-á/>	[kŵííká]	‘to come’
c. /ku-ang-a/>	/kwaáng-á/>	[kwaángá]	‘to respond’
d. /ku-end-a/ >	/kweénd-á/>	[kweéndá]	‘to walk’
e. /ku-uŵ-a/>	/kuúŵ-á/>	[kuúŵá]	‘to hide’

In all the forms in (15), the Melodic H links to M1. The second Melodic H is associated with the final mora. The association of the two Hs to the TBUs is followed by glide formation or fusion and then compensatory lengthening on the vowel. The linking of H to M1 creates a rising contour tone followed by H which is prohibited in Ciyao. This yields incorrect forms such as *[kŵííwá] ‘to steal’ and *[kwaáng-á] ‘to respond’. Mtenje (1993) notes that a rule of Prefix Left Spreading (PLS) or Long Spread Left (LSL) (cf. Hyman & Ngunga, 1994) applies to spread the H tone leftwards to M1 to level the H tone and thus creating a permissible level H followed by the Melodic H previously assigned by the tense.

To account for the vowel initial verb stems within the framework of OT, the Initial Left Spreading (ILS) dominates other constraints in the evaluation of candidates. This leads us to the following ranking of constraints: ILS » ALIGN-L(HD) » ALIGN-R(HD) » NORISE » NONFINALITY.

The tableau below in (16) shows the interaction of the constraints..

(16) Evaluation of candidates: linking of H to the first and final mora

/ku-ík-a/	ILS	ALIGN-L (HD)	ALIGN-R (HD)	NORISE	NONFINALITY
a) kŵííwá	*!		*!		
b) kŵííwá	*!			*	*
⇒c) kŵííwá					*
d) kŵííwá		*!	*!		

In the tableau in (16), candidates (a) and (b) are not optimal because they both seriously violate a highly ranked ILS constraint which requires the H tone on an initial mora of the verb stem to spread to the left to level a rising tone. The candidate in (d) is also non-optimal as it fatally violates all highly ranked alignment constraints. The candidate in (c) is the most optimal since it respects all highly ranked constraints.

As we can recall, tone realisation also depends on the length of the verb stem. Let us consider another set of data that also involves onsetless verb stems in (17) but are longer than those in (15). The Melodic H is underlined to separate it from a doubled H.

(17) Infinitive with longer vowel initial verb stems: H placed on M2

Surface forms (H deletion)	melodic H & HTD	underlying forms	gloss
a. kweembéceya	</kweémbéceya/	</ku-jembek-ey-a/	‘to wait’
b. kweendésya	</kweéndésya/	</ku-jendes-y-a/	‘to drive’
c. kwiigánya	</kwiígánya/	</ku-jigan-y-a/	‘to teach’
d. kwiinjíla	</kwiínjíla/	</ku-jinj-il-a/	‘to enter’
e. kwaangúya	</kwaángúya/	</ku-janguy-a/	‘to hasten’
f. kwaawúla	</kwaáwúla/	</ku-jawul-a/	‘to go’

The surface forms in (17) show that the first two morae do not have H but the third mora does. The question that arises is where does this H come from since the general rule for the infinitive tense is to place the first Melodic H on M1 and the second on the final mora in most verbs? Of course, we noted earlier that as the first Melodic H is linked to M1, the second H is not linked to FM in some verbs. It remains floating. We propose that in the data in (17) above, the first Melodic H, expectedly, links with M1 and doubles to the next mora, M2, through HTD but the second underlying Melodic H is a floating tone and thus remains unlinked. This explains why the final morae have low tones. However, a complication that needs to be explained is why only the doubled H tone on M2 appears while the Melodic H placed on M1 by the tense does not.

To appreciate the tonal facts above, let us first consider some segmental derivational facts involved in the data under discussion. In Ciyao, there is an obligatory rule that deletes a root-initial /j/ when it is preceded by an infinitive prefix as seen below where /a/ is the second person (honorific) subject prefix and the final vowel /e/ marks an imperative construction:

(18) Imperative forms (Mtenje 2002, p. 15)

Suface forms	underlying forms	gloss
a. ajaule	</a-jaul-a/	you should go
b. ajende	</a-jend-a/	you should walk/travel
c. ajigale	</a-jigal-a/	you should take
d. ajasime	</a-jasim-a/	you should borrow

When the imperative verbal forms above appear as bare infinitives, the root-initial /j/ is deleted and the infinitive prefix vowel /u/ changes into a corresponding glide /w/ because it is now adjacent to the first vowel of the verb root, which undergoes compensatory lengthening, as seen below.

(19) Infinitive forms (Mtenje 2002, p. 16)

Surface forms	underlying forms	gloss
a. k ^w aula	< /ku-jaul-a/	to go
b. k ^w eenda	< /ku-jend-a/	to walk/travel
c. k ^w iigala	< /ku-jigal-a/	to take
d. k ^w aasima	< /ku-jasim-a/	to borrow

Let us now return to the tonal facts in the NC forms in (17a-f). Here, we notice that the /j/ deletion rule applies thus making the verb stems vowel initial. Then, the vowel /u/ of the infinitive prefix /ku-/ glides with M1 resulting in a long syllable. With that long syllable, it means that tonally, the low-toned prefix mora is followed by the stem-initial Melodic H which then doubles to M2. This creates a rising tone as in *[kweémbéceya]. But, similar to what Odden (1998) observed in Tanzanian Ciyao, there should be no rising tone when H follows. A rise should be followed by a low-toned mora as in [ndaáwí] ‘time’ or [naáliíle] ‘I ate’. As a solution, the first Melodic H which is linked with M1 is deleted to get a permissible tone melody of a level L tone which is followed by the doubled H on M2.

To account for the tone pattern using OT, the constraint, EXTEND outranks *ONSET. The constraints are ranked as follows: EXTEND » *ONSET » NORISE.

The tableau in (20) provides the interaction of the constraints in the evaluation of candidates.

(20) Evaluation of candidates: linking of H to the second mora

/ku-íganya/	EXTEND	*ONSET	NORISE
a) k ^w iíganya	*!		
⇒b) k ^w iigánya			
c) ku-íganya	*!	*!	
d) ku-ígánya		*!	

e) kwiígánya			*!
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In Tableau (20), candidates (a), (c), and (d) are non-optimal because they fatally violate highly ranked constraints Extend for (a) and (c) which requires the spreading of H to the following mora, and *ONSET for (d) which expects syllables to have onsets. Candidate (e) is also not optimal since it violates NORISE which demands a rising contour not to be followed by H. Candidate (b) is optimal since it respects all the constraints.

5.3.2.2 Affirmative simple past tense

This tense is formed by attaching the underlying H-toned prefix /-á/ after the SM. The verb stems have the morphological structure: SM-TM-VR-FV/TM as illustrated in the examples below.

(21) Affirmative simple past: H placed on M1 and FM

	Surface forms	underling forms	gloss
a.	mwaaswásilé	</mu-á-swal-ile/	‘you prayed’
b.	mwaapópesilé	</mu-á-popel-ile/	‘you prayed’
c.	twaatáwilé	</tu-á-taŵ-ile/	‘we tied/bulit’
d.	ŵaalíinjilé	</ŵa-á-liing-ile/	‘s/he measured/tried’
e.	ŵaaléémbilé	</ŵa-á-leemb-ile/	‘s/he wrote’

Segmentally, liquid spirantisation changes /l/ to the fricative /s/ in (21a-b), palatalisation changes the velar stop /g/ to the palatal affricate /j/ in (21d) while GF and vowel coalescence rules operate between the subject prefixes and the underlyingly H toned tense prefix /á/ in (21a-c). Vowel coalescence (fusion) applies in (21d-e) followed by the lengthening of the derived vowel to compensate for the lost SM mora thus yielding a rising contour tone /mwaá/, /twaá/ and /waá/.

The question that arises is why the tonal outputs of the segmental rules which have a rising tone end up with surface forms bearing level L tones. To appreciate what happens, let us consider the processes of Melodic H tone assignment already discussed on the infinitive tense in the preceding sections above. Firstly, we propose that this tense has two underlying Melodic H tones similar to those observed in the infinitive tense. Thus, the first H docks to

M1 while the second is linked to the FM. The H on M1 spreads through HTD to the second mora of the long syllable in (21d and e) since the following morae are low-toned and thus permit tone doubling as discussed earlier in this chapter. On the other hand, the H on M1 in (21a-c) cannot spread to the next morae because they are followed by H tones and this would create unacceptable level H tones in Ciyao.

As regards the question of why the rising tone melody on the prefixes (e.g. [mwaá], [twaá, etc]) ends up being low-toned, the answer lies in what we earlier noted as a prohibition against rising tones as observed in (17) above where the primary Melodic H tone on M1 was deleted to avoid a situation where a rising tone is followed by an H tone. Likewise, in (21) the prefix H tone is deleted leaving only the Melodic H on M1 (with doubling, where appropriate) and the H on FM.

To account for these forms, we need ALIGN-R (HD) which demands the assignment of H on the last mora of the verb stem. This alignment constraint will have to dominate Nonfinality to ensure there is an H tone on the final mora. The constraints are ranked as follows: ALIGN-L (HD) » ALIGN-R (HD) » NORISE » NONFINALITY. The tableau in (22) shows the evaluation of candidates.

(22) Evaluation of candidates: linking of H to the first and final mora

/naá-lolaga/	ALIGN-L (HD)	ALIGN-R (HD)	NORISE	NONFINALITY
a) naa-lolagá	*!			*
b)naá-lólaga		*!	*!	
c) naá-lólagá			*!	*
⇒d) naa-lólagá				*

In the tableau in (22), candidates (a) and (b) are not optimal because they fatally violate the highly ranked constraints ALIGN-L (HD) and ALIGN-R (HD) respectively. These constraints require the H tone to be aligned with the left and the right edge of the verb stem respectively. The candidate in (c) is also not optimal since it violates NORISE on the prefix (there is a rising contour). Although candidate (d) violates Nonfinality by bearing H on the final mora, it becomes optimal since it respects all the highly ranked alignment constraints.

The data discussed in (21) and evaluated in (22) above are for verb stems with short penultimate syllables and the Melodic H is linked to FM. In (23) below, we present a different set of data to demonstrate the tone pattern of the verb stems with long penultimate vowels. The tone pattern shows that the Melodic H appears on a second mora of a long syllable instead of the FM.

(23) Affirmative simple past with long penult: H placed on M1 and penult M2

	Surface forms	underlying forms	gloss
a.	waatéleéče	</wi-á-tele-il-k-e/	‘s/he cooked’
b.	twaawúleéje	</tu-á-wula-il-g-e/	‘we killed’
c.	twaawúgeéle	</tu-á-wuga-il-l-e/	‘we closed’
d.	mwaawútwiíče	</mu-á-wutu-il-k-e/	‘you ran’
e.	naalóliíte	</ni-á-lol-ite/	‘I saw’
f.	mwaasúúmiísyé	</mu-á-suum-i-isy-e/	‘you sold’
g.	naalóómbeéle	</ni-á-loomb-el-e/	‘I married’

In (23c-d), the rule of imbrication applies by first deleting /l/. Thereafter, the rule changes the vowels /ai/ to [ee] and /ui/ to /wii/ before the mid vowel /e/. For the prefixes, glide formation and vowel fusion have applied to derive the surface forms there.

In comparison with the data in the same tense given in (22) above, we notice that there is a Melodic difference regarding the final mora tone. While in both cases there is an H tone on M1, there is H on the FM in (22) while in (23) the second H tone appears on the second mora of the long penult instead of the final mora. To account for this difference, there must be a rule that shifts the H placed on the FM to the penult. This rule is H Tone Retraction and applies to the H on FM when it is in phrase final environments (cf section 3.2.7.7 above where the conditions for the application of the rule were given). The proof that H tone retraction has applied is provided in (24) below where phrase medially, the second Melodic H does not undergo retraction and, therefore, remains on the FM.

(24) Phrase medial: H placed on M1 and FM

Surface forms	underlying forms	gloss
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- a. naalóómbelé msíkana </ni-á-lomb-el-e msíkana/ ‘I married a girl’
b. mwaasúúmisyé sáasu </mu-á-suum-isy-e sáasu/ ‘you sold firewood’
c. w̃aatélecé ugalí </w̃i-á-telek-e ugalí/ ‘s/he cooked hard porridge’
d. twaawúleejé lijóká </tu-á-wulag-e lijóká/ ‘we killed a snake’
e. twaawúgelé litaánga </tu-á-wugal-e litaánga/ ‘we closed the door’

To account for the forms above, we need a Pullback constraint which requires the H tone to retract to the second mora of the long penultimate syllable in addition to the alignment constraints and NORISE. This gives the following ranking: ALIGN-L (HD) » PULLBACK » NORISE » ALIGN-L (HD). Let us consider the tableau in (25) for the evaluation of the candidates.

(25) **Evaluation of candidates: linking of H to the first and final mora**

/tu-á-wuleeje/	ALIGN-L(HD)	PULLBACK	NORISE	ALIGN-R(HD)
⇒ a) twaa-wúleejé				*
b) twaa-wúleejé		*!		
c) twaa-wúleejé			*!	
d) twaa-wuleeje	*!			*

In Tableau (25), a fatal violation of the PULLBACK constraint, which requires the H tone to retract to the second mora of the long penultimate syllable, makes candidate (b) a loser. Candidate (c) is not optimal because it violates NORISE which demands that a rising contour should not be followed by an H tone. Similarly, candidate (d) is non-optimal since it violates the highly ranked ALIGN-L (HD) constraint which states that a high tone should be aligned with the left edge of the verb stem. Candidate (a) is the most optimal for respecting all highly ranked constraints although it violates the lowly ranked ALIGN-R (HD).

Now we present conditional tenses that require lengthening of the final mora for a second Melodic H tone to dock onto the second mora of that final bimoraic syllable.

5.3.2.3 Conditionals

These are events that are deemed to be unlikely to happen since they talk about the past. That is, they are unfulfilled conditions and there is no likelihood for them to be fulfilled. In NC, this tense is formed by prefixing the Conditional Tense Marker (CTM) /ká/ which is underlyingly H-toned. All the SMs are low-toned. The verb has the morphological structure: SM-(TM)-VR-FV. Let us consider the data in (26) with some tonal variations in the NC dialect.

(26) Affirmative past conditional: H placed on M1 and FM

variety A	underlying forms	variety B	gloss
a. ngaájíiweé	</n-ká-jiw-e/>	ngaájíiwe	‘if I stole’
b. ngaájúuweé	</ n-ká-juw-e/>	ngaájúuwe	‘if I hid’
c. tukágópoleé	</tu-ká-gopol-e/>	tukágópole	‘if we untied’
d. tukájínjileé	</tu-ká-jinjil-e/>	tukájínjile	‘if we entered’
e. ngaáságamileé	</n-ka-á-sagamil-e/>	ngaáságamile	‘if I dreamt’
f. tukájémbeceleé	</tu-ká-jembek-el-e/>	tukájémbecele	‘if we waited’

The above data show that the affirmative condition in both dialects has a low-toned SM whilst the CTM is underlyingly H-toned. There is a H tone on M1 in both dialects. This is due to the docking of the first Melodic H. There is also H on FM in variety A. Also, notice that the final mora is long in variety A thus creating a final bimoraic syllable. Then the tense assigns the second Melodic H onto M2 of that final bimoraic syllable to create a rising intonation. We propose that the lengthening process is triggered by the need to have the rising intonation since the construction must be embedded in a main clause. Syntactically, the rising intonation is like a question that requires an answer for the phrase to resolve. On the contrary, the final mora in variety B is not lengthened. Consequently, the tense does not assign the Melodic H on the monomoraic syllable thereby creating a falling intonation that reflects a statement. We suggest that the lengthening of the final mora of the verb stem in this tense is optional such that if lengthening occurs, the tense assigns the Melodic H on the M2 of the final bimoraic syllable. If the final bimoraic syllable is shortened, Final Vowel Shortening removes both the length and its H tone.

The bisyllabic forms in (26a-b) justify requiring the FM to be lengthened for the Melodic H tone to dock onto the M2 of the final bimoraic syllable. If the Melodic H were to dock onto the final monomoraic syllable in those verb stems, it would violate the contour H tone constraint that requires a rising or falling H on the penult to be followed by a toneless mora. It is, therefore, obligatory that either the FM is lengthened for the second Melodic H to link to the M2 of the final bimoraic syllable or that the final syllable is short and no Melodic H links.

For the long verbs in the above data in (26), the initial H on the verb stem does not spread to the next mora. If it did, there would be a sequence of two adjacent high tones contrary to the OCP.

To account for these forms, we need the OCP constraint, in addition to the other constraints, and it should be ranked above EXTEND, the constraint which requires a high tone to spread to a following mora. The constraints interact in the following ranking: OCP » ALIGN-R (HD) » EXTEND » NONFINALITY.

The tableau in (27) shows the evaluation of the relevant candidates from one of the tenses, affirmative future progressive.

(27) Evaluation of candidates

/n-ka-á-sagamil-e/	OCP	ALIGN-R(HD)	EXTEND	NONFINALITY
a) ngaáságamilee		*!	*	
⇒ b) ngaáságamileé			*	*
c) ngaáságámileé	*!			*
d) ngaáságámilee	*!	*!		

