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Tone and Accent in KiYaka

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by

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1991

To

My late father Kakhuúndâ Lúhâangu

My late uncle Maloónginí Mábéélâ

and

My mother Lukoówâ Inyééngi

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LIST OF ABBREVIATIONS

C:	clitic group
CONP:	connective phrase
Cop:	copula
Dem:	demonstrative
FV:	final vowel
G:	tone group
H:	high tone
imp:	imperative
ip:	immediate past
L:	low tone
LP:	locative phrase
MS:	macro stem
OA:	object agreement marker
OCP:	Obligatory Contour Principle
p:	prosodic constituent
Poss.	possessive
R:	raised H tone
rp:	remote past
SA:	subject agreement marker
T:	tone pattern
TBU:	tone bearing unit
TM:	tense marker
UR:	underlying representation
VR:	verb root
VU:	verbal unit

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ABSTRACT OF THE DISSERTATION

Tone and Accent in KiYaka

by

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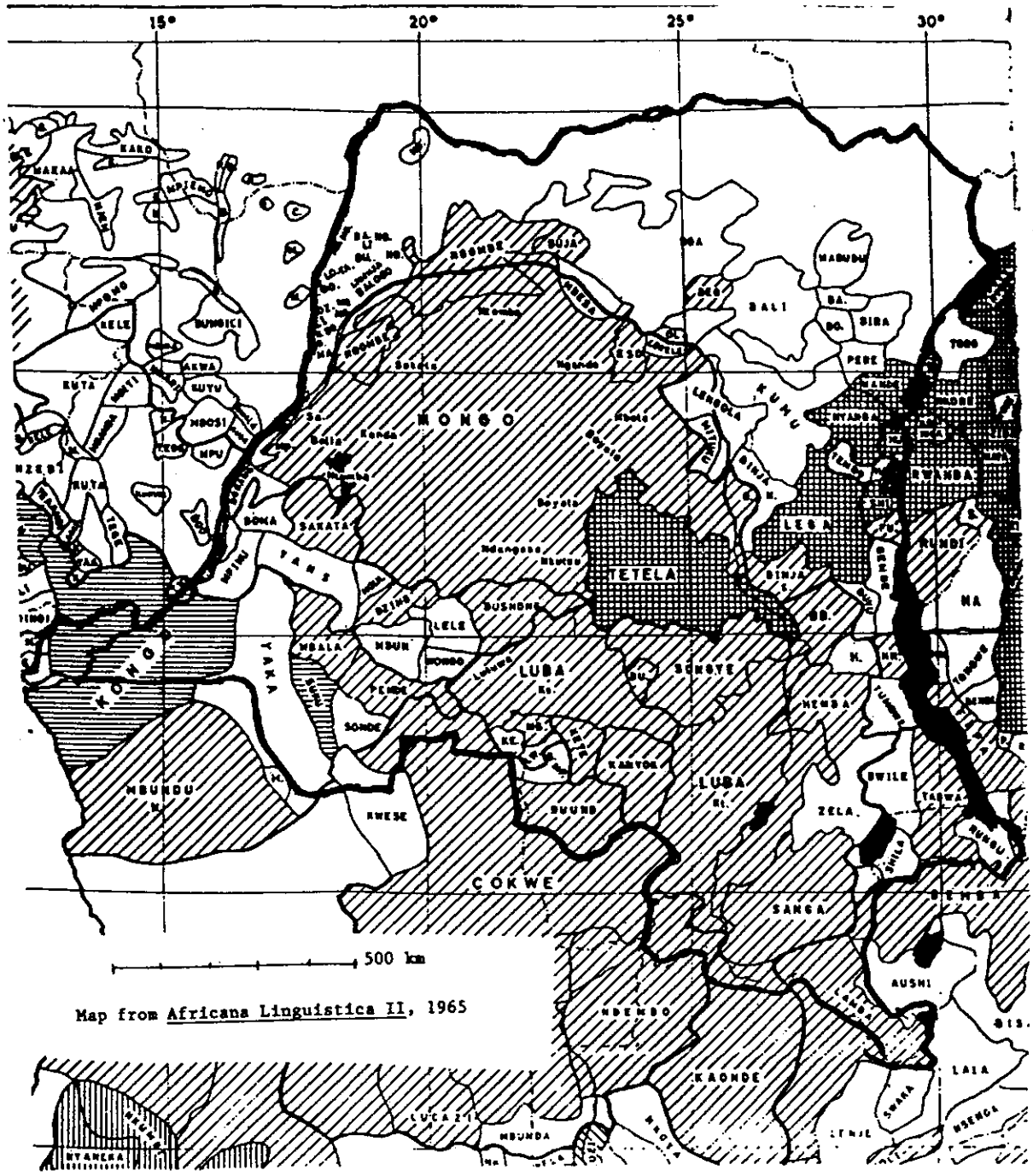
This dissertation is a study of the tone system of Kiyaka, a Bantu language whose main tonal characteristic is the remarkable tonal variation observable on nouns and verbs. I argue that the tonal alternation observed in Kiyaka is the result of the interplay between the tonal specification and the tone rules on the one hand, and the environments in which the rules apply, on the other