In the tableau in (27), candidate (a) is not optimal because it violates the highly ranked constraint ALIGN-R (HD) which requires the right edge of the verb stem to be aligned with H. Candidate (c) is also not optimal since it seriously violates the highly ranked OCP for the fact that H has spread to obey the constraint EXTEND thereby creating a sequence of H tones. Similarly, candidate (d) is unacceptable because it violates two high-ranking constraints OCP and ALIGN-R (HD) through H spreading and not aligning H with the

right edge of the verb stem. Although candidate (b) violates EXTEND (by not spreading the H tone) and NONFINALITY (for having H on the final mora), it respects the highly ranked OCP constraint by avoiding spreading the H tone hence it is the most optimal output.

For the bisyllabic or short verbs, they can be accounted for just like with the affirmative future conditional tense below using the constraints shown in the tableau in (29) below.

5.3.2.4 Affirmative future conditional

It is a condition that talks about an action that is likely to take place in the future if some other action also happens. Unlike present and past conditionals, the chances of an action to be fulfilled in the future conditional tense are very high. It is formed by prefixing a Conditional Tense Marker /nagá/ and the TM /cí/ or /tí/. The verb stems have the morphological structure: CTM-TM-SM-(TM)-VR-FV. Let us consider the data in (28) with some tonal variations of /cí/ or /tí/.

(28) Affirmative future conditional: H placed on M1 and FM

NC variety A			
	Surface forms	underlying forms	gloss
a.	nagátínjiiwée	</nagá-tí-N-jiw-e/	‘if I will steal’
b.	nagátínjítáawée	</ nagá-tí-N-cí-taŵ-e /	‘if I will tie/build’
c.	nagátínjánguyée	</ nagá-tí-N-janguy-e /	‘if I will hasten’
d.	nagácítúságamileé	</nagá-cí-tu-sagamil-e/	‘if we will dream’
e.	nagátújínjileé	</nagá-cí-tu-jinjil-e/	‘if we will enter’
f.	nagátújémbeceleé	</nagá-cí-tu-jembek-el-e/	‘if we will wait’

We can see in (28) that the NC variety A uses the CM /nagá/ which is underlyingly H-toned. The SM is lexically low-toned. The H tone of the TM /cí/ or /tí/ spreads to the SM in variety A. Similarly, the H of the CTM /nagá/ doubles to SM in a situation where the TM /cí-/ is optionally omitted as in (28e, f). In those cases, we propose that the CTM [nagá] marks both the condition and the tense. We also propose that it is obligatory for the TM /tí/ to surface with 1SG.SM /N/ and TM /cí/ with 2PL.SM /tu/.

The tonal pattern seen in (28) is for variety A. Let us compare it with variety B in (29) where different SMs are used, and show different tone patterns.

(29) Affirmative future conditional: H placed on M1 and FM

NC variety B

	Surface Forms	underlying Forms	gloss
a.	pacińjijiiwáá/pacińjijiwá	</paci-N-cí-jiw-a/	‘if I will steal’
b.	pacitú-taawáá/pacitútawá	</pací-tu-taw-a/	‘if we will build’
c.	pacitújanguyaá/pacitújanguya	</paci-tu-janguy-a/	‘if we will hasten’
d.	pacitújinjilaá/pacitújinjila	</paci-tu-jinjl-a/	‘if we will enter’
e.	pacińjígopolaá/pacińjígopola	</paci-N-cí-gopol-a/	‘if we will untie’
f.	pacitújembecelaá/pacitújembecela	</paci-tú-jembek-el-a/	‘if we will wait’

(The slash means that within variety B, verb stems are pronounced with either long or short FM)

Comparing NC variety A in (28) with variety B in (29), we notice that NC variety B uses a different CTM /paci/ which surfaces with a low tone. We propose that /paci/ is underlyingly H-toned and that it loses its H after spreading it to the SM which is lexically toneless as seen in variety A in (28) above. While in variety A the first Melodic H is linked to M1, in variety B, which uses /paci/ as the CTM, this H is not associated with M1. It remains floating. The second Melodic H is the only one that links to M2 of the final bimoraic syllable. Just like in the affirmative past conditional, the Melodic H in the affirmative future conditional is not linked to the FM if it is short and in those situations, the entire verb stem is toneless as seen in (29) above.

To account for the variety A forms in (28), we need STEM (H) and to dominate *ALIGN-R (HD) (Nonfinality). We also need ALIGN-R (HD). Other constraints are LEVEL-L and FVL-H which obligates a final vowel to be lengthened to link a H tone. The following will be the ranking of constraints in variety A: STEM-H » FVL-H » ALIGN-L (HD) LEVEL-L » *ALIGN-R (HD).

Unlike in variety A where the final mora of the bimoraic syllable is H-toned, in variety B, the final mora is low-toned and monosyllabic. To account for the variation, the constraints in variety B will have to be re-ranked as follows: STEM-H » LEVEL-L » FVL-H » ALIGN-L (HD) » *ALIGN-R (HD).

The tableaux in (30) evaluate the candidates in the two dialects.

(30) Evaluation of candidates

Variety A: linking H to M1 and FM (bimoraic)

/nagá-tí-N-jiw-e/	STEM-H	FVL-H	ALIGN-L (HD)	LEVEL-L	*ALIGN-R (HD)
a) nagátín-jíiwé		*!		*	*
b) nagátín-jíiwe		*!		*	
⇒ c) nagátín-jíiweé				*	*
d) nagátín-jiiweé			*!		*

Variety B: linking H to FM (bimoraic) only

/paci-N-cí-jiw-a/	STEM-H	LEVEL-L	FVL-H	ALIGN-L (HD)	*ALIGN-R (HD)
a) pacínjí-jíiwa		*!	*!		*
b) pacínjí-jíiwa		*!	*!		*
c) pacínjí-jíiwaá		*!			*
⇒ d) pacínjí-jiiwaá				*	*

In the tableau in (30) dialect A, candidates (a) and (b) are nonoptimal because they violate the highly ranked FVL-H which requires a vowel to be lengthened on the final vowel and be H-linked. Candidate (d) seriously violates a highly ranked ALIGN-L (HD) that needs H to link to the leftmost edge of the verb stem. Candidate (c) is optimal since it respects a highly ranked FVL-H.

In dialect B, re-ranking of the constraints produces the optimal output, candidate (d). Consequently, such a reversal in constraint ranking makes candidates (a), (b) and (c) non-optimal because they all violate highly ranked LEVEL-L.

The tone patterns discussed in the preceding sections where the two Melodic H tones link to M1 and FM are also attested in the following tenses where, due to limitations of space, we only provide a few examples without further discussions:

(31) Affirmative present progressive

	Surface forms	underlying forms	gloss
a.	ńkúwééndá	/ń-ku-weend-a/	‘you are begging’ and
b.	ńgúléembá	</ń-ku-leemb-a/	‘I am writing’
c.	ákúwá	/á-ku-w-a/	‘he/she/they (is/are) dying’

(32) Affirmative past progressive

a.	mwaapópelagá	</mu-á-popelag-a/	‘you were praying’
b.	waalíingagá	</wa-á-lingag-a/	‘s/he was trying/measuring’
c.	naalólagá	</ni-á-lolag-a/	‘I was seeing’

(33) Negative present progressive

	Surface forms	underlying forms	gloss
a.	ŋgaŋgúlóómbelá	</ n-ka-n-kú-loomb-el-a/	‘I am not marrying’
b.	ŋgatukúwúlagá	</n-ka-tu-kú-wulag-a/	‘we are not killing
c.	ŋgatukútáwá	</n-ka-tu-kú-taŵ-a/	‘we are not building/ tying’

(34) Negative future conditional

	Surface forms	underlying forms	gloss
a.	nagáŋgasímbíkánaá	</nagá-nkasí-N-pikan-a/>	‘if I won’t listen’
b.	nagáŋgasínjángúyaá	</nagá-nkasí-N-janguy-a/>	‘if we won’t hasten’
c.	nagáŋgasíndáwáá	</nagá-nkasí-N-taŵ-a/>	‘if I won’t build’

In the preceding sections, we have discussed the tonal patterns involving the placement of a melodic H on M1 and on both M1 and FM of the verb stem. The third major tonal pattern that follows assigns a Melodic H to the final mora of the verb stem.

5.3.3 *Pattern III: H tone placed on FM only*

This is a third major tonal pattern attested in most Ciyao dialects where a grammatical H tone is assigned to the final mora of the verb stem only. The following are the tenses in which this pattern occurs: negative simple past, affirmative near future, affirmative remote future, affirmative imperative, negative imperative and affirmative present condition. In the next section, we will use selected tenses to illustrate this pattern.

5.3.3.1 *Negative simple past tense*

This tense shows that an action did not take place in the past. The tense has the morphological structure: NEG-TM-SM-(OM)-VR-FM. Let us consider the examples below which have the verbal structure: NEG-(TM)-SM-VR-FM.

(35) **Negative simple past: H placed on FM**

	Surface forms	underlying Forms	gloss
a.	ŋganituwugalá	</nka-ni-tu-wugal-a/	‘we didn’t close’
b.	ŋganituwulagá	</nka-ni-tu-wulag-a/	‘we didn’t kill’
c.	ŋganituteleká	</nka-ni-tu-telek-a/	‘we didn’t cook’
d.	ŋganitutaŵá	</nka-ni-tu-taw-a/	‘we didn’t build’

As it can be observed in (35), the NEG(TM) [ŋgani] and the SM are underlyingly low-toned. There is a single Melodic H which is associated with the FM.

5.3.3.2 *Near future tense*

The tense shows that the events will take place any time after the time of speaking. It is formed by prefixing the future TM /ci-/ before the SM as in most Ciyao dialects, including those spoken in Tanzania and Mozambique (cf. Hyman & Ngunga 1997, Odden 1998). In NC, the near future TM /cí/ is phonetically realized as /shi-/ , a form which is attested in ciMwera (P22), Ciyao’s close linguistic neighbour. Examples to illustrate the tone pattern are provided below where the verbs have the morphological structure: TM-SM-VR-FM.

As it can be noted in (36 d & e) below, the TM /shí-/ in NC can be optionally omitted without necessarily affecting the tone pattern.

(36) Affirmative near future: H placed on FM

	Surface forms	underlying Forms	gloss
a.	shítúwugalé	</shí-tu-wugal-a/	‘we will close’
b.	shítúteleché	</shí-tu-telek-e/	‘we will cook’
c.	shááleembé	</shí-a-leemb-e/	‘s/he/they will write’
d.	túwugalé	</shí-tu-wugal-e/	‘we will close’
e.	tútawé	</shí-tu-taw-e/	‘we will tie/build’

The NC forms in (36a-c) have H on the first two prefixes. We propose that the first prefix which is the TM /shí-/ is underlyingly H toned. Thereafter, HTD applies spreading the H tone to the SM. The final mora in (36) is also H-toned. To account for this, we maintain the position that some tenses in Ciyao, including this one, have one Melodic H which, in this case, is assigned to the final mora of the verb stem as previously argued for other similar data. The fact that there are some tenses where there is only one underlying H instead of two is illustrated in the discussion in section 6.4.3 on affirmative present perfective, present and past habitual tenses where it is shown that there is one Melodic H that appears on M2 only. A similar position is taken by Mtenje (1993) for other dialects of Malawian Ciyao, and Odden (1994), and Kisseberth and Odden (2003) for Tanzanian Masasi Ciyao.

Comparatively, unlike in the NC data in (36) where the final vowel is H-toned, in Tanzanian Tunduru Ciyao, the final vowel appears as low-toned as observed by Odden (1998, p. 277) in words like [chítú-lye] ‘we will eat’ and [cháá-lime] ‘he will cultivate’.

We now move on to the affirmative remote future which has the same tone pattern with H on the final mora of the verb stem.

5.3.3.3 Affirmative remote future tense

This tense refers to events that will take place at a distant time after today. It is formed by prefixing the TMs /ci-ci-/ as seen below where the verb structure is TM-SM-(TM)-VR-FM.

(37) Affirmative remote future: H placed on FM

	Surface forms	underlying Forms	gloss
a.	cinjĩloombelá	</ci-n-ci-loomb-el-a/	‘I will marry’
b.	citúwulagá	</ci-tú-ci-wulag-a/	‘we will kill/slaughter’
c.	tucíwugalá	</ci-tú-ci-wugal-a/	‘we will close’
d.	tucípopelá	</ci-tú-ci-popel-a/	‘we will pray’
e.	citútawá	</ci-tú-ci-taw-a/	‘we will build’
f.	caacíleembá	</ci-a-cí-leemb-a/	‘s/he/they will write’

Morphologically, the forms in (37b-e) have optionally dropped the second TM (ci). The remaining (first) TM /ci/ and the SM /tu/ have swapped positions in (46c-d). However, the switched prefixes leave behind the H tone. They do not carry the H (the underlying forms have H on /tú/ and a low tone on /ci/). This shows that the tone is autonomous as was extensively demonstrated in the framework of Autosegmental Phonology proposed by Goldsmith (1976).

The position switching seems possible when the TM /ci/ is used with the 1PL.SM /tu-/. With the other SMs i.e. 1SG.SM /n/ ‘I’, the 2SG.SM or 2PL.SM /m/ ‘you’ and the 3SG.SM or 3PL.SM /a/, the TM and SM do not switch positions. If they did, they would yield incorrect forms like *[ci-cá-liingá] ‘s/he/they will try/measure’ and *[n-ji-cí-lolá] ‘I will see’.

In terms of tone melody, just like in the affirmative near future tenses above, there is a Melodic H which is assigned to the final mora of the verb. For the prefixes, the first tense prefix /ci-/ is toneless whilst the second, /cí/, is H-toned. We are adopting what Odden (1994) proposed for Tanzanian Ciyao that there is H on the first tense prefix /ci/ which is lexically assigned, and that the H is later deleted optionally after spreading to the next mora

/-cí-/. In that situation where one H is deleted, he argues that the primary H is the one that is erased together with its TBU and what survives is the doubled H.

Our next verb tense that has a H tone placed on FM is the affirmative imperative tense.

5.3.3.4 Affirmative imperative tense

This tense forces the listener to act without any objection. As pointed out in section 3.1.5, the imperative in Ciyao is formed by obligatorily attaching the second-person subject prefix which is a syllabic nasal /n-/. The NC imperative verbs have the morphological structure: SM-VR-FM(TM). Recall that in Ciyao, the TMs can appear at the beginning or at the end of the verb structure. The TM in affirmative imperative appears as a suffix /e-/ as seen in the examples below.

(38) Affirmative imperative: H placed on FM

	variety A	underlying forms	variety B	gloss
a.	ń.-kologanyé	</mu-kologany-e/>	ń.-kologanye	‘stir’
b.	ń.-simonjé	</ mu-simong-e/>	ń.-simonje	‘be surprised’
c.	ń.-jiganyé	</ mu-jigany-e/>	ń.-jiganye	‘teach’
d.	ń.-wëndé	</ mu-wënd-e/>	ń.-wënde	‘beg’
e.	ń.-juwé	</ mu-juw-e/>	ń.-juwe	‘hide’
f.	ń.-mŵé	</ mu-mŵ-e/>	ń.-mŵe	‘drink’

We note from the data above that the SM and FM are H-toned. Ngunga (1997) argues that the imperative assigns H to the SM in Mozambican Ciyao. Notice that the H on the SM does not spread to M1. In section 3.2.7.1.2, we discussed cases where HTD fails to apply. One of them is that the prefix H does not double to the initial-stem mora in Ciyao as seen in the data above. The H on the FM in variety A is due to the underlying Melodic H which links to that mora. In variety B, the final mora is low-toned due to the failure of the Melodic H to link to that TBU. The imperative tonal pattern in NC variety B which has a low-toned final mora is similar to Tanzanian Ciyao as shown in Odden (1998).

We finally discuss the last tense which has H placed on FM only..

5.3.3.5 Affirmative present conditional tense

This tense shows that an action is unlikely to happen and it is, therefore, difficult to affirm it. The CMs /kutí/ (for variety A) and /pací/ (for variety B), are used in this tense where the second mora of the CM is H toned. The verbs have the following morphological structure: CM-SM-VR-FM(TM) as shown below.

(39) Affirmative present conditional: H placed on FM

	Surface Forms	underlying forms	gloss
a.	kutínjiwée	</kutí-N-jiw-e/	‘if I steal’
b.	kutínjuwée	</kutí-N-juw-e/	‘if I hide’
c.	kutímputeé	</kutí-N-put-e/	‘if I beat’
d.	kutítúwiceé	<kutí-tu-wik-e/	‘if we come’
e.	kutítúgopoleé	</kutí-tu-gopol-e/	‘if we untie’

The data in (39) show that the CM /kutí/ is lexically H-toned while the SMs are lexically low-toned. The H on the CM doubles to the SM. Notably, the Melodic H appears on the second mora of the long final vowel. As previously stated, NC variety A uses the CM /kuti/ as reflected in (39). In NC variety B, the CM /pací/ replaces /kuti/ but the tone melody remains the same. As earlier proposed in this chapter, in section 5.3.2.3, the FM has a second mora on which the H is placed to have the rising intonation because the structure must be embedded in a main clause.

The tone pattern which has been discussed in the sections above where the Melodic H tone is placed on FM is also attested in tenses like the future progressive tense as in [cinjílolagá] /ci-n-cí-lol-ag-a/ ‘I will be seeing’ and [tucítawagá] /tu-cí-taŵ-ag-a/ ‘we will be tying/building’; the affirmative subjunctive as in [mbasyé] /m-pasy-e/ ‘I should taste’, [tusimonjé] /tu-simong-e/ ‘we should be surprised’ and negative subjunctive tense as in [tukagoná] /tu-ka-gon-a/ ‘we should not sleep’, [tukapeleká] /tu-ka-pelek-a/ ‘we should not give’.

Accounting for the verb stems in this Pattern III, where H is placed on FM, requires the use and ranking of the following constraints: STEM (H) » *ALIGN-L (HD) » ALIGN-R (HD) » ALIGN-L (HD) » NONFINALITY.

The evaluation of candidates for variety A in the tableau in (40) below reflects the rest of the tenses in this tonal pattern. However, we will illustrate using the forms in imperative because there are variations within the dialect. The constraints will have to be re-ranked in variety B so that NONFINALITY outranks ALIGN-R (HD) to avoid the assignment of H to the final mora. The constraints are ranked as follows: NONFINALITY » *ALIGN-L (HD) » ALIGN-R (HD) » ALIGN-L (HD) » STEM-H.

The tableau below in (40) evaluates the candidates in the two dialects.

(40) Evaluation of candidates

Dialect A: linking H to FM

/m̩.-simonje/	STEM-H	*ALIGN-L (HD)	ALIGN-R (HD)	ALIGN-L (HD)	NONFINALITY
a) m̩.-s̩monje		*!	*!		
⇒ b) m̩.-simonjé				*	*
c) m̩.-s̩monjé		*!			*
d) m̩.-simonje	*!				

Dialect B: non-linking of H to FM

/ku-saagula/	NONFINALITY	*ALIGN-L (HD)	ALIGN-R (HD)	ALIGN-L (HD)	STEM H
a) m̩.-s̩monje		*!	*		
b) m̩.-simonjé	*!			*	
c) m̩.-s̩monjé	*!	*!			
⇒ d) m̩.-simonje			*	*	*

In the tableau in (40) dialect A, candidate (a) violates the highly ranked *ALIGN-L (HD) and ALIGN-R (HD) constraints hence it is not optimal. Candidate (c) is unacceptable because it violates a high-ranking constraint *ALIGN-L (HD). Candidate (d) is equally inappropriate output because it fatally violates the highest constraint STEM H. On the other hand, candidate (b) is optimal since it respects the highly ranked constraints although it violates lowly ranked ALIGN-L (HD) and NONFINALITY.

With a re-ranking of constraints in variety B, candidates (a) and (b) are not optimal because they violate the highly ranked *ALIGN-L (HD) and NONFINALITY respectively. Candidate (c) is also non-optimal since it violates the highly ranked NONFINALITY and

*ALIGN-L (HD). The candidate in (d) is the optimal one because it respects the highly ranked NONFINALITY and *ALIGN-L (HD) constraints although it violates the lowest ranking constraint STEM H since it has no high tone anywhere in the verb stem.

Our fourth pattern involves the placement of a high tone on the second mora of the verb stem.

5.3.4 *Pattern IV: H tone placed on M2 only*

This tone pattern is very common in zone P languages. Odden (1998) observes this melody in Masaasi Ciyao of Tanzania. Likewise, Cheng and Kisseberth (1979, 1980), Kisseberth and Odden (2003), and Kisseberth and Guéros (2014) show that M2 is also the target of H tone in several Makhuwa dialects. Similar observations are made by Odden (1988, 1990) and Liphola (2001) for Shimakonde, Odden (1996) for Kimatuumbi and Kisseberth and Mtenje (2022) for the Ehlomwe dialect Emihavani, among others. In their general description of African tone systems, Kisseberth and Odden (2003) and Odden and Bickmore (2014) also show the prevalence of this tone pattern in other zone P languages. In NC, the tenses that display this tone pattern include the following: negative infinitive, affirmative present habitual, negative present habitual, affirmative present perfect, negative present perfect, negative past progressive, affirmative past habitual and negative past habitual. However, for purposes of this thesis and due to space limitations, we will illustrate this tone pattern using only the affirmative present perfect, affirmative present habitual, negative past progressive and negative infinitive.

5.3.4.1 *Present perfect tense*

The present perfect tense in NC is formed by prefixing subject markers to the verb root and then replacing the final vowel /a/ with /-ile/, /-ele/, /-ite/ or /-e/ depending on the verb stems. Consider the data in (41). The verbal structure is: SM-VR-FV-(TM).

(41) **Affirmative present perfective tense: H placed on M2**

	Surface Forms	underling forms	gloss
a.	tuwugéele	< /tu-wuga-il-l-e/	‘we have closed’
b.	ateléeče	</a-tele-e-k-e/	‘s/he/they have cooked’
c.	m̩sumíisye	</mu-sum-i-is-y-e/	‘you have sold’

- d. ndolíte <n-lol-i-it-e/ ‘I have seen him/her’
e. alembíle </a-lemb-il-e/ ‘s/he/they has/have written’

In the forms above, all the prefixes are toneless. A single Melodic H tone is linked to M2. This H does not double in (41e) to respect Non-finality which prohibits spreading H to a phrase final mora. In the case of (41a-d), doubling would result in a level H followed by a low tone which, as stated previously, is not allowed in Ciyao. Segmentally, Imbrication applies in (41a) where /l/ is deleted followed by vowel fusion in the forms while in (38b), palatalisation changes /k/ to /č/ before front vowels.

To account for the forms, we require the constraints *ALIGN-L (HD) to dominate NO FALL. We also need *ALIGN-R (HD) that disallows the linking of a H tone to a final mora. The constraints are ranked as follows: STEM-H » *ALIGN-L (HD) » NOFALL » *ALIGN-R (HD).

The tableau in (42) shows the interaction of the constraints.

(42) Evaluation of candidates: linking of H to the second mora

/tu-wuga-il-l-e/	STEM-H	*ALIGN-L (HD)	NOFALL	*ALIGN-R (HD)
a) tu-wugéélé			*!	*
b) tu-wugeele	*!			
⇒ c) tu-wugéele				
d) tu-wúgéele		*!		

In the above tableau, candidates (a), (b) and (d) are not optimal because they violate the highly ranked NOFALL, STEM H and *ALIGN-L (HD) respectively. NOFALL requires a falling contour not to be followed by a high tone. STEM H demands a stem to realise a H tone while *align-l (HD) prevents a H tone to align with the left edge of the verb stem. Candidate (c) wins because it respects all the constraints.

5.3.4.2 Affirmative present habitual tense

The present habitual tense shows that an action usually takes place in the present time. It is formed by prefixing the habitual marker /-kusa-/ to the verb stem. The verbal

morphological pattern is SM-TM-VR-FM. Consider the data in (43) and the variations within NC.

(43) Affirmative present habitual: H placed on M2

variety A	underlying forms	variety B	gloss
a. akúsááteléka	</á-kúsa-telek-a />	akúsaateléka	‘s/hetthey cook(s)’
b. túkúsááwulága	</tú-kúsaa-wulag-a />	túkúsaawulága	‘we kill/slaughter’
c. mkúsááwugála	</m-kúsaa-wugál-a />	mkúsaawugála	‘you close’
d. akúsáatawá	</á-kúsaa-taw-a />	akúsaatawá	‘s/h/they build(s)’
e. ngúsáálya	</n-kú-sa-ly-a />	ngúsaalya	‘I eat’

In the data in (43), there is H on M2 in all NC varieties except the monosyllabic verb which has no M2 for the Melodic H to associate with. The proposal is that there is a floating Melodic H which docks on to the M2 in longer verb stems. On the part of the prefixes, /nkú-/ undergoes a PNSV and NA to surface as [ngú-]. Tonally, the SMs /tú/ ‘we’, /m/ ‘you’ and /n/ ‘I’ as well as /kú/ of the TM /kúsa/ are H toned. These prefixes are underlyingly H-toned. The third person SM /a/ is toneless but lexically H toned as shown in underlying forms. We propose that the rule of onsetless H delinking, already discussed in section 3.2.7.6 above, applies thus rendering this SM low-toned. In NC variety A, /sá/ is H toned whilst in NC variety B it is low toned. Although /sá/ is H-toned in NC variety A, we propose it is low-toned in both varieties. The realisation of H in variety A is through the application of HTD from /kú/ which is followed by the Long Spread (Right) rule. The non-realisation of H on /sa/ in variety B shows that doubling is not allowed there. As for why the HTD fails to apply in variety B, we propose it is just a matter of tone variation within NC. It is important to note that the H tone on the prefix /kú/ fails to spread only in phrase final contexts. In phrase medial positions, when an object NP is added, doubling occurs in both varieties as seen in (44).

(44) Affirmative present habitual tense: H placed on M2

variety A	underlying forms	variety B
a. akúsááteléká ugalí	</á-kúsa-telek-a ugalí />	akúsáá-teléká ugalí
‘s/he/they cook(s) hard porridge’		

- b. túkúsááwulágá lijóká </tú-kúsa-wulag-a lijóká/> túkúsáá-wulágá lijóká
‘we kill the snake’
- c. mkúsááwugálá litaánga </m-kúsa-wugál-á litaánga/> mkúsáá-wugálá
litaánga ‘you close the door’
- d. túkúsáátawá nyúúmba </tú-kúsa-taw-a nyúúmba/> túkúsáá-tawá nyúúmba
‘we build the house’
- e. ngúsáálya imáanga </n-kú-sa-li-a imáanga/> ngúsáá-lya imáanga

In both varieties, when the verb stems are in phrase medial position, the prefix /sá/ appears H toned.

To account for the forms variety A in (43) above, we need PREFIX-H SPREAD. This constraint should dominate *LS(R). We also need *ALIGN-R (HD). Other constraints include STEM-H, EXTEND and *ALIGN-L (HD). The ranking of the constraints is as follows: STEM-H » PREFIX-H SPREAD » *ALIGN-R (HD) » *ALIGN-L (HD) » EXTEND » *LS(R).

We can observe in (43) that unlike in variety A where the prefix (sáá) is H-toned through H spreading, in variety B, (saa) is low-toned. The constraints will have to be re-ranked to account for these NC variations. Unlike in variety A where PREFIX-H SPREAD dominates *LS(R), in variety B, *LS(R) outranks PREFIX-H SPREAD. The constraints re-ranked as follows: STEM-H » *LS(R) » *ALIGN-R (HD) » ALIGN-L (HD) » EXTEND » PREFIX-H SPREAD.

The tableau below in (45) evaluates the candidates in the two dialects.

(45) Evaluation of candidates

Variety A: linking of H to the second mora (with prefix [sáá])

/tú-kúsaa-wulaga/	STEM-H	PREFIX-H SPREAD	*ALIGN-R (HD)	*ALIGN-L (HD)	EXTEND	*LS (R)
a) túkúsáá-wulágá			*!			*
⇒b) túkúsáá-wulága					*	*
c) túkúsáá-wulaga	*!	*!				
d) túkúsáá-wúlága				*!		*
e) túkúsaa-wulága		*!			*	

Variety B: linking of H to the second mora (with prefix [saa])

/túkúsaa-wulaga/	STEM H	*LS (R)	*ALIGN-R (HD)	*ALIGN-L (HD)	EXTEND	PREFIX-H SPREAD
a) túkúsáá-wulagá		*!	*!			
b) túkúsáá-wulága		*!				*
c) túkúsáa-wulaga	*!					
d) túkúsáá-wúlága		*!		*!		
⇒ e) túkúsaa-wulága					*	*

In the tableau in (45) dialect A, candidate (a) violates the highly ranked *ALIGN-R (HD) which requires the H tone to align with the right edge of the verb stem. Candidates (c) and (d) respectively violate STEM H and *ALIGN-L (HD). The first constraint requires the availability of H in every verb stem and the second one prohibits the alignment of H with the left edge of the verb stem. Due to this violation these forms are not optimal. Candidate (e) is equally non-optimal because it violates a highly ranked PREFIX-H SPREAD constraint which requires doubling the H tone to the following mora. Candidate (b) is the best output since it respects the highly ranked constraints although it violates lowly ranked EXTEND and *LS(R).

Constraints are re-ranked in variety B, and with such a re-ranking, candidates (a) and (b) are non-optimal because they both fatally violate the highly ranked *LS(R). Candidates (c) and (d) are not winners since they do not respect the highly ranked STEM H and *LS(R), respectively. The candidate in (e) is the most optimal because it respects the highly ranked constraints even though it violates the lowest ranking constraints PREFIX-H SPREAD as it has no high tone on (sa).

5.3.4.3 Negative past progressive tense

This tense shows that an action was not taking place in the past. In this tense, the NEG [ŋga-] is prefixed to the verb stem. The verb has the structure: NEG-(TM)-SM-(OM)-VR-FM. Let us consider the data in (46) and observe the tonal pattern.

(46) Negative past progressive: H placed on M2

Surface forms	underling forms	gloss
a. η ganaalingága measuring’	</nka-ni-a-ling-ag-a/	‘s/he was not trying/
b. η ganaalembága	</nka-ni-a-lemb-ag-a/	‘s/he was not writing’
c. η ganitutaŵága tying/building’	</nka-ni-tu-taw-ag-a/	‘we were not
d. η ganimsumága	</nka-ni-m-sum-ag-a/	‘you were not buying’
e. η ganindyaága	</nka-ni-n-li-ag-a/	‘I was not eating’

All the negative forms in (46) have the Melodic H on M2. All the prefixes are toneless. High tone doubling fails to apply in all verb stems in (46) to respect the Non-finality constraint which bars a high tone spreading to the final mora prepausally.

The forms in (46) can be accounted for using the tableau in (47) that involves a ranking of constraints as follows: STEM-H » *ALIGN-R (HD) » *ALIGN-L (HD) » EXTEND.

(47) Evaluatin candidates: linking of H to the second mora

/nka-ni-a-ling-ag-a/	STEM-H	*ALIGN-R (HD)	*ALIGN-L (HD)	EXTEND
a) η ganaa-lembágá		*!		
⇒b) η ganaa-lembága				*
c) η ganaa-lembaga	*!			
d) η ganaa-lémbága			*!	
e) η ganaa-lémbaga			*!	*

In the tableau in (47), candidate (a) violates the highly ranked *ALIGN-R (HD) which requires the H tone to be associated with the right edge of the verb stem. Both candidates (d) and (e) violate *ALIGN-L (HD) which disallows the alignment of H with the left edge of the verb stem, and because of this violation, they are not the best candidates. Candidate (b) is the best output because it respects the highly ranked constraints STEM-H although it violates lowly ranked EXTEND.

The past tense to illustrate the tonal pattern where H is placed on M2 is the negative infinitive.

5.3.4.4 Negative infinitive tense

The negative infinitive verbs use the NEG Marker [ŋgá-] (/nka/) which precedes the verb root. The verbal structure is NEG-(TM)-VR-FM. Consider the data in (48).

(48) Negative infinitive tense: H placed on M2

Surface forms	underling forms	gloss
a. ŋgáwéenda	</nká-ŋeend-a/	‘to not beg’
b. ŋgájaása	</nká-jaas-a/	‘to not throw’
c. ŋgáwilaanga	</nká-ŋilaang-a/	‘to not call’
d. ŋgáyiká	</nká-yik-a/	‘to not come’
e. ŋgápelá	</nká-pel-a/	‘to not tire’
f. ŋgákuŋgúluka	</nká-kunguluk-a/	‘to not chat’
g. ŋgájembéčela	</nká-jembek-el-a/	‘to not wait’

In the data in (48), the NEG prefix /nká-/ is underlyingly H-toned, and it undergoes the PNSV and NA to surface as [ŋgá]. Note that the NEG [ŋga-] also plays the function of the TM since the negative infinitive does not contain the TM /ku-/. The tense assigns the Melodic H to M2. With the Melodic H being linked to M2 of the CVC roots in (48d & e), the H is coincidentally on the final mora. However, we cannot claim that the tense assigns the grammatical H on FM otherwise we would fail to account for all the other verbs in (48) where the H falls on M2 and not on the final mora. This is evidence that the H is assigned to M2, (which in the short roots, coincides with the final mora) and not the final mora. In long verbs in (48f-g), the H-tone linked to M2 does not spread to the next mora. We argue that in this tense, M2 H is sensitive to the floating H that would have been linked to the final mora such that the spreading of H would in principle create a successive 3-H pattern forbidden in Ciyao just like in other Bantu languages.

The forms in (48) for the negative infinitive can be accounted for using the constraints, STEM H, *ALIGN-L (HD), *ALIGN-R (HD) and NORISE in such a way that STEM-H is ranked high. The following is how the constraints are ranked: STEM-H » *ALIGN-L (HD) » *ALIGN-R (HD) » NORISE. The tableau in (49) evaluates the candidates.

(49) Evaluation of candidates: linking of H to the second mora

/</nká-ŵeend-a/	STEM H	*ALIGN-L (HD)	*ALIGN-R (HD)	NORISE
a) ngáŵeéndá			*!	*
b) ngáŵeenda	*!			
⇒c) ngáŵeénda				
d) ngáŵeenda	*!			

In the tableau in (49), candidate (a) violates the highly ranked *ALIGN-R (HD) which does not require a H tone to associate with the right edge of the verb stem. Candidates (b) and (d) violate STEM-H since they do not have a H tone linked to the verb stem as required by the constraint. Candidate (c) is the optimal output because it respects the highly ranked STEM-H and the other constraints.