I assume the theories of autosegmental phonology and underspecification, and that Kiyaka has both tone and accent in the lexicon In addition, the only tone that is specified underlyingly, the H tone, can be floating or prelinked. The floating tone never links to its underlying domain of specification because of association rules. I argue that the landing site for floating tones - not necessarily to the following syllable or even the following word- is determined by the location of an accent.

The investigation of the phrasal conditions reveals that the tone rules apply within postlexical domains derived by mapping syntactic structures into phonological constituents, as advocated by the Theory of Prosodic Hierarchy. In particular, I argue that reference to both the relational and the end-based versions of the Theory of Prosodic Hierarchy is required in Kiyaka because neither can account for the data alone.



Map from Africana Linguistica II, 1965

CHAPTER 1

INTRODUCTION

1.0 Objective

This dissertation is a study of the tone system of KiYaka. My goal in undertaking this investigation is to provide both a description and a theoretical account of the system. From the descriptive point of view, this study aims at providing the linguistic community with more accurate, thorough and detailed data of the tonal phenomena in this language. Although this work is not the first description of KiYaka, it constitutes the first comprehensive and in-depth attempt to describe this system. The tonal phenomena of KiYaka are somewhat unusual; for example, Goldsmith (1987:89) characterises then as "different ... from the better understood eastern Bantu tone systems".

This dissertation includes a formal analysis of KiYaka tone. The analysis assumes the theories of autosegmental phonology and underspecification, and claims that KiYaka has both tone and accent in the lexicon. In addition, the only tone that is specified underlyingly, the H tone, can be floating or prelinked; the association of the floating tone is subject to phrasal conditions. These tone phrasal rules take place in prosodic domains derived according to the theory of Prosodic Hierarchy, by mapping syntactic structures into phonological constituents.

1.1 General Background

KiYaka is a Bantu language spoken in the south of the Region of Bandundu, Zaïre, and north-central Angola. In the literature the language is sometimes referred to as YiYaka, IYaka or simply Yaka. In Zaïre, KiYaka is the language of about three

million speakers, most of whom live in the region of Kwango[1]. It is located in zone H31 of Guthrie's classification (1971) and is related to various degrees to other languages previously described by different scholars as "languages with tonal case". These include Kintandu (H16), by Daeleman 1966 and 1983; Umbundu (R11) by Schadeberg 1986; and Kiyombe (H16c), by Meeussen and Ndembe 1964. Daeleman 1983 also lists Cokwe (K11), KiHolu (H33), and GiPende (L11) as having tonal case.

The present study is primarily based on the dialect of Mulopo-Ndiindi, and specifically as reflected in the speech of Mayimba-Ngonde, the native village of the author. The basic data were supplemented by material collected by van den Eynde (1968) as well as a small glossary compiled by Guttenberg (1970). Although van den Eynde's data are from a different dialect, I am very familiar with it because I went to elementary school in the Catholic mission where the data were collected and grew up with the principal language consultant.

1.2 Segmental Inventory and Syllable Structure

1.2.1 Vowels

KiYaka has 5 short and 5 long vowels:

(1)

i			u		ii			uu	
	e		o			ee		oo	
		a					aa		

Vowels are subject to rules whose investigation is beyond the scope of the present work. In any case, there a complex vowel harmony system, described in part by

[1]This information from Ibula M.Katakanga (1989) should be interpreted with caution since it is based on political rather than linguistic records.

Goldsmith (1985). KiYaka data involving data vowel harmony and truncation are represented more fully in Bastin (1983).

Vowel length is phonemic, as can be seen in the following infinitive forms.

(2)

ku-zika to	vs	ku-ziika to bury
ku-bela to fail	vs	ku-beela to be sick
ku-sala to work	vs	ku-saala to remain
ku-loka to bewitch	vs	ku-looka to dry (intr)
ku-vuka to cut hair	vs	ku-vuuka to fly (intr)

1.2.2 Consonants

(3) Consonants of KiYaka.