Other tenses that fall under Pattern IV where the Melodic H is linked to M2 include: the affirmative past habitual, negative present habitual, negative past habitual and negative present perfect as shown below without any further explanation.

(50) Other tenses with H placed on M2:

Tenses	surface forms	underlying forms	glossing
Affirmative past habitual	tuwugééleje	</tu-ŵuga-il-le-g-e/	‘we usually closed’
	atelééceje	</a-tele-il-k-e-g-e/	‘s/he usually cooked’
Negative present habitual	ngańgúsáálombéla	</nka-ń-kúsaa-loomb-el-a/	‘I do not marry’
	ngatúkúsááwulága	</nka-tú-kúsaa-wulag-a/	‘we do not kill’
Negative past habitual	nganínlombélaga	</nka-ní-n-lomb-el-ag-a/	‘I didn’t usually marry’
	nganínđolága]	</nka-ní-n-lol-ag-a/	‘I didn’t usually see’
Negative present perfect	nganítúwulága	</nka-ni-tu-wulag-a/	‘we haven’t killed it’
	nganítútaŵá	</nka-ni-tu-taw-a/	‘we haven’t built’

The fifth and last tone pattern to be discussed and show how the Optimality Theory accounts for the tones in Namwera Ciyao including dialectical variations through the re-ranking of constraints, is where H is placed both on the second and final morae of the verb stem.

5.3.5 *Pattern V: H Tone Placed on M2 and FM*

This is the fifth and final tonal pattern that occurs in NC. In this pattern, a grammatical H is linked to the second and final morae of the verb stem. The negative present conditional and the negative past conditional tenses will be used to illustrate this tone pattern.

5.3.5.1 *Negative present condition*

This tense shows what is going to happen if another event fails to take place in the present time. It is formed by attaching the CM /nagá/ or the optional /naá/ and the NEG prefix which is /nka/ underlyingly but appears as [ŋga] due to post-nasal stop voicing. The verb stem has the morphological structure: CM-NEG-SM-VR-FM(TM). Consider the data in (51) where variations within NC are also illustrated.

(51) Negative present conditional: H placed on M2 and FM

	variety A	underlying forms	variety B	gloss
a.	nagáŋgatusuúmaá don't buy'	</nagá-nka-tu-suum-a/>	aáŋgatusuúma	'if we
b.	nagáŋgambuúsyáá 'if I don't ask'	</nagá-nka-N-ŵuusy-a/>	naáŋgambuúsyá	
c.	nagátukakuúndaá 'if we don't accept'	</nagá-tu-ka-kuund-a/>	naáŋgatukuúnda	
d.	nagáŋgambikánaá 'if I don't listen/hear'	</nagá-nka-N-pikan-a/>	naáŋgambikána	
e.	nagáŋgatuŵulágaá 'if we don't kill'	</nagá-nka-tu-ŵulag-a/>	naáŋgatuŵulága	

All the data in (51a-e) show that the NEG(TM) [ŋga-]/ nka-/ and the SM surface with low tones. Earlier, we proposed that the NEG is H-toned underlyingly. Quite interesting also is the fact that the H tone on CM [nagá/naá] fails to spread to the NEG. To account for why the NEG, which is underlyingly H toned, appears without a high tone in these forms, we propose that HTD is blocked from spreading the H of the CM [nagá/naá] to the NEG because the NEG is already H toned lexically but its high tone is later deleted in the derivation.

In variety A in (51a-e), there is an additional melodic H which is associated with the M2 of the final bimoraic syllable while in variety B, that H is not linked hence the final mora appears with a low tone. The non-realisation of H on the final mora in (51a-c), the forms with long penults, is due to the same reason given earlier which relates to the respect for the contour tone constraint that requires the following mora to be low toned. In (51d-e), the non-appearance of H on the final mora in variety B is to avoid successive melodic H tones. In other words, based on the above data, the second melodic H cannot be linked to the FM in variety B because the final syllable is not long.

We should note that bisyllabic verb stems with short penults have a melodic H on M2 of the verb stem as in </nagá-nka-tu-wík-a/> [naáŋgatuwíká] ‘if we don’t come’ and </nagá-nka-tu-kat-a/> [naáŋgatukatá] ‘if we don’t cut’. However, it is also tempting to argue that the melodic H is linked to FM and not M2 in such forms. To prove that the melodic H is realised on M2, let us look at the negative present conditional tense with monosyllabic verb stems in (52).

(52) Negative present conditional tense

Monosyllabic verb stems: H placed on M2 only

	variety A	underlying forms	variety B	gloss
a.	nagáŋgaaŋwáá	</nagá-nka-a-w̃-a/>	naáŋgaaŋwá	if s/he doesn’t die’
b.	nagáŋgatumŋwáá	</nagá-nka-tu-m̃-w̃-a/>	naáŋgatumŋwá	‘if we don’t drink’
c.	nagáŋgatugŋwáá	</nagá-nka-tu-g̃-w̃-a/>	naáŋgatugŋwá	‘if we don’t fall’
d.	nagáŋgandyaá	</nagá-nka-N-ly-a/>	naáŋgandya	‘if I don’t eat’
e.	nagáŋgatunyaá	</nagá-nka-tu-ny-a/>	naáŋgatunya	‘if we don’t defecate’

The monosyllabic verbs from variety A in (52) provide further evidence that the first Melodic H in this tense is linked to M2 of the verb stem. The monomoraic syllables in variety A are made bimoraic and the H links to M2 of those bimoraic syllables. The process of vowel lengthening has occurred to create a second mora for the H tone to dock in these monosyllabic verbs. If the H tone did not target M2, we would have expected it to go somewhere. This is compelling proof that the high tone in this tense targets M2 of the verb stem. It will be noted that as expected, the second melodic high tone does not have a host because there is no other mora for it to dock onto in monosyllabic verb stems. In variety B

the H remains floating and is eventually pruned hence it does not appear on the FM of the monomoraic syllables.

The last tense in this tone pattern where a H tone is linked to M2 and the final mora of the verb stem is the negative past conditional tense.

5.3.5.2 Negative past conditional tense

This tense refers to actions whose conditions were fulfilled in the past and are unlikely to recur. It is formed by prefixing the CM /nagá/ or optional /naá/ to the verb stem. The morphological structure is CM-NEG-(TM)-SM-VR-FM. Let us consider the data in (53) and also observe the tonal variations in the two varieties.

(53) Negative past conditional tense

Bisyllabic verb stems: H placed on M2 and FM

	variety A	underlying Forms	variety B	gloss
a.	nagáŋganínjuúwáá ‘if I didn’t hide’	</nagá-nkaní-N-juw-a/	nagáŋganínjuúwa	
b.	nagáŋganítúkuúndaá ‘if we didn’t accept’	</nagá-nkaní-tu-kund-a/>	naáŋganítúkuúnda	
c.	nagáŋganítúwéendaá ‘if we didn’t request’	</nagá-nkaní-tu-wend-a/>	nagáŋganítúwéenda	‘if
d.	nagáŋganítúkaátaá ‘if we didn’t cut’	</nagá-nkaní-tu-kat-a/>	nagáŋganítúkatá	‘if
e.	nagáŋganítúgoónáá ‘if we didn’t sleep’	</nagá-nkaní-tu-gon-a/>	nagáŋganítúgoná	

As shown in the above data, both the CM [nagá] and the NEG(TM) [ŋga-ní] are H-toned. The H on the NEG(TM) spreads to the SM. In both dialects, there are two underlying H tones. The first H goes to M2 of the verb stem which, for variety A with a long penult, falls on its second mora. This creates a rising tone which is prohibited in Ciyao in that environment. To conform to the contour tone constraint, this variety lengthens the final vowel and places the second underlying Melodic H on M2 of the bimoraic final vowel thus creating a rising intonation. On the other hand, the penultimate syllables in variety B are

short and therefore, toneless because the first underlying melodic H links with their final syllables, which happen to be the M2 of the verb stem. In this variety, the second Melodic H remains floating because it has no other mora to associate with since the M2 has already been assigned a high tone. Consequently, it gets pruned and is never realised phonetically. The tone pattern observed in (53) also occurs in monosyllabic and long verbs as seen below in (54).

(54) Negative past conditional tense – monosyllabic verbs: H placed on M2 only Longer verbs: H placed on M2 and FM

	variety A	underlying forms	variety B	gloss
a.	nagáŋganímbikánaá	</nagá-nganí-Ń-pikan-a/>	naáŋganímbikána	‘if I didn’t listen/hear’
b.	nagáŋganítúwulágaá	</nagá-nkaní-tu-wulag-a/>	nagáŋganítúwulága	‘if we didn’t kill’
c.	nagáŋganíndyaá	</nagá-nkaní-N-ly-a-a/>	nagáŋganíndya	‘if I didn’t eat’
d.	nagáŋganítúmwaá	</nagá-nkaní-tu-mw-a/>	nagáŋganítúmwa	‘if we didn’t drink’
e.	nagáŋganítúgwaá	</nagá-nkaní-tu-gw-a/>	nagáŋganítúgwa	‘if we didn’t fall’
f.	Nagáŋganíngungúlukaá	</nagá-nkaní-N-kunguluk-a/>	nagáŋganíngungúluka	if I didn’t chat’

Notice that in both dialects, the first Melodic H links with M2 in the longer verb stems and for variety A, the FM has been made bimoraic to create an environment for the second Melodic H to link with the second mora of the long vowel. This is to avoid associating the second Melodic H with a monomoraic FM which would result in two successive H tones in the final foot which is prohibited in long verbs in Ciyao as earlier stated in section 5.3.2.3. For variety B, which consistently does not allow H on FM, the second underlying Melodic H remains unlinked and, therefore, does not surface just like in (53) above. The long verb stems of variety A in (54) without long penultimate vowels present clear evidence that in this tense, there are two underlying Melodic H tones the first of which links with M2 and the second with the M2 of the bimoraic FM. The monosyllabic verb

stems in (54) show that in variety A, only the first Melodic H gets associated with M2 (the second mora of the bimoraic final vowel). The second remains floating and is, eventually, pruned. The monosyllabic verbs in variety B are interesting because they represent a case where both of the underlying Melodic H tones are not associated with any TBU (and hence do not appear anywhere on the verb stem) because of the constraint against H on the final mora of the verb stem.

To account for the forms in (54), in both varieties, we need the STEM (H) constraint so that all verb stems should have an H tone. We also need *ALIGN-L (HD), *ALIGN-R (HD) (the ant-alignment constraints). Other constraints are NORISE, FVL-H which obligates a vowel to be lengthened on the final vowel and then to link H, and PREFIX-H SPREAD which requires an H tone on the prefix to double to the following mora.

Since there are variations within NC, for Variety A, FVL-H will have to dominate NORISE for the best optimal output. The following is how the constraints are ranked: STEM-H » FVL-H » NORISE » *ALIGN-R(HD) » ALIGN-L(HD) » PREFIX-H SPREAD.

Unlike in variety A where the final mora of the bimoraic syllable is H-toned, in variety B, the final mora is low-toned and it is monosyllabic. The constraints will have to be re-ranked. Unlike in variety A where FVL-H dominates NORISE, in variety B, NORISE outranks FVL-H. The constraint ranking is as follows: STEM-H » NORISE » *ALIGN-R (HD) » FVL-H » *ALIGN-L (HD) » PREFIX-H SPREAD.

The tableau below in (55) evaluates the candidates in the two dialects.

(55) Evaluation of candidates

Variety A: linking H to M2 and FM (bimoraic)

/nagá-nka-tu-suum-a/	STEM-H	FVL-H	NORISE	*ALIGN-R (HD)	*ALIGN-L (HD)	PREFIX-H SPREAD
a) nagáŋgatu-suúma		*!	*!	*		*
b) nagáŋgatu-suúma		*!				*
⇒ c) nagáŋgatu-suúmaá				*	*	*
d) nagáŋgátu-suúma		*!	*!	*		

Variety B: Linking H to M2 only (FM - monomoraic)

/nagá-nka-tu-suum-a/	STEM-H	NORISE	*ALIGN-R (HD)	FVL-H	*ALIGN-L (HD)	PREFIX-H SPREAD
a) nagáŋgatu-suúma		*!	*!	*		*
⇒ b) nagáŋgatu-suúma				*		*
c) nagáŋgatu-suúmaá			*!			*
d) nagáŋgátu-suúma		*!	*!	*		

In the tableau in (55), dialect A, candidate (a) violates the highly ranked FVL-H and NORISE which require a final vowel to be lengthened, and a rising tone not to be followed by a H tone respectively. Candidate (b) is nonoptimal because it violates a highly ranked FVL-H. Candidate (d) is equally not optimal because it fatally violates highly ranked FVL-H and NORISE. It is candidate (c) which is optimal since it respects highly ranked constraints, FVL-H and NORISE.

In dialect B, constraints are re-ranked and with the re-ranking, candidates (a) and (d) are non-optimal because they violate both FVL-H and *ALIGN-R (HD). Candidates (c) is also non-optimal because it fatally violates *ALIGN-R (HD). Candidate (b) is a winner since it respects the highly ranked NORISE and *ALIGN-R (HD).

In our next section, we analyse the effects of object markers on tones in Namwera Ciyao.

5.4 Object Marker tonal effects in Namwera Ciyao tenses

In Chapter 3, we reviewed OMs as one of the factors that influence or contribute to tone patterns in Bantu languages. This section discusses the major effects of object markers (OMs) on tone assignment when they appear in various tenses in NC. It will show that the OM has an effect of (1) shifting H from M2 to M1; (2) shifting H from M1 to the macrostem, (3) shifting H from the final mora to the penult, M1 and/or M2, (4) introducing H in specific positions, (5) blocking H spreading into the macrostem, and (6) in some tenses the OM has no effect on H tone placement. But we should mention here that these OMs'

tonal patterns will not be accounted for because their effects on tone melodies fall within the tone patterns already accounted for (within OT) in the preceding section 5.3

In our next section, we analyse the effects of object markers on tones in Namwera Ciyao.

5.4.1 Tenses where OM shifts H from M2 to M1

One of the significant effects of the object marker in NC is that it shifts a high tone from the second mora to the first mora of the verb stem. This effect happens in the following tenses: the negative infinitive tense, affirmative present habitual, negative present habitual, affirmative present perfect and the affirmative past habitual. However, in the interest of brevity, we will use only two tenses for illustration. In all cases, we will first present verb stems without the OM and then those with OM to observe the effect that the OM has on H tone placement.

5.4.1.1 Negative infinitive

The placement of H in negative infinitives where object markers are involved varies depending on the length of the verb. As observed by Odden (1998) in Tanzanian Ciyao, when the OM is attached to short verb stems, the H tone shifts from M2 to M1, and it remains on M2 in long verb stems as in (56). The verbal structure is: NEG-(TM)-OM-VR-FV.

(56) **a. Monosyllabic and bisyllabic verb stems without OM: H placed on M2**

Surface forms	Underlying forms	Gloss
i. ngáwóná	</nká-wón-a/	‘not to see’
ii. ngáloómba	</nká-loomb-a/	‘not to marry’
iii. ngáwuúsyá	</nká-wuusy-a/	‘not to ask’
v. ngáleém̐ba	</nká-leemb-a/	‘not to write’
vi. ngálya	</nká-li-a/	‘not to eat’

b. Monosyllabic and bisyllabic verb stems with OM: H shifts from M2 to M1

Surface forms	Underlying forms	Gloss
i. ngám̐wóna	</nká-m̐-wón-a/	‘not to see him/her’

ii. ngámłóomba	</nká-m-loomb-a/	‘not to marry her’
iii. ngámwúusya	</nká-m-wuusy-a/	‘not to ask him/her’
iv. ngáciléma	</nká-ci-leemb-a/	‘not to write it’
v. ngácilyá	</nká-ci-ly-a/	‘not to eat it’

In short verbs in (56a & b), the NEG [ngá] which also functions as the TM is lexically H-toned. In the short verbs without OM in (56a), the H is linked to M2 except for the monosyllabic verb stem /-lya/ since it does not have a second mora. However, in (56b), the H tone is on M1 in all the verb stems. We argue that the H has shifted a mora to the left. The attachment of OM is what has influenced the shifting of H from M2 to M1.

(57) a. Trisyllabic and longer stems without OM: H placed on M2

Surface forms	Underlying forms	Gloss
i. ngáwugála	</nká-wugal-a/	‘not to close’
ii. ngáwulága	</nká-wulag-a/	‘not to kill’
iii. ngátéléka	<nká-telek-a/	‘not to cook’
iv. ngáwutúka	<nká-wutuk-a/	‘not to run’
v. ngájembécela	<nká-jembek-el-a/	‘not to wait’

b. Trisyllabic and longer stems with OM: H remains M2

Surface forms	Underlying forms	Gloss
i. ngáciwugála	</nká-ci-wugal-a/	‘not to close it’
ii. ngáciwulága	</nká-ci-wulag-a/	‘not to kill it’
iii. ngámtelécela	<nká-m-telek-el-a/	‘not to cook for him/her’
iv. ngámwutúčila	<nká-wutuk-il-a/	‘not to run for/after him/her’
v. ngámjembécela	<nká-m-sagamil-a/	‘not to wait for him/her’

Unlike in the short verbs in (56b) where the H shifts from M2 to M1, in the longer verb stems with OM in (57b), the attachment of the OM does not change the tone pattern. The H remains on M2. We follow (Odden 1998) proposal that H shifting only applies in monosyllabic or bisyllabic verb stems and not in trisyllabic or longer verb stems when the OM is attached. Note also that in (54biii-v), HTD fails to apply. This supports the proposal made in Tone Pattern III in section 5.3.4.4 that M2 H is sensitive to the floating H that would have been linked to the final mora such that the spreading of H would in principle create a successive forbidden 3-H pattern.

5.4.1.2 Affirmative present habitual

This tense shows that an action usually takes place in the present time. It is formed by prefixing the habitual marker /-kusa-/ to the verb stem. The tense has the morphological structure: SM-TM-OM-VR-FM. We present both the verb stems without OM and those with OM to illustrate the effect the OM has on H tones.

(58) a. Monosyllabic and bisyllabic verb stems without OM: H placed on M2

Surface forms: variety A	Underlying forms	Surface forms: variety B	Gloss
i. tókúsaáatawá	</tú-kúsa-taŵ-a/>	tókúsaatawá	'we build'
ii. ngúsááloómba	</ń-kúsa-loomb-a/>	ngúsiiloómba	'I marry'
iii. akúsááleémbe	</a-kúsa-leemb-a/>	akúsaaleémbe	's/he writes'
iv. akúsááliinga	</tú-kúsa-liing-a/>	akúsaaliinga	's/he tries'
v. ngúsááoná	</n-kúsa-on-a/>	ngúsaawoná	'I see'
vi. ngúsáályaága	</n-kúsa-ly-ag-a/>	ngúsaalyaága	'I eat'

For monosyllabic and bisyllabic verb stems without OM, the tense places H on M2. Let us observe the tone pattern with OM attached.

b. Monosyllabic and bisyllabic verb Stems with OM: H shifts from M2 to M1

Surface forms: variety A	Underlying forms	Surface forms: variety B	Gloss
i. tókúsaáajitáwá	</tú-kúsa-ji-taŵ-a/>	tókúsaajitáwá	we build it'
ii. ngúsíinalóomba	</ń-kúsi-na-loomba/>	ngúsiinalóomba	I marry her'
iii. akúsáaciléemba	</a-kúsa-ci-leemb-a/>	akúsaaciléemba	s/he writes it'
iv. akúsííwáliinga	</tú-kúsi-ŵa-liing-a/>	akúsííwáliinga	s/he tries him/her'
v. ngúsíínaóna	</nkú-si-na-on-a/>	ngúsiinawóna	I see her/him'
vi. ngúsááulyáaga	</nkú-sa-u-ly-ag-a/>	ngúsaaulýáaga	I eat it'

The SMs and the TM (kú-) in (58a-b) are underlyingly H-toned in both dialects. We earlier argued in section 6.4.3.2 that SM /a/ is underlyingly H-toned but that the rule of onsetless H delinking applied. The H-tone on the TM (/kú-/) doubles to /sá/ or /sí/ from which LS applies in variety A but not in Variety B. Unlike in the verb stems without OM where H is

placed on M2, the presence of OM in (58b) shifts the H tone from M2 to M1. With trisyllabic or longer verb stems, just like in negative infinitives, the H tone remains on M2 even when the OM is attached as in [túkúsááwugála] </tú-kúsa-wugal-a/> ‘we close’ or [túkúsááciwugála] </tú-kúsa-ci-wugal-a/> ‘we close it; [akúsááteléka] </akúsa-telek-a/> ‘s/he/they cook(s) or [akúsííwatelécela] </á-kúsi-wa-telék-el-a/> ‘s/he/they cook(s) for him/her’ and [mókúsáápopéla] </m-kúsa-popel-a/> ‘you pray’ or [mókúsíímupopélela] </m-kúsa-mu-popel-el-a/> ‘you pray for her/him’.

We should note that the same phenomenon where the H tone is placed on M2 and shifts to M1 when an OM is attached is also attested in the following tenses where only the shifting is illustrated without any further discussion:

(59) Negative present habitual, past habitual and present perfective

Tenses	surface forms without OM: H on M2	underlying forms	gloss
Negative present habitual	ŋgaŋgúsááwoná	/nka-ń-kúsa-on-a/	‘I do not see’
	ŋgatúkúsáátaŵá	/nka-tú-kúsa-taŵ-a/	‘we do not build’
Past habitual	asumísyeje	</a-sumisy-e-g-e/	‘s/he/they usually sold’
	alembíleje	</a-lemb-ile-g-e/	‘s/he/they usually wrote’
Present perfective	alinjíle	</a-ling-il-e/	‘s/he/they have/has tried (measured)’
	alembíle	</a-lemb-il-e/	‘s/he has written’

Tenses	surface forms with OM: H shifts from M2 to M1	underlying forms	gloss
Negative present habitual	ŋgaŋgúsíínawóna	</nka-ń-kúsii-na-on-a/	‘I do not see him/her/them’
	ŋgatúkúsáájítáŵa	</nka-tú-kúsa-ji-taŵ-a/	‘we do not build it’
Past habitual	Ayisúmisyeje	</a-yi-sumisy-e-g-e/	‘s/he/they usually sold them’
	Acilémbileje	/a-ci-lemb-ile-g-e/	‘s/he/they usually wrote it’

Present perfective	ŵaalínjile	<ŵa-a-ling-il-e/	‘s/he/they have/has tried’ him/her’
	acilémbile	</a-ci-lemb-il-e/	s/he has written it’

As was the case with long verb stems discussed earlier, in tenses shown in (59), the Melodic H remains on M2 both with and without OM as in [tuwugéele] / tu-wuga-il-l-e/ ‘we have closed’ and [tugawugéele] /tu-ga-wuga-il-l-e/ ‘we have closed them.’, [ateléčeje] </a-telek-e-g-e/ ‘s/he/they usually cooked’ or [aŵuteléčeje] ‘s/he usually booked it’ and [ŋgamkúsaawutúka] </nka-m-kúsaa-wutuk-a/> ‘you do not usually run’ or [ŋgamkúsii-mwaa-wutúcila] </nka-m-kúsii-mu-a-wutuk-ila/ ‘you do not run after her/him/them.

5.4.2 Tenses where OM shifts H from M1 to a macrostem

The second major effect of OM in NC, as in other Ciyao dialects (cf. Odden 1998 for Tanzanian Ciyao) is that it shifts the H tone from the first mora of the verb stem to the macrostem. This effect occurs in the following tenses: the negative present progressive, affirmative simple past and the affirmative past progressive tenses. As we did in the other tenses discussed above, we will use only two tenses for illustration to achieve brevity.

5.4.2.1 Negative present progressive tense

This is the first tense that shows an H tone shifting from M1 to a macrostem when an object marker is attached to a verb stem as shown in the examples below where the morphological structure is: NEG-SM-TM-OM-VR-FV/TM.

(60) a. Negative present progressive without OM: H placed on M1 and FM

Surface forms: variety A	underlying forms	surface forms: variety B	gloss
i. ŋgaŋgúlóómbelá	</nka-n-kú-loomb-el-a/>	ŋgaŋgúlóómbela	‘I am not marrying’
ii. ŋgatukúwúlagá	</nka-tu-kú-wugal-a/>	ŋgatukúwúlaga	‘we are not killing’
iii. ŋgatukútáwá	</nka-tu-kú-taŵ-a/>	ŋgatukútáwa	‘we are not building’
iv. ŋgaakúléembá	</nka-a-kú-leemb-a/>	ŋgaakúléemba	‘s/he/they (is/are) not writing’

b. Negative present progressive with OM: H shifts from M1 to OM

Surface forms: variety A	underlying forms	surface forms: variety B	gloss
i. ɲgaŋgŋááloombá	</nka-n-kú-a-loomb-a/>	ɲgaŋgŋááloomb a	'I am not marrying her'
ii. ɲgatukúyiwulagá	</nka-tu-kú-yi-wulag-a/>	ɲgatukúyiwulaga	'we are not killing them'
iii. ɲgatukújítawá	</nka-tu-kú-ji-taŋ-a/>	ɲgatukújítawá	'we are not building/tying it'
iv. ɲgaakúcíleembá	</nka-a-kú-ci-leemba- a/>	ɲgaakúcíleemba	's/he/they (is/are) not writing them'

The data in (60a) have H on M1 and FM which is a result of linking two underlying Melodic H tones. However, when OMs are attached in (60b), all the verb stems have no H on M1. Instead, it is the OM which is H-toned. This appears to contradict the earlier claim we made that in Ciyao OMs are generally underlyingly low-toned. Since there is no H tone on M1 but on OM, we claim that the presence of the OM has influenced the shifting of H to the left, and the H which was on M1 ends up being placed on the OM itself since it is the next mora.

5.4.2.2 Affirmative simple past

This is another tense in which the OM has the effect of shifting a high tone from M1 to a macrostem. The tense has the verbal structure: SM-TM-VR-FV/TM.

(61) a. Simple past without OM: H placed on M1 and FM

Surface forms	underlying forms	gloss
i. mŋwaaléembilé	</ŋwa-á-leemb-il-e/	'you wrote'
ii. naalóómbelé	</ni-á-loomb-el-e/	'I married her'
iii. twaatáwilé	</tu-á-taŋ-il-e/	'we tied/built it'
iv. ŋaalínjilé	</ŋwa-á-a-liing-il-e/	's/he/they tried'

b. Simple past with OM: H shifts from M1 to OM

Surface forms	underlying forms	gloss
i. mŋwaacíleembilé	</mu-á-ci-leemb-il-e/	's/he wrote it'
ii. naaáloombilé	</ni-á-a-loomb-il-e/	'I married her'

iii. twaajítawilé	</tu-á-ji-taŵ-il-e/	‘we tied/built it’
iv. ŵaaáliinjilé	</ŵa-á-a-liing-il-e/	‘s/he tried’

It can be observed in (61a-b) that the verb stems with and without the OM have low-toned SMs and TMs. As earlier argued, the TM loses its underlying H to respect the constraint that does not allow a rising tone to be followed by H. As previously argued (see section 5.3.2), the H tones on M1 and FM in the verb stems in (61a) are contributed by two underlying Melodic Hs that link to these positions, respectively, in this tense. And just like with the negative present progressive tense in (60b), OMs in (61b) appear with H tones while the H on M1 is lost. This is because the H which was on M1 has shifted to the OM, which is underlyingly low, thus making it high-toned. The same phenomenon where the H tone shifts from M1 to the OM occurs in the past progressive tense as illustrated in (62) below.

(62) a. Affirmative past progressive without OM: H placed on M1 and FM

Surface forms	underlying forms	gloss
i. naawónagá	</ni-á-onag-a/	‘I was seeing’
ii. twaawúgalagá	</tu-á-wulagag-a/	‘we were closing’

b. Affirmative past progressive with OM: H shifts from M1 to OM

Surface forms	underlying forms	gloss
i. naaáonagá	</ni-á-a-onag-a/	‘I was seeing him/her/them’
ii. twaagáwugalagá	</tu-á-ga-wulagag-a/	‘we were closing them’

5.4.3 Tenses where OM shifts H from FM to penult, M1 and/or M2

This is the third major effect of OM in NC that shifts H from the final mora of the verb stem to either the penult, M1 or M2. The tenses where this happens in NC are the negative simple past, the affirmative near future and the affirmative imperative tense.

5.4.3.1 Negative simple past

The forms given in (63) below show that a high tone shifts from FM to the penult of the verb stem when an object marker is attached. The verb stem has the morphological structure: NEG-(TM)-SM-OM-VR-FV.

(63) a. Negative simple past without OM: H placed on FM

Surface forms	underlying forms	gloss
i. nganimbugalá	</nkani-n-wugal-a/	‘I didn’t close’
ii. nganituwulagá	</nkani-tu-wulag-a/	‘we didn’t kill’
iii. nganaateleká	</nkana-a-telek-a/	‘s/h/e/they didn’t cook’
iv. nganitutaŵá	</nkani-tu-taw-a/	‘we didn’t build’
v. nganaaleembá	</nkana-a-leemb-a/	‘they didn’t write’

b. Negative simple past with OM: H shifts from FM to penult

Surface forms	underlying forms	gloss
i. nganingawugála	</nkani-n-ga-wugal-a/	‘I didn’t close them’
ii. nganituliwulága	</nkani-tu-li-wulag-a/	‘we did not kill/slaughter it’
iii. nganaaŵuteléka	</nkana-a-ŵu-telek-a/	‘s/he/they did not cook it’
iv. nganituŵitáŵa	</nkani-tu-ŵi-taw-a/	‘we didn’t build it’
v. nganaacileémba	</nkana-a-ci-leemb-a/	‘s/he/they did not write it’

As can be noted, the Melodic H tone assigned to the final mora by the TM in the forms in (63a) appears on the penult mora in (63b) when object markers are attached. This is due to the tone-shifting effect of the OMs.

5.4.3.2 Affirmative near future

In the affirmative near future tense, we note that there is a major H tone shift introduced by OMs which is different from the other cases discussed previously where a high tone shifted locally from M2 to M1, M1 to the OM and from FM to the penult. Here, the H tone shifts from the final mora to the first mora of the verb stem. This is illustrated below where the verb stems have the morphological shape: TM-SM-OM-VR-FV.

(64) a. Affirmative near future without OM: H placed on FM

Surface forms	underlying forms	gloss
i. shítúwulajé	</shí-tu-wulag-e/	‘we will kill/slaughter’
ii. shítúwugalé	</shí-tu-wugal-a/	‘we will close’
iii. shítútelecé	</shí-tu-telek-e/	‘we will cook’
iv. túwugalé	</shí-tu-wugal-e/	‘we will close’
v. tútawé	</shí-tu-taw-e/	‘we will tie/build’

b. Affirmative Near Future with OM: H shifts from FM to M1

Surface forms	underlying forms	gloss
i. shítúciwúláje	</shí-tu-ci-wulag-e/	‘we will kill/slaughter it’
ii. shítúgawúgále	</shí-tu-ga-wugal-e/	‘we will close them’
iii. shítújítéléče	</shí-tu-ji-telek-e/	‘we will cook it’
iv. túgawúgále	</shí-tu-ga-wugal-e/	‘we will close them’
v. tújítáwe	</shí-tu-ji-taw-e/	‘we will tie/build it’

In the forms above, the TM /shí-/ is lexically H toned and the high tone doubles to the SM. All OMs, as expected, are underlyingly toneless in (64b). The near future verb stems without OM in (64a) have a Melodic H on the FM which is assigned by the tense while those with OMs appear with H on M1 but without the melodic high tone on the final mora. Clearly, it must be the addition of the OM to the verb stems that has brought about this drastic effect of shifting the H tone from FM to M1. Notice that when the shifting occurs, the H doubles to the next mora wherever appropriate, notably in (64bi-iii) above. Odden (1998) observed that a similar phenomenon occurs in Tanzanian Ciyao in the affirmative near future forms when an object marker is added.

5.4.3.3 Affirmative imperative tense

The affirmative imperative tense provides a case where an OM triggers shifting of the H tone from FM to either M1 or M2 depending on the length of the verb stems. For short verbs, the H shifts from FM to M1 whilst in long verbs the H tone shifts from FM to M2. The verb stems have the morphological structure: SM-OM-VR-FV(TM) or OM-SM-VR-FV(TM). See the data in (65) below without OM.

(65) Affirmative imperative without OM: H placed on FM

Surface forms: variety A	underlying forms	surface forms: variety B	gloss
a. m̌.-kologanyé	</mu-kologany-e/	m̌.-kologanye	‘stir’
b. m̌.-jiganyé	</ mu-jigany-e/	m̌.-jiganye	‘teach’
c. m̌.-taŵé	</ mu-taŵ-e/	m̌.-taŵe	‘build/tie’
d. m̌.-ŵujé	</ mu-ŵug-e/	m̌.-ŵuje	‘cook it’
e. m̌.-lyé	</ mu-mŵ-e/	m̌.-lye	‘drink’
f. m̌.-ŵé	</ mu-ŵ-e/	m̌.-ŵe	‘die’

The data in (65) show that the SM is H-toned. As Ngunga (1997) observes, the tense assigns H to SM. Earlier, we discussed that the prefix H does not double to M1 in other dialects of Ciyao. This is the same with NC data above where the prefix H (ḿ) fails to spread to M1 of the verb stem. Again, the tense assigns a Melodic H on FM in variety A irrespective of the length of the verb stem. In variety B, like in Tanzanian Ciyao (Odden 1998), the Melodic H is not linked to FM thus, effecting dialectical variation.

We now look at the tone melody when an object marker is attached to the verb stem.