	Labials	Alveo/ dentals	Palatal	Velar	Glottal
Stops	b				
	p	t		k	
Nasals	m	n			
	mb	nd		ng	
	ph	th		kh	
Fricatives	v	z			
	f	s			h
Affricates	mbv	ndz			
	pf	ts			
Lateral		l			
Glides	w		y		

The segments represented as sequences in the table above can be considered as complex segments rather than underlying units. However, there seems to be evidence that some of these segments are derived. For instance, the prenasalised stops [mb] can be shown to be the realisation of a nasal /N/ unspecified for place followed by / b/ or /m/. The same can be said about [nd]. This is the case for the prenasalised stops in the following data.

(4)

/N/ + /m/	---> mb	ku-maka	(to carve)	mbakiní	I carved
/N/ + /b/	---> mb	ku-baka	(to catch)	mbakidí	I caught
/N/ + /n/	---> nd	ku-nuuka	(to sniffe)	nduukiní	I sniffed
/N/ + /l/	---> nd	ku-luuka	(to become wise)	nduukidí	I became wise

Given these cases where the alternation is clear, I will assume that where the alternation cannot be determined the prenasalised stop is simply a unit. In fact, there are numerous cases where it is possible to tell whether [mb] is from the combination /N/ and /m/ or /N/ and /b/.

The prenasalised consonants illustrated in (4) above are further distinguished by the ability to trigger nasal harmony. This rule spreads the feature [+nasal] from the verb stem - which can be the root only or the root followed by a type of affix generally referred to as an "extension" - to affect any [l] to the right within the verbal unit. But nasal harmony is possible only after a prenasalised stop is composed of two nasals as in /N/ +/m/ and /N/ + /n/. In other words, nasal harmony occurs only if the stem contains an underlying nasal. Otherwise, there is no nasal harmony. The data of (4) is repeated below to illustrate this point.

(5)

/N/ + /m/	---> mb	ku-maka	(to carve)	mbak-iní	I carved
/N/ + /b/	---> mb	ku-baka	(to catch)	mbak-idí	I caught

/N/	+ /n/	---> nd	ku-nuuka	(to sniff)	nduuk-iní	I sniffed
/N/	+ /l/	---> nd	ku-luuka	(to become wise)	nduuk-idí	I became wise

In these examples, /N/ is the first person singular subject agreement marker (see Table of agreement markers below). The tensed verb forms show the alternation tense marker [-idi] / [-ini]. Both [d] and [n] are variants of /l/, which is realised as [d] before [i] and [n] due to nasal harmony. The data indicate that where the verb stem contains a nasal before the tense marker (i.e. mak- and nuuk-), nasal harmony obtains.

The rule that derives /mb/ from /m/+/b/ or /m/+/m/ is very general in KiYaka. It affects almost all consonants. That is, the /N/ unspecified for place can precede any consonant and produce a new complex segment when both are tautosyllabic. The list below makes this point.

(6) Derived Consonants

/N/	+ /p/	---> ph	-phat-	phatidi	I buttoned
	/h/	---> ph	- hy-	phiidí	I am burnt
	/t/	---> th	-tal-	thadidí	I looked
	/k/	---> kh	-kot-	khotelé	I entered
/N/	+ /m/	---> mb	-mak-	mbakiní	I carved
	/b/	---> mb	-bak-	mbakidí	I caught
/N/	+ /n/	---> nd	-nuuk-	nduukiní	I smelt
	/l/	---> nd	-luuk-	nduukidí	I became wise
/N/	+ /y/	---> ngy	-yaang-	ngyeengé	I forked
	/w/	---> ngw	-woomb-	ngwoombelé	I implored
/N/	+ /z/	---> ndz	-zol-	ndzolelé	I wanted
	/v/	---> mbv	-vuumb-	mbvuumbidí	I stewed
/N/	+ /s/	---> ts	-sey-	tseyelé	I laughed
	/f/	---> pf	-fiy-	pfiyidí	I sucked

Finally, let us note that KiYaka has a few more complex consonants. All these combinations involve a glide.

(7)			
	mw	nw	ngw
	mbw	nzw	
	my	ny	
	bw		
	by	dy	
		ty	kw
		tw	ky
	vw	tsy	
		zy	
	fw	sw	hw
		sy	hy
		lw	

1.2.3 Syllable structure

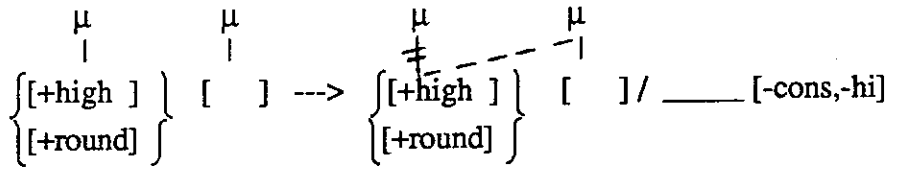
As is the case for most Bantu languages, the canonical syllable structure of KiYaka is CV. However, other syllable shapes can be found as illustrated below. (G stands for "glide").

(8)			
	V:	a bwe	(what happened?)
	CV:	hata	(village)
	CVV:	taata	(father)
	CGV:	kya taata	(of father)
	CGVV:	mwaana	(child)
	N:	n'ta[1]	(hit him/her)

Syllables composed of just the vowel are rare; they are often found in vocatives, interjections, etc. In the syllable that contains a glide, this one is mostly the result of a rule of Devocalisation that changes high and back vowels into the corresponding glide without changing the value of the feature [back].

[1] Although there is no standard orthography, a syllabic nasal is usually separated from the onset of the following syllable by an apostrophe. The /N/ in (6) is usually written as [n] followed by the consonant but the combination is pronounced as shown in (6).

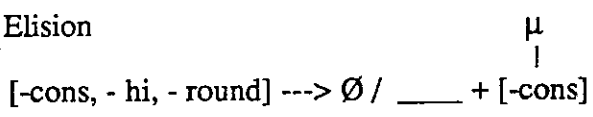
(9) Devocalisation



This rule turns /kudi/ into [kudy] and /kufu/ into [kufw] before the final vowels /-a/, /e/, and /o/. For these cases under consideration, the resulting forms are respectively *kudy-a* and *kufw-a*.

Another rule that corrects the shape of the syllable structure is Vowel Elision. It is formulated in (10).

(10) Vowel Elision



This particular rule gets rid of the leftmost vowel in a sequence that would violate the syllable structure of certain words. The unwanted sequence of vowels is derived when two syllables merge due to morphology or syntax. This is the rule at work when the possessive *-eeto* (our) follows the noun *mwaana* (child). *Mwaana* loses its final vowel; the resulting form is *mwaneeto* (our child).

The distribution of CVV is an interesting one. Given that vowel length is phonemic in the language, one would expect the distribution of CVV to be unpredictable. In fact, underlying CVV syllables are commonly found only in the stem-initial syllable of words (e.g. taata). In the middle of words, CVV syllables are the result of suffixation in verbs: e.g. di-idi (he ate) and compounding in nouns: e.g. ngaanga-nzaambi (priest).

Stem-final CVV are non-nexistent except in loan words and short forms, all of which bear a HL sequence of tones on the last syllable. Loan words that exhibit CVV at the end of the word come mostly from French. It will be remembered that French places word stress on the last syllable. In KiYaka, the word-final stress is interpreted as a H tone.

(11)

a.	taxîi	(taxi)
b.	kaféè	(coffee)
c.	vokáà	(avocado)
d.	frigóò	(fridge)
e.	vwayúù	(hooligan)

Word-final CVV also appears in short or reduced forms of certain words. These are words with high frequency use such as question words when they are phrase-final.

(12)

a.	náà	(nánì)	who
b.	khîi	(khíkì)	what
c.	bwéè	(bwéyì)	what/how
d.	kwéè	(kwéyì)	where
e.	kyéè	(kyéyì)	which

CVV syllables can be found in lexical items derived by compounding. These are words where the second member involved in the process has a long syllable at the beginning of the stem. Here are some examples of such nouns.

(13) a. ngudikhóongo
mother-polygamy
Father's other wife

b. ngaanganzaambí
master-god
Priest

c. phiiphaphiipha
night-night
Nightly

d. ngaangangoombo
master-divination
Fortune teller

1.3 Morphology

The agglutinative nature of Bantu morphology is one of the major characteristics of this language family. The class system is an important feature of this agglutinative morphology. In the table below, I give the eighteen classes of KiYaka.

(14) Noun prefixes and corresponding agreement markers in KiYaka.