(66) Affirmative imperative tense

Monosyllabic and Bisyllabic Verb Stems with OM: H shifts from FM to M1

Surface forms: variety A	underlying forms	surface forms: variety B	gloss
a. ḿ.-ji-táw̃e	</ mu-ji-taŵ-e/>	ḿ.-jitáw̃e	‘build it’
b. ḿ.-wu-ŵúje	</ mu-wu-ŵug-e/>	ḿ.-wuŵúje	‘cook it’
c. mu ḿ.-lóle	</mu- mu-lol-e/>	mu ḿ.-lóle	‘see him/her’
d. ḿ.-ci-léembe	</ mu-ci-leemb-e/>	ḿ.-ci-léembe	‘write it’
e. ḿ.-ŵu-lyé	</mu-ŵu-ly-e/>	ḿ.-ŵulyé	‘eat it’
f. ḿ.-ŵu-mwé	</ mu-ŵu-mŵ-e/>	ḿ.-ŵumwé	‘drink it’

As we can see in the above data in (66), there is H on M1 and not on FM as is the case with the affirmative imperative verbs without OM in (65). There are two possible explanations for having H on M1. The first is to claim that the OM has triggered the shifting of H from the FM (where the tense initially assigned H) one mora to the left (penult). This account would be plausible only in CVCV verb stems like in (66a-c) but not in the monosyllabic verb stems in (66e-f) and CVVCV in (66d). If shifting H one mora to the left was a better way of accounting for H on M1, we would expect the H in the monosyllabic verb stems without OM like [ḿ.-lyé] and [ḿ.-ŵé] to shift to the left and thus, the OM itself would have been H-toned. But this is not the case. These forms surface as [ḿ.-ŵu-lyé] and [ḿ.-ŵumwé] not *[ḿ.-ŵú-lye] and [ḿ.-ŵúmŵe].

The second argument that we adopt is to claim that the attachment of the OM has shifted H from FM to M1 and not just one mora to the left as would be the case with the first

possible account for the tone shift. The argument works in all verbs above where FM is toneless (with OM attached) while M1 surfaces with H tone.

(67) Long verb stems with OM: H shifts from FM to M2

Surface forms	underlying forms	glossing
a. <i>ń-li-kológanye</i>	</mu-li-kologany-e/>	‘stir it’
b. <i>ń.-ci-ǰigánye</i>	</ mu-ci-ǰi-gany-e/>	‘teach it (e.g. dog)’
c. <i>ń-ci-wuláje</i>	</mu-ci-wulag-e/>	‘kill it’
d. <i>ń-liwugále</i>	</mu-li-wugal-e/>	‘close it’
e. <i>ń-ci-wutúcile</i>	</mu-ci-wutuk-il-e/>	‘run after it’
f. <i>ń-cisagúle</i>	</mu-ci-sagul-e/>	‘select it’

Contrary to the short verbs in (66) where the OM shifted H to M1, the long verbs in (67) above have H on M2 when an object marker is attached to them. This proves that the size of the verb stem matters in the determination of where the OM shifts the H tone. We note that the shifted M2H does not spread to the next penult mora in (67a and e) as would normally be expected. We argue that a H tone shifted by the OM to M2 does not spread to the next mora.

5.4.4 Tenses where OM assigns H to specific positions

In almost all the other cases discussed above, we have argued and provided evidence that an object marker shifts a high tone from one position in the verb stem to another. We will now show cases where the OM assigns H to various positions in the verb stem particularly to M1 or M2 depending on the tense as well as the length of the verb stems. We will demonstrate that the OM introduces H to M1 in short verbs but to M2 in long verbs. This effect happens in the following tenses: the negative imperative, affirmative remote future and the affirmative future progressive tenses. For the sake of brevity, we will use only one tense to illustrate this OM effect.

5.4.4.1 Affirmative remote future

This is one of the tenses that illustrate the fact that an OM assigns H to either M1 (short verb stems) or M2 (long verb stems). The verb structure has the morphological shape: (TM)-SM-TM-(OM)-VR-FV.

(68) **Affirmative remote future without OM: H placed on FM**

Surface forms	underlying forms	gloss
a. cinjílóombelá	</ci-n-cí-loomb-el-a/	‘I will marry’
b. caacíleembá	</ci-a-cí-leemb-a/	‘s/he/they will write’
c. caacíliingá	</ci-a-cí-liing-a/	‘s/he/they will try/measure’
d. citútaŵá	</ci-tú-ci-taw-a/	‘we will build’
e. cinjílólá	</ci-n-cí-lol-a/	‘I will see’

(69) **Affirmative remote future with OM: H introduced on M1**

Surface forms	underlying forms	gloss
a. cinjálóómbá	</ci-n-cí-a-loomb-a/	‘I will marry her’
b. caacíléémbá	</ci-a-cí-ci-leemb-a/	‘s/he/they will write it’
c. caacílííngá	</ci-a-ci-a-liing-a/	‘s/he/they will try (measure) him/her/them’
d. tucíjitáŵá	</ci-tu-cí-ji-taŵ-a/	‘we will tie/build it’
e. cinjálólá	</ci-n-cí-a-lol-a/	‘I will see him/her/them’

In the data in (68-69), the H on the tense prefix [cí] or [-jí-] is a doubled H, and the H on FM, is assigned by the Melodic H. Note that the bisyllabic verb stems without OM in (68) have only one H which appears on FM while those with OMs have another H tone on M1 which doubles, where appropriate, as in (69a-c). The extra H on M1 must have been introduced by the OMs since this tense only adds one Melodic H to the FM. In long verb stems, the H tone introduced by the OM appears on M2, as was also the case in (67). Thus, we have forms like [cimcíawutúcilá] /ci-m-cí-a-wutuk-il-a/ ‘you will run after her/him/them’ and [caacíatelécelá] /ci-a-cí-a-telek-el-a/ ‘s/he/they will cook for her/him/them’. Notice again that the H assigned by the OM to M2 does not double in these cases. This is because doubling would yield a sequence of 3-H tones as also shown in sections 5.3.4.4 and 5.4.1.1.

The same tonal effect where a high tone is assigned either on M1 or M2 when an OM is attached also happens in the tenses given below where we do not delve into details since the issue has already been discussed in the preceding tense.

(70) **Negative imperative and affirmative future progressive without OM:
H placed on FM**

Tenses	surface forms	underlying forms	glossing
Negative imperative	ń.-katawá	</mu-ka-taw-a/	‘do not build’
	ń.-ka-wulagá	</mu-ka-wulag-a/	‘do not kill’
Affirmative future progressive	cací-leembagá	</ci-a-cí-leemb-ag-a/	‘s/he/they will be writing’
	caací-telekagá	</ci-a-cí-telek-ag-a/	‘s/he/they will be cooking’

The H tone is placed on FM in both short and long verb stems.

**(71) Negative imperative tense and affirmative future progressive with OM:
H introduced on M1 (short verb stem) or M2 (long verb stems)**

Tenses	surface forms	underlying forms	gloss
Negative imperative	ń.-kajitáwá	</mu-ka-ji-taw-a/	‘do not build it’
	ṁka-ci-léembá	</mu-ka-ci-leemb-a/>	‘do not write it’
Affirmative future progressive	činjulyáaga	</či-n-čí-u-li-ag-a>	‘I will be eating it’
	čaačáatelécelagá	</či-a-cí-a-telek-el-ag-a/>	‘s/he/they will be cooking for them’

As it can be noted, the OM has introduced H on M1 in short verb stems and M2 in long verb stems. But in the negative imperative, OM only introduces a H tone in short verb stems while in long verb stems OM shifts H from FM to M2 as in [ń.-kačiwulága] </mu-ka-či-wulag-a/> ‘do not kill it’ where the H disappears from the final mora of the verb stem.

5.4.5 Tenses where OM blocks H spreading

In some tenses, the attachment of an object marker prevents a high tone from spreading either into the macrostem or to an adjacent mora even when the conditions for tone doubling are satisfied. We will note that in the tenses where this happens, the blocked H tone is the one that is introduced in the verb stem domain by an object marker either on M1 (for short verb stems) or M2 (for longer verb stems). We present a few examples to illustrate this in the next sections.

5.4.5.1 Negative present perfective with OM: Blocking HTD

In the negative present perfective tense, a high tone introduced by an object marker is prevented from spreading to the next mora as seen in the examples below:

(72) Negative present perfective without OM: H placed on M2

Surface forms	underlying forms	gloss
a. ŋganítúwugála	</nka-ní-tú-wugal-a/	‘we haven’t closed’
b. ŋganítúwulága	</nka-ní-tú-wulag-a/	‘we haven’t killed’
c. ŋganítútawá	</nka-ní-tú-taw-a/	‘we haven’t tied/built’
d. ŋganááleémba	</nka-ní-á-leemb-a/	‘s/he/they has/haven’t written’
e. ŋganááliínga	</nka-ní-á-liing-a/	‘s/he/they has/haven’t tried’
f. ŋganíndya	</nka-ní-ń-ly-a/	‘I haven’t eaten’

The NEG (ŋgani) and SMs (tú, á, ń) are lexically H toned. The Melodic H is assigned to M2 except in the monosyllabic verb stem in (72f) which is toneless because it does not have a second mora for H to link to. Note that the H on SM does not spread to M1 because, as shown in the preceding chapter, Ciyao does not allow a prefix H to double to M1 of the verb stem. Let us now consider cases where the verb stems above appear with OMs.

(73) a. Bysllabic verbs with OM: H introduced on M1 and does not spread

Surface forms	underlying forms	gloss
i. ŋganítújitáwa	</nkaní-tú-ji-taw-a/	‘we haven’t tied/built it’
ii. ŋganínaaóna	</nkaní-ní-a-on-a/	‘I haven’t seen hin/her/them’
iii. ŋganáacíleémba	</nkaní-á-á-ci-leemb-a/	‘s/he hasn’t written it’

In the above data in (73a), OMs are low-toned. We stated in (72) that SMs (tú, á, ń) are lexically H-toned. However, the H on SM fails to spread to the OM. We argue that the OM is blocking the spreading of H to OM itself. In (73ai-ii), HTD fails to apply to respect the non-finality constraint that prohibits the spreading of H to the final mora. In (70aiii), HTD does not spread since, as we argued earlier in section 5.3.1.1, the M1 H of the long penult does not double in Ciyao when the final mora is low toned.

b. Long verb stems with OM: H placed on M2

Surface forms	underlying forms	gloss
i. ŋganítúyiwugála	</nka-ní-tú-yi-wugal-a/	‘we haven’t closed them’

ii. ṅganítúciwulága	</nka-ní-tú-ci-wulag-a/	‘we haven’t killed it’
iii. ṅganíwáatelécela	</nka-ní-ŵí-a-telek-el-a/	‘s/he/they haven’t cooked for him/her/them’
iv. ṅganíwáawutúcila	</nka-ní- ŵí-a-wutuk-il-a/	‘s/he hasn’t run after her/him/them’

In the long verb stems, M2 H does not spread to the next mora in (73biii-iv) although the conditions for HTD are met. This further proves that the presence of the OM blocks the spreading of H. Briefly highlighted below are the affirmative remote future and affirmative imperative tenses that depict similar tone blocking effects.

(74) Verb stems without OM: H placed on FM

Tenses	surface forms	underlying forms	gloss
Affirmative imperative	ṁ.-leembé	</ mu-leemb-e/>	‘write’
	ṁ-kologanyé	</mu-kologany-e/>	‘stir’
Affirmative remote future	cinjílolá	</ci-n-cí-lol-a/	‘I will see’
	tucípopelá	</ci-tú-ci-popel-a/	‘we will pray’

In the verb stems above, the Melodic H tone is on FM in both short and long verb stems.

(75) Verb stems with OM: Blocking HTD

Tenses	surface forms	underlying forms	gloss
Affirmative imperative	ṁ.-ciléembe	</ mu-ci-leemb-e/>	‘write it’
	ṁ-likológanye	</mu-li-kologany-e/>	‘stir it’
Affirmative remote future	tucímpopélela	</ci-tú-mu-popel-el-a/	‘we will pray for him/her’

The OM introduces H on M1 in short verb stems and M2 in long verb stems. Notice that the H fails to double to the next mora. This must be due to the presence of the OM since the conditions for spreading are satisfied.

5.4.6 Tenses with no OM effect on H tone placement

In some NC tenses, for example, the affirmative present progressive, negative remote future, negative future progressive and negative past progressive object markers do not have any effect on H tone assignment. That is, whether an OM is attached or not, the tonal pattern remains the same. The Melodic H tone does not shift nor does any high tone get

introduced on the verb stem because of the presence of the object marker. We will illustrate this using only one of these tenses for the sake of space.

5.4.6.1 Affirmative present progressive

This is one of the tenses where object markers have no tonal effects. We illustrate this with the examples below where the verb stems have the morphological structure: SM-TM-(OM)-VR-FV.

(76) Affirmative present progressive without OM: H placed on M1

Surface forms	underlying forms	gloss
a. m̀kúwútúka	</m̀-ku-wutuk-a/	‘you are running’
b. túkúwúlága	</tú-ku-wulag-a/	‘we are killing’
c. ákútéléka	</á-ku-telek-a/>	‘s/he is cooking’
d. ngúpócéla	</n̄-ku-pok-el-a/>	‘I am receiving’

In the verb stems in (76) above, the Melodic H is placed on M1 and spreads to the next mora as the conditions are met. Let us consider the tone melody in (77) where the OM is attached to the verb stems.

(77) Affirmative present progressive with OM: H remains on M1

Surface forms	underlying forms	gloss
a. m̀kwáawútúcila	</m̀-ku-a-wutuk-il-a/	‘you are running for (after) her/him/them’
b. túkúciwúlága	</tú-ku-ci-wulag-a/	‘we are killing it’
c. akúatélécela	</á-ku-a-telek-el-a/	‘s/he is cooking for him/her/them’
d. ngwáapócélela	</n̄-ku-a-pokel-el-a/	‘I am receiving for him/her/them’

This similarity in tone melody between the verb stems with and without OMs indicates that the OM does not affect H tone placement.

The non-effect of OMs on H tone placement is also evident in other tenses, and these are briefly illustrated below. The verb stem has the following morphological structure: NEG-(TM)-SM-VR-FV (-cont. ga).

(78) Verb stems without OM: H placed on M1

Tenses	surface forms	underlying forms	gloss
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Negative remote future	ngasááléemba	</nkasá-a-leemb-a/	‘s/he/they will not write’
	ngasítúwúgála	</nkasí-tu-wugal-a/	‘we will not close’
Negative future progressive	ngasítútáwága	</nkasí-tu-taŵág-a/	‘we will not be building’
	ngasítúwúlágaga	</nkasí-tu-wulag-ag-a/	‘we will not be killing/ slaughtering ’

The NEG(TM) /nkasí-/ is H-toned underlyingly. The NEG(TM) H doubles to the SM. As it can be noted in the data without OM in (78), a H tone is placed on M1 from where it doubles under appropriate conditions.

The tone melody remains the same even when OM's are attached to the verb stems as shown in (79) below where the structure is: NEG-(TM)-SM-OM-VR-FV.

(79) Verb stems with OM: H remains on M1

Tenses	surface forms	underlying forms	gloss
Negative remote future	ngasáácíléemba	</nkasá-a-cí-leemb-a/	‘s/he/they will not write it’
	ngasítúgáwúgála	</nkasí-tu-gá-wugal-a/	‘we will not close them’
Negative future progressive	ngasítújítáwága	</nkasí-tu-jí-taŵág-a/	‘we will not be building it
	ngasítúciwúlágaga	</nkasí-tu-cí-wulag-ag-a/	‘we will not be killing/ slaughtering it’

The negative past progressive below has the verb structure: NEG-(TM)-SM-(OM)-VR-FV.

(80) Negative past progressive: H placed on M2

Tenses	surface forms	underlying forms	gloss
Past progressive without OM	nganaaleémbaga	< /nkani-a-leem-ag-a/	‘s/he was not writing it’
	nganituwugálaga	</nkani-tu-wugal-ag-a/	‘we were not closing’
Past progressive with OM	nganaacileémbaga	< /nkani-a-ci-leem-ag-a/	‘s/he was not writing it’
	nganituyiwugálaga	</nkani-tu-yi-wugal-ag-a/	‘we were not closing them’

As it can be seen above, the tone melody in the tenses is the same regardless of whether an OM is attached to the verb or not. This shows that in this tense, and others discussed in this section 6.5.6 the OM has no effect on tone assignment.

5.5 Conclusion

In this chapter, we have discussed the major properties of tone patterns in Namwera Ciyao. These involve tenses that assign a grammatical (Melodic) H tone to different positions in the verb stem notably, the following: stem-initial mora; second mora; word final mora; stem-initial and word final mora, and the second mora and word final mora. The chapter has shown that the application of general tone rules such as High Tone Doubling and/or High Tone Shifting obscures Melodic and lexical H tones; the verb stem length affects tone realisation such that most short verb stems have a grammatical H assigned to M1 and it doubles where conditions are satisfied. In long verb stems a Melodic H is assigned to M2 and the H does not double. The chapter has also shown that OMs have effects on tone in Namwera Ciyao such as: shifting H from M2 to M1; M1 to the macrostem; shifting the final mora to the penult, M1 and/or M2; introducing H in specific positions; blocking H spreading into the macrostem, and in some tenses the OM has no effect on H tone placement.

The chapter has also demonstrated how Optimality Theory has accounted for various generalizations in NC verbal tone analysis. Different phenomena such as the spreading of a high tone rightward, the shifting of the high tone leftward and the failure of the H tone to spread if that spreading would lead to having adjacent H tones in violation of the OCP. Most importantly, OT has shown that the re-ranking of constraints accounts for the dialectal differences encountered in Namwera Ciyao between varieties A and B.

CHAPTER 6

SUMMARY AND CONCLUSIONS

6.1. Introduction

The aim of the study was to analyse tonal patterns in the nominal and verbal systems of the Namwera Ciyao dialect, a Malawian Bantu language. This chapter provides a summary, conclusions of the study, and areas for further research.

6.2 Summary

The thesis has been presented in five chapters. Chapter 1 provided an introduction and it includes the background, problem statement, and objectives of the study. Chapter 2 discussed the methodology used by the study: data was collected from six native speakers of Namwera Ciyao using structured interview schedule.

Chapter 3 reviewed the literature and proposed the adoption of the framework of Optimality Theory (OT). OT was adopted as it was observed that it accounted for both a single dialectal tonal system and dialectal tonal variations in Bantu languages.

Chapter 4 detailed the analysis of the nominal tone system of Namwera Ciyao whose generalisations were formalized using the Optimality Theory. The chapter first presented and discussed the findings on nominal tone melodies in Namwera Ciyao. Afterwards, it discussed noun classes, possessives and demonstratives in Namwera Ciyao. Finally, noun phrases were analysed and accounted for within OT. The noun phrases comprised several combinations: a noun + possessive; a noun + possessive + adjective; a noun + demonstrative, and a noun + adjective.

Chapter 5 extensively discussed the major properties of the verb tone patterns in Namwera Ciyao. Five major patterns were found, analysed and accounted for under the framework

of the Optimality Theory. The patterns involve tenses that assign a grammatical H tone to M1 only, M1 and FM, FM only, M2 only, and M2 and FM. In all the analyses, it was found that apart from the underlying H, tone melodies in all of these major tone patterns are mainly contributed by at least one of the following factors: Tense/Apect/Mood (TAMs), mora counting, size or shape of the verb stem, object markers and general tone rules.

6.3 Conclusions

This study has provided a comprehensive analysis of the tonal dynamics within the Namwera dialect of Ciyao, revealing significant linguistic differences and dynamic interaction of tonal patterns influenced by several factors including syntactic structure and morphological considerations.

One of the primary contributions of this research is the demonstration that Namwera Ciyao exhibits a high degree of dialectal varieties each with its distinct tonal characteristics. These variations are observed not only in tonal realisations but also in syntactic structures, such as the use of demonstratives and possessives, and in the application of tone doubling and shifting. In the syntactic structures, one variety of Namwera Ciyao features a demonstrative-noun-demonstrative pattern, while another variety favours a simple noun-demonstrative structure. This difference in syntactic structure enhances the understanding of how tone and syntactic constructions interact in the Namwera Ciyao, and in turn attaining the full scope of tone in the dialect.

The analysis of demonstratives and possessives has further illustrated the dialectal diversity within Namwera Ciyao, revealing contrasting tonal behaviours such as tone deletion, tone doubling and tone shifting. One variety prefers high tone doubling to tone shifting or tone deletion to tone shifting and vice versa, which contribute to the dialect's rich tonal system. This variation in Namwera Ciyao dialect underscores the importance of recognizing dialectal varieties within a language, and thus challenges the notion of a monolithic or holistic tonal system, an issue which was observed in this thesis' problem statement, and highlights the need for further investigation into the internal diversity of Bantu languages.

In verbal tonology, the study identified five major stem-tone patterns: H on M1 only; H on M1 and FM; H on FM only; H on M2 only; H on M2 and FM. The findings in Namwera

Ciyao surpass the four stem-tone patterns that Hyman and Ngunga (1994, p. 35) found in Ciyao in general: H on M1; H on FV; H on M2; No H on verb stem. While Odden (1998, p. 276-278) observes five stem-tone patterns in Tanzanian Ciyao just like in Namwera dialect of Ciyao, the two differ in some patterns. Tanzanian Ciyao has H on V1, H on V2 and H on FV similar to NC. But Namwera Ciyao has H on both M1 and FM; H on M2 and FM but Tanzanian Ciyao reveals H on both V1 and V2, and No H on the verb stem. The identification of these major tonal patterns in the verb stem in Namwera Ciyao underscores the precision with which tonal melodies are assigned to specific morae, and this variation provides valuable data for future research into the tonal typologies of other languages within the Bantu family. Furthermore, the study's identification of the melodic H, which departs from the regular Ciyao pattern by not being realised on the final mora of the verb stem, provides an important perspective to the understanding of tonal systems within the Ciyao language family and further highlights the distinctiveness of the tonal structure of Namwera Ciyao.

In conditionals, the dialect reveals two alternative tonal patterns: 1) it is either to have a lengthened final vowel and then to link a melodic H on its second and not first mora just to guarantee a falling contour on the penult is followed by a low tone, or 2) to have a monomoraic final vowel with no melodic H tone linkage. This variation reveals the flexibility of the Namwera Ciyao dialect in tonal realisation, and further emphasises its distinctive nature within the broader Ciyao language group.

The results suggest that the interaction of Tense/Aspect/Mood, mora counting, verb stem shape, object markers, and general tonal rules significantly influence tonal patterns, contributing to the flexible and adaptable nature of Namwera Ciyao's tonal system. The study found several effects of object markers on tone in Namwera Ciyao, the findings that almost no literature in Ciyao and other Bantu languages have revealed. Object markers have been found to play a critical role in tone movement across the verb stem with their presence causing shifts in the positioning of H tone across different morae of the verb. It was found that objective markers have six effects on tone patterns in Namwera Ciyao: (1) shifting H from M2 to M1; (2) shifting H from M1 to the macrostem, (3) shifting H from the final mora to the penult, M1 and/or M2, (4) introducing H in specific positions, (5)

blocking H spreading into the macrostem, and (6) having no effect on H tone placement. The object marker's effect on tone melodies increases the complexity of tone, and thus adding depth to the understanding of tonal behaviour in Bantu languages.

The study also demonstrates the relevance of Optimality Theory in accounting for the observed tonal variations and explain phenomena such as the docking of the melodic H tone. New constraints were proposed to fully explain those phenomena. The phenomenon in Namwera Ciyao is more insightful through constraints ranking and re-ranking. The proposed constraints were: Bimoraic Final Vowel H (BFV-H) also referred to as Final Vowel Lengthening H (FVL-H) that requires H to be linked to the second mora of the long final vowel; Possessive H (POSS-H) which demands an H tone to be linked to the possessive marker, and DEM-finH which obligates a demonstrative marker to surface with a H tone on the final mora. The introduction of new constraints to account for tonal variations underscores the complexity and adaptability of this dialect.

In conclusion, the findings of this thesis make a significant contribution to the field of tonal phonology. The detailed account of the tonal patterns within the Namwera dialect offers new insights into the mechanisms of tonal systems in Bantu languages. This research paves the way for further investigations into the tonal systems of other Ciyao dialects, as well as Bantu languages in general, highlighting the relationship between syntax, morphology, and phonology in shaping tonal systems. The variations observed in the tonal patterns of Namwera Ciyao not only expands the theoretical framework of Optimality Theory but also open opportunities for future comparative studies within the Ciyao dialect continuum and the broader Bantu language family and their impact on linguistics.

6.4 Recommendations

Given the limitations of time and space in the present study, future research is recommended on the examination of the verbal tone patterns in affirmative present perfect progressive and past perfect progressive tenses in Namwera Ciyao together with their negative forms. These tenses and aspects were not explored but would expose similar or distinct tone patterns.

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APPENDICES

Appendix I: Data transcription of Namwera Ciyao

NAMWERA CIYAO NOUNS

apwaáŋga	‘young brother’
angáaŋga	‘grandparent’
akwéegwe	‘mother-in-law’
waandú	‘people’
baába	‘father’
acínááŋgoló	‘parents’
maáma	‘mother’
mweénye	‘chief’
líísó	‘eye’
ligaasá	‘hand’
liwúpá	‘bone’
liwíwi	‘ear’
myaási	‘blood’
líínó	‘tooth’
méénó	‘teeth’
mbwá	‘dog’
kalúunga	‘hare’
likoswe	‘rat’
cijuní	‘bird’
mbúsí	‘goat’
lisíimba	‘lion’
ŋg'oombé	‘cow’
liwáasa	‘family’
ngoópe	‘face’
lusajó	‘foot’
luwúumbo/wúumbo	‘hair’ (sg.)/hair (pl.)’
liluungó	‘knee’
mgoongó	‘backbone’
lijóká	‘snake’
ŋgúkú/ŋgúku	‘chicken’
ŋguúnda	‘dove’
sóomba	‘fish’
lijaní	‘monkey/baboon’
cilááŋgó/ilááŋgó	‘livestock (sg.)/(pl.)’
lijelá/majelá	‘hoe/hoes’
lipúpa	‘wall’
kwináání	‘heaven/sky’
méésí	‘water’
mawútá	‘fats/oil’
malówé	‘words’
njété	‘salt’

mláatu	‘bridge’
luteénje	‘fence’
ṅguwó	‘cloth’
ugalí	‘hard porridge’
lipapáaya	‘pawpaw’
lituúmbi	‘hill/mountain’
liwú	‘ashes’
manyasí	‘grass’
nyuúmba	‘house’

NAMWERA CIYAO NOUN PHRASES

nyuumbá syeenu	‘your houses’
majuumbá geenu	‘your houses’
nyuumbá jeetu	‘our house’
majuumbá geetu	‘our houses’
nyuumbá syeetu	‘our houses’
nyuumbá jaawo	‘their house’
nyuumbá syaawo	‘their houses’
majuumbá gaawo	‘their houses’
malajā gáaṅgú/gáaṅgu	‘my shirt(s)’
malaja géenú/géenu	‘your shirt(s)’
malaja géetú/géetu	‘our shirt(s)’
lugomo lwáaṅgú/lwáaṅgu	‘my lip’
lugomo lwéenu	‘your lip’
ṅgomo syéetu	‘our lips’
ṅgomo syéenu	‘your lips’
cindu céenu	‘your thing’
yindu yéenu	‘your things’
cipulá ceenu	‘your knife’
yipulá yeenu	‘your knives’
liwágó lyéenu	‘your axe’
liwágó lyéetu	‘our axe’
liwágó lyáawo	‘their axe’
mawágó géenu	‘our axes’

DEMONSTRATIVES

ajú	‘this’	ájo	‘that’
awá	‘these’	áwo	‘those’
aú	‘this’	áwo	‘that’
ají	‘these’	ájo	‘those’
ají	‘this’	ájo	‘that’
así	‘these’	áyo	‘those’
ací	‘this’	áco	‘that’
ayí	‘these’	áyo	‘those’
alí	‘this’	áyo	‘that’
agá	‘these’	ágo	‘those’

alú	‘this’	álo	‘that’
así	‘these’	ásyó	‘those’
aká	‘this’	áko	‘that’
atú	‘these’	áto	‘those’

NAMWERA CIYAO ADVERBS

lijúusi	‘two days ago’
liisó	‘yesterday’
leélo	‘today’
muúsi	‘noon’
malaáwî	‘tomorrow’
liguló	‘afternoon’
ciló	‘evening/night’
kundaŵindaŵipé	‘early in the morning’

AFFIRMATIVE INFINITIVE VERBS

kŵííwá	‘to steal’
kúúwá	‘to hide’
kŵííká	‘to come/arrive’
kweembéceya	‘to wait’
kátá	‘to cut’
kulyá	‘to eat’
kupáándá	‘to plant’
kuwá	‘to die’
kwaangúya	‘to hasten’
kwiigánya	‘to teach’
kulijígaanya	‘to learn’
kung’áándá	‘to chart’
kwáásá	‘to throw away’
kuwútúka	‘to run’
kutíílá	‘to run away’
kupélá	‘to get tired’
kuwáálá	‘to wear’
kuwúúlá	‘to undress’
kwééndá	‘to walk’
kulííngá	‘to try/measure’

NEGATIVE INFINITIVE VERBS

ŋgájiíwá	‘not to steal’
ŋgájuúwá	‘not to hide’
ŋgáyiká	‘not to come’
ŋgákunŋúluka	‘not to chat’
ŋgásimóonŋa	‘not to be surprised’
ŋgájembéceya	‘not to wait’
ŋgákatá	‘not to cut’
ŋgálya	‘not to eat’

ngápaánda	‘not to plant’
ngáwa	‘not to die’
ngágoná	‘not to sleep’
ngásuúma	‘not to buy’
ngágwa	‘not to fall’
ngátuúnda	‘not to urinate’
ngákumbúcula	‘not to remember’
ngálombéla	‘not to marry’
ngásagámila	‘not to dream’
ngájinjira	‘not to enter’
ngámwa	‘not to drink’
ngáweénda	‘not to beg’
ngátiíla	‘not to run away’
ngápelá	‘not to get tired’
ngáwugála	‘not to close’
ngáguúmba	‘not to mould’
ngájaánga	‘not to respond’
ngájembéceya	‘not to wait’
ngájeénda	‘not to walk’
ngáliínga	‘not to try/measure’

PRESENT HABITUAL TENSE

ngúsalya(lyaága)	‘I eat’
ngúsaulya(lyaága)	‘I eat it’
ngaṅgúsalya /jwaṅgálya	‘I don’t it’
ngúsaloló/ṅúsálolága	‘I see’
ngúsinaaóna	‘I see him/her’
ngúsinaalóómba	‘I marry her’
ngaṅgúsaloombéla	‘I don’t marry’
túkúsáwulága	‘we kill’
túkúsáciwulága	‘we kill it’
ṅgatúkúsawulága	‘we don’t kill’
túkúsáwugála	‘we close’
túkúsátawá	‘we build’
túkúsájitáwa	‘we build it’
ṅgatúkúsatawá	‘we don’t build’

PRESENT PROGRESSIVE TENSE

ngúlyá	‘I am eating’
Ngúulyá	‘I am eating it’
ngaṅgúlyá	‘I am not eating’
ngúlóómbelá	‘I am marrying’
ngúalóómbá	‘I am marrying her’
ngaṅgúlóómbelá	‘I am not marrying’
túkúwulága	‘we are killing’
túkúciwulága	‘we are killing it’

ngatukuciwulagá	‘we are not killing it’
túkúwúgála	‘we are closing’
túkúgawúgála	‘we are closing them’
ngatukúwúgalá	‘we are not closing’
túkútáwá	‘we are building’
túkújítáwá	‘we are building it’
ngatukujítáwá	‘we are not building it’
mókúwútúka	‘you are running’

PRESENT PERFECT TENSE

ndiíle	‘I have eaten’
naulíle	‘I have eaten it’
nganíndya	‘I haven’t eaten’
ndolíite	‘I have seen’
nloombéle	‘I have married’
naalóómbile	‘I have married her’
nganíloombéla	‘I haven’t married’
tuwuléje	‘we have killed’
tuciwuléje	‘we have killed it’
tuwugéle	‘we have closed’
tugawugéle	‘we have closed them’
nganítúwugála	‘we haven’t closed’
tujitaŵíle	‘we have built it’
nganítútaŵá	‘we haven’t built’
m̄wutŵíice	‘you have run’
asumísyé	‘s/he/they (has/have) sold’

SIMPLE PAST TENSE

nááliíle	‘I ate’
naaúliíle	‘I ate it’
naalóliíte	‘I saw’
nalóómbeéle	‘I married’
naáloombilé	‘I married her’
twawúléje	‘we killed’
twacíwuléje	‘we killed it’
twawúgeéle	‘we closed’
twagáwugeéle	‘we closed them’
twatáŵilé	‘we built’
twajítaŵilé	‘we built it’
mwaasúúmiísyé	‘you sold’
mwaaisuumísyé	‘you sold them’
ŵaaléembilé	‘s/he wrote’
ŵaacíleembilé	‘s/he wrote it’

PAST PROGRESSIVE TENSE

naályaága	‘I was eating’
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naaúlyaága
 nganindyaága
 naalóómbelagá
 naaáloombagá
 nganiloombélagá
 twaawúlagagá
 twaacíwulagagá
 nganituciwulágaga
 twaawúlagagá
 twaagáwugalagá
 nganituwugalága
 twaatáwagá
 twaagátawagá
 nganitutawága
 mwaapópelagá

'I was eating it'
 'I was not eating'
 'I was marrying'
 'I was marrying her'
 'I was not marrying'
 'we were killing'
 'we were killing it'
 'we were not killing it'
 'we were closing'
 'we were closing them'
 'we were not closing'
 'we were building'
 'we were building them'
 'we weren't building'
 'you were praying'

NEAR FUTURE TENSE

shíindyé
 shínáulyé
 nganaulyá
 shíndolé
 shíloombelé
 shínáalóombe
 nganiloombéla
 shítúwulájé
 túciwúlájé
 ngatuciwulága
 shítúwugalé
 ngatuwugála
 shítútawé
 tújítáwé
 ngatujítáwa
 shímpopelé
 shááliinjé

'I am going to eat'
 'I am going to eat it'
 'I am not going to eat it'
 'I am going to see'
 'I am going to marry'
 'I am going to marry her'
 'I am not going to marry'
 'we are going to kill'
 'we are going to kill it'
 'we are not going to kill it'
 'we are going to close'
 'we are not going to close'
 'we are going to build'
 'we are going to build it'
 'we are not going to close it'
 'you are going to pray'
 's/he/they (is/are) going to try/measure'

DISTANCE FUTURE TENSE

cinjília
 cinjíulyá
 ngasínáulyá
 cinjílólá
 cinjíloombelá
 cinjíalómbá
 ngasílómbéla
 citúwulagá
 citúciwulága
 ngasítúciwúlága

'I will eat'
 'I will eat it'
 'I will not eat it'
 'I will see'
 'I will marry'
 'I will marry her'
 'I will not marry'
 'we will kill'
 'we will kill it'
 'we will not kill it'

citúwugalá	‘we will close’
citúgawugála	‘we will close them’
ngasítúwúgála	‘we will not close’
citútaŵá	‘we will build’
tucíjitaŵá	‘we will build it’
ngasítújitaŵá	‘we will not build it’
cimcíswalí	‘you will pray’
cimcíwutuká	‘you will run’
cimcíawútúcilá	‘you will run after/for him/her/them’
ngasímúáwútúčila	‘you will not run after/for him/her/them’

FUTURE PROGRESSIVE TENSE

cinjilyaaga	‘I will be eating’
cinjilyáaga	‘I will be eating it’
ngasínáúlyáaga	‘I will not be eating it’
cinjilolagá	‘I will be seeing’
cinjiloombelagá	‘I will be marrying’
cinjialoómbagá	‘I will be marrying her’
ngasílómbélagá	‘I will not be marrying’
citúwulagagá	‘we will be killing’
citúciwulágagá	‘we will be killing it’
citúwugalagá	‘we will be closing’
ngasítúwúgálaga	‘we will not be closing’
citútaŵagá	‘we will be building’
citújitaŵagá	‘we will be building it’
cimcíwutukagá	‘you will be running’
cimcíawutúcilagá	‘you will be running after/for him/her/them’
ngasímúáwútúcilaga	‘you will not be praying for him/her/them’

AFFIRMATIVE IMPERATIVE

m.-jiŵé	‘steal’
m.-juŵé	‘hide’
m.-kungulucé/ m.-ng'andé	‘chat’
m.-simonjé	‘get surprised’
m.-jembecelé	‘wait’
m.-katé	‘cut’
m.-lyé	‘eat’
m.-gŵé	‘fall’
m.-mŵé	‘drink’
m.-ŵé	‘die’
m.-jimé	‘stand’
m.-sagamilé	‘dream’
m.-lumé	‘bite’
m.-malisyé	‘finish’
m.-kasimongá	‘not to be surprised’

NEGATIVE IMPERATIVE

m̃.-kajembecelá	‘not to wait’
m̃.-kakatá	‘not to cut’
m̃.-kalya	‘not to eat’
m̃.-kagwa	‘not to fall’
m̃.-kamwa	‘not to drink’
m̃.-ka-w̃a	‘not to die’
m̃.-kajimá	‘not to stand’
m̃.-kataw̃á	‘not to build/tie’
m̃.-kagopolá	‘not to untie’
m̃-kaputá	‘not to beat’
m̃.-kapikaná	‘not to listen’
m̃.-kapeleká	‘not to give’
m̃.-kaw̃endá	‘not to beg’
m̃.-kakologanyá	‘not to stir’
m̃.-kajasá	‘not to throw away’

AFFIRMATIVE SUBJUNCTIVE

njiw̃é	‘I should steal’
tujuw̃é	‘we should hide’
ngungulucé	‘I should chat’
tung'andé	‘we should chat’
tusimonjé	‘we should be surprised’
tukaté	‘we should cut’
ndyé	‘I should eat’
tugw̃é	‘we should fall’
tumw̃é	‘we should drink’
tuw̃é	‘we should die’
njimé	‘I should stand’
tulumé	‘we should bite’
tumalisyé	‘we should finish’
ndaw̃é	‘I should build/tie’
ngopolé	‘I should untie’
mbuté	‘I should ‘beat’
tupelecé	‘we should give’
tuw̃ulajé	‘we should kill’
tujiganyé	‘we should teach’
tu-sagulé	‘we should select’

NEGATIVE SUBJUNCTIVE

ngakaná	‘I should not refuse’
tukatutá	‘we not push’
m̃katamá	‘you should not sit’
tukatundá	‘we should not urinate’

tukalombelá	‘we should not marry’
m̄kapocelá	‘you should not receive’
tukasagamilá	‘we should not dream’
tukajinjilá	‘we should not enter’
tukatawá	‘we should not build’

PAST HABITUAL TENSE

ndiléje	‘I usually ate’
ndolíteje	‘I usually saw’
nlombéleje	‘I usually married’
tuwuléjeje	‘I usually killed’
tuwugéleje	‘we usually closed’
tutaŵiléje	‘we usually built’
ajogwéépeje	‘s/he usually feared’
a-sumísyeye	‘s/he usually sold’
alembíleje	‘s/he usually wrote’
akologényeyeje	‘s/he usually stirred’
ateléceje	‘s/he usually cooked’

PRESENT CONDITIONALS

kutínjiwéé	‘if I sell’
kutínjuwéé	‘if I hide’
kutínsagamileé	‘if I dream’
kutítúwiceé	‘if we come’
kutítújinjileé	‘if we enter’
kutítúkunguluceé	‘if we chat’
kutítúlumeé	‘if we bite’
kutítújembeceleé	‘if we wait’
kutínɗawéé	‘if we build’
kutitúgopoleé	‘if we untie’
kutitúlyeé	‘if we eat’
kutím̄buteé	‘if I beat’
kutitúpandeeé	‘if we plant’
kutím̄bikaneé	‘if I hear’
kutínjanguyeeé	‘if I hasten’
kutínɗetemelée	‘if I shiver’
kutínsumisyeeé	‘if I sell’
kutím̄bopeleé	‘if I pray’

NEGATIVE PRESENT CONDITIONALSS

ngaajíiwéé	‘if I stole’
ngajúuwéé	‘if I hid’
nganságamileé	‘if I dreamt’
tukayíceé	‘if I came’
tukajínjileé	‘if we entered’

tukakúnguluceé	‘if we chat’
tukalúmeé	‘if we bit’
tukajémbecelé	‘if we waited’
ngatáwée	‘if I built’
ngaályeé	‘if we ate’
ngaapúuteé	‘if I provoked’
tukapáandé	‘if we planted’
ngaapíkaneé	‘if we listened’
nganjánguyeeé	‘if I hastened’
ngaatétemeleé	‘if I shivered’
ngaasúmisyeeé	‘if I sold’
ngaapópeleé	‘if I prayed’

FUTURE CONDITIONALS

nagátínjiiwée	‘if I will steal’
nagátín-júuwée	‘if I will hide’
nagátínságamileé	‘if I will dream’
nagátúyíceé	‘if we will come’
nagátújínjileé	‘if we will enter’
nagátúkúnguluceé	‘if we will chat’
nagátúlúúmeé	‘if we will bite’
nagátínjítáwée	‘if I will build’
nagátíndyeeé	‘if I will eat’
nagátímbúuteé	‘if I will beat’
nagátúpáandé	‘if we will plant’
nagátímbíkaneé	‘if I will listen’
nagátínjánguyeeé	‘if I will hasten’
nagátíndétemeleé	‘if I will shiver’
nagátínsúmisyeeé	‘if I will sell’
nagátímbópeleé	‘if I will pray’

NEGATIVE PRESENT CONDITIONALS

nagánganjiiwáá	‘if I don’t steal’
nagánganjuúwáá	‘if I don’t hide’
nagángasagamílaá	‘if I don’t dream’
nagátukayiíkaá	‘if we don’t come’
nagátukajinjilá	‘if we don’t enter’
nagángangungúlukaá	‘if we don’t chat’
nagángambuútaá	‘if I don’t beat’
nagángatupaándaá	‘if we don’t plant’
nagángandolaá	‘if I don’t see’
nagángatugonaá	‘if we don’t sleep’
nagá-nga-tu-gwáá	‘if we don’t fall’
nagángatupelékaá	‘if we don’t give’
nagángatugwíísyáá	‘if we don’t let fall’
nagángatuwúlagaá	‘if we don’t kill’

nagátukamalisyaá	‘if we don’t finish’
nagángatunyaá	‘if we don’t defecate’
nagáanganjiímaá	‘if I don’t stand’
nagángatutelékaá	‘if we don’t cook’
nagángatuwílaangaá	‘if we don’t call’
nagángatulumaá	‘if we don’t bite’

NEGATIVE PAST CONDITIONALS

nagáanganínjiíwáá	‘if I didn’t steal’
nagá-nganí-njuúwáá	‘if I didn’t hide’
nagáanganínsagámílaá	‘if I didn’t dream’
nagáanganitúwíkaá	‘if we come’
nagáanganitújinjílaá	‘if we didn’t enter’
nagáanganíngungúlukaá	‘if I didn’t chat’
nagáanganitúlumaá	‘if we didn’t bite’
nagáanganitújembecelaá	‘if we didn’t wait’
nagáanganíndaŵáá	‘if I didn’t build’
nagáanganitúkaátaá	‘if we didn’t cut’
nagáanganitúgŵiísyáá	‘if we didn’t let fall’
nagáanganitúwúlagaá	‘if we didn’t kill’
nagáanganitúmaliísyáá	‘if we didn’t finish’
nagáanganitúnyaá	‘if we didn’t drink’
nagáanganínjiímaá	‘if I didn’t stand’
nagáanganitútelékaá	‘if we didn’t cook’
nagáanganitúwílaangaá	‘if we didn’t call’
nagáanganitúlijiganyaá	‘if we didn’t learn’
nagáanganitúkaánaá	‘if we didn’t
nagáanganitújigáanyaá	‘if we didn’t teach’

NEGATIVE FUTURE TENSE

agángasínjiíwáá	‘if I won’t steal’
nagángasínjuúwáá	‘if I won’t hide’
nagángasínságámílaá	‘if I won’t dream’
nagángasitúwíkaá	‘if we won’t come’
nagángasitújinjílaá	‘if we won’t enter’
nagángasíngungúlukaá	‘if we won’t chat’
nagángasitúlúumaá	‘if we won’t bite’
nagángasitújembecelaá	‘if we won’t wait’
nagángasíndaŵáá	‘if I won’t build’
nagángasitúgónáá	‘if I won’t sleep’
nagángasitúsúumaá	‘if we won’t buy’
nagángasitújógopaá	‘if we won’t fear’
nagángasitúwéendaá	‘if we won’t beg’
nagángasitúgŵáá	‘if we won’t fall’
nagángasitúpélékaá	‘if we won’t give’

Appendix II: Letter of introduction

Pompidou Alfred Magwira
University of Malawi
Post Office Box 280
Zomba

Dear Respondents

PARTICIPATION IN A RESEARCH STUDY ON NAMWERA DIALECT OF CIYAO

I am a Master's of Arts in Pure Linguistics student at University of Malawi. I am conducting research on "*Tonal analysis of Verbal and Nominal System of Namwera Dialect of Ciyao*".

You have been selected to be a participant in this research because you are part of the selected sample of Ciyao native speakers. The research focuses on describing the tones of Namwera Ciyao dialect, and it is purely academic, with no gains. I request you respond to the questions to the best of your knowledge without any influence. I assure you upholding strict confidentiality in the collected data, and that your identities will not be revealed in the aggregated findings.

Yours faithfully

Pompidou Alfred Magwira

Appendix III: Informed consent form

Research Proposal Title: *Tonal analysis of Verbal and Nominal System of Namwera Dialect of Ciyao*

Name of Principle Investigator: **Pompidou Alfred Magwira**

PURPOSE AND BACKGROUND

I am **Pompidou Alfred Magwira**, a Master of Arts in Pure Linguistics student at University of Malawi. I am conducting research on analyzing tones of verbs and nominals of Namwera Ciyao dialect which is purely academic, with no gains. Ciyao has dialects, and one of which is Namwera Ciyao. The purpose of the study is to describe tonal patterns in verbal and nominal system of this Namwera dialect of Ciyao. You were selected as a possible participant in this research because I believe that you, as a native speaker of Ciyao who even stays in Namwera area, can help in providing accurate data thereby contributing much to Namwera Ciyao tonology.

STUDY PROCEDURES

In this interview, you will participate with me. I will sit down with you to ask questions. No one else but the interviewer will be present unless you would like someone else to be there. The interview will take about **two hours**. During the interview, you will be asked to provide Ciyao equivalents for the Chichewa words. Specifically, Ciyao equivalents will be on: nouns in isolation; noun phrases; infinitives (verb roots); tenses (present, past, future); verbal phrases and negative verbs. If you do not wish to answer any of the questions during the interview, you have the right to say so, and I will move on to the next question. However, I don't anticipate that there are questions that may be sensitive or potentially cause embarrassment and discomfort. The entire interview will be voice recorded and later transcribed. However, no one will be identified by name on the recorder. The information recorded and transcribed is strictly confidential, and access to it will be limited to the researcher, **Pompidou Alfred Magwira** and perhaps the supervisor, **Prof. Al Mtenje**.

RISKS

With COVID-19 pandemic, social distance was strictly adhered to during interview with the participants, so too washing of hands/sanitizing and wearing of face masks.

FORESEEABLE AND UNFORESEEABLE ADVERSE EVENTS

The researcher did not anticipate any serious risks associated with the subjects' participation. However, the most foreseeable adverse event was causing inconveniences to the participants. To deal with it, the researcher ensured that he visited the respondents in their areas, and that the recording of the data was initiated at a convenient time as agreed between the researcher and the subjects. Also, the participants were reimbursed, at the end of the interview, for their travel costs to the meeting place and for the time lost. This potentially helped to minimize any adverse impacts this might bring to the study. The anticipated unforeseeable events were some questions that would bring discomfort or embarrassment to the participants, and this was dealt with by urging participants to decline answering any kind of question that would bring discomfort or embarrassment to them. At the same time, they were asked to exercise their right to stop the interview.

CONFIDENTIALITY

The data from this study would be kept as confidential as possible. Their responses would be anonymous, and thus, no revealing of individual identities in the aggregated findings or publications from the study. After the interview, the participants were assigned codes from 001 to 006 instead of the participants' names, and kept separately from any names or other direct identification of participants. Only the researcher would know the codes and not be shared to anyone else.

BENEFITS (DIRECT OR INDIRECT) OF PARTICIPATION

The participants will indirectly benefit from the study as the data will help in generating new knowledge. The data will help to clarify some of the differences with other Ciyao

dialects, and will be a point of reference as their Namwera dialect of Ciyao tonology will have been fully described.

VOLUNTARY PARTICIPATION

Participation in this study was voluntary. It was up to the participants to decide whether to participate in the study or not, and the decision would have not affected any relationship with the researcher or the institution, University of Malawi. Participants were free to withdraw their consent and discontinue participation at any time without prejudice.

CONTACT INFORMATION

In cases where there are questions about the research and rights of participants, in the event of research related risks, the following contacts were available to the participants Professor Al Mtenje, Post Office Box 280, Zomba_0881558235/0992809188 (supervisor); Mrs. Chrissy Mandere, University of Malawi Research Ethics Committee (UNIMAREC) Administrator, Post Office Box 280, Zomba_0888309967, and Prof Alister Munthali, (UNIMAREC) Chairperson, Post Office Box 280, Zomba_0888822044.

I hereby consent to participate in the research conducted by **Pompidou Alfred Magwira** from University of Malawi. By signing this form, I agree that:

- I have received sufficient information about the purpose and nature of the study, and I have had an opportunity to ask questions.
- I have understood the purpose of my participation as an interviewee.
- My participation is completely voluntary. There is no explicit or implicit coercion whatsoever to participate.
- Even if I agree to participate now, I can withdraw at any time or refuse to answer without consequences of any kind.
- My participation involves *providing Ciyao* equivalents for the Chichewa words on: *nouns in isolation; noun phrases; infinitives (verb roots); tenses (present, past, future); verbal phrases and negative verbs.*
- I don't expect to benefit directly for my participation in this research.

- I consent to my interview being voice (audio) recorded and a transcript be produced.
- All information I provide for this study will be treated with confidentiality. The researcher will not identify me by name but that it will be changed disguising any details of my interview which may reveal my identity. Therefore, I am guaranteed that my confidentiality as a participant in this study is secure.
- My disguised extracts may be quoted in viva voce.
- I am free to contact the researcher and other officers for further clarification and information.

Signature of research participant

Date

I believe the research participant is giving informed consent to participate in this study.

Signature of researcher

Date

Appendix IV: Letter of approval



ACTING VICE-CHANCELLOR
Prof. Alfred D. Mtenje, BEd Mtw, MA S. Illinois, PhD London.

UNIVERSITY OF MALAWI
P.O. Box 280, Zomba, Malawi

Our Ref: P. 10/21/93
Your Ref:

Telephone: (265) 526 622
Fax: (265) 524 031
E-mail: vc@unima.mw

26th November, 2021

Mr Pompidou Alfred Magwira
Post Office Box 90248,
Bangwe,
Blantyre 9.

Email: pompialfred@gmail.com

Dear Mr Magwira

**RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT
FOR PROTOCOL NO. P.10/21/93. TONAL ANALYSIS OF VERBAL AND
NOMINAL SYSTEM OF NAMWERA DIALECT OF CIYAO.**

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the University of Malawi Research Ethics Committee (UNIMAREC) in a format that is available at the Secretariat.

Once the study is completed, you are required to furnish the Committee and the Principal with a final report of the study. The Committee reserves the right to carry out compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

Wishing you a successful implementation of your study.

Yours Sincerely,



Prof. Alister Munthali
CHAIRPERSON OF UNIMAREC



CC: Acting Vice Chancellor
Acting University Registrar
College Finance Officer
Dean of Research
Compliance Officer