Class	Noun Prefix	Modifier Prefix	SA Prefix	OA Prefix	OA Enclitic	OA Full pronoun
1 1sg	Ø	u-, Ø	/N/, i-	/N/	---	---
2sg	Ø	u-, Ø	u-, Ø	ku-	---	---
3sg	/N'/,mu-,Ø	u-, Ø	ka-,u-,Ø	/N'/	---	yaandi
2a 1pl	ba-	ba-	tu-	tu-	---	---
2pl	ba-	ba-	lu-	lu-	---	---
3pl	ba-	ba-	ba-	ba-	---	yaawu
3	/N'/, mu-	u-	u-	---	SA+a	SA+aawu
4	/N'/, mu-	mi-	mi-	---	SA+a	SA+aawu
5	di-, Ø	di-	di-	---	SA+a	SA+aawu
6	ma-	ma-	ma-	---	SA+a	SA+aawu
7	ki-	ki-	ki-	---	SA+a	SA+aawu
8	bi-	bi-	bi-	---	SA+a	SA+aawu
9	/N/	i-	i-	---	SA+a	SA+aawu
10	/N/	zi-	zi-	---	SA+a	SA+aawu
11	lu-	lu-	lu-	---	SA+a	SA+aawu
12	ka-	ka-	ka-	---	SA+a	SA+aawu
13	tu-	tu-	tu-	---	SA+a	SA+aawu
14	bu-	bu-	bu-	---	SA+a	SA+aawu
15	ku-	ku-	ku-	---	SA+a	SA+aawu
16	ha-	ha-	ha-	---	SA+a	SA+aawu
17	ku-	ku-	ku-	---	SA+a	SA+aawu
18	mu-	mu-	mu-	---	SA+a	SA+aawu

A noun is normally made up of a root preceded by the noun class prefix. For instance, the noun *ma-katika* 'livers' is made up of the root *katika* and the prefix *ma-* (class 6). Verb forms are usually made up of the verb root preceded by the subject prefix and followed by a suffix that indicates the tense. For instance, the verb *ba-tadidi* 'they

looked' is composed of the verb root *tal-* 'look'. *Ba-* is the subject agreement prefix for the third plural, and *-ili* is the suffix that marks the recent past. Here it is realised as [-idi] due to a phonological rule that converts /l/ to [d] when it is followed by [i]. It will be shown in Chapter 3 that the verb stem can contain other affixes.

1.4 Previous Descriptions

The earliest attempt to provide a description of the tone system of KiYaka was undertaken in the first published grammar of the language (van den Eynde 1968). Two other studies deal exclusively with the tone system of KiYaka and both are based on the (written) data collected by van den Eynde (1968). These are a paper by Meeussen (1971) and a more recent paper by Goldsmith (1987), respectively.

Although the data were generally well recorded, three major shortcomings emerge from the original work which are likely to affect subsequent analyses based exclusively on these data. First, van den Eynde observed the phonetic difference between different H tone tones; namely, certain H tones are realised with a relatively higher pitch than others. However, he decided to systematically ignore it (1968:10) for the sake of a simpler notation system. As will be seen later, this distinction is crucial for the analysis of KiYaka tone.

Second, van den Eynde correctly observed that nouns fall into different tone groups depending on the way they behave tonally in similar contexts. These contexts were characterised in syntactico-semantic terms. In addition, an important tone group is curiously absent from van den Eynde's grammar. Although the present study is based on dialect different from the one described by van den Eynde, there is indication from Meeussen's (1971) paper that some nouns do not fit into the three tone groups

set by van den Eynde. It will be observed in the analysis that the presence of this extra tone group is crucial for an adequate understanding of this tone system.

Finally, van den Eynde determined that three syntactico-semantic categories were relevant for tone assignment to nouns. Any noun may surface with any of the three tone patterns or "tonal cases" depending on its syntactico-semantic function in the construction. But a systematic examination of the environments that determine the tone patterns reveals the potential existence of more tone patterns without any matching syntactico-semantic categories.

I discuss these works in more detail at the end of Chapter 3.

1.5 Organisation of the dissertation

This dissertation is organised in four chapters: (1) Introduction, (2) Nouns, (3) Verbs, (4) Prosodic Domains. In addition, Chapter 3 is followed by an addendum that briefly describes the shortcomings of the previous studies. Finally, I present in an Appendix additional data relevant to specific sections of the dissertation.

Chapter 2 introduces the basics of the analysis. The basic objective is to account for tonal variation as well as phonetic differences in nouns. In the analysis I propose that KiYaka has only H tone specified in the lexicon. This tone can be floating or prelinked. When it is floating, the H tone can link to syllables that are assigned accent lexically. Such a co-association yields a phonetically higher pitched H tone (or raised H tone) than a regular H. Low tone means the lack of tone and is therefore supplied by default.

Tonal variation in nouns is accounted for by suggesting that the tone rules responsible for tone association are subject to phrasal conditions. I argue that the tone

of a noun depends not only on its underlying specification, but also on the position it occupies in a phrase.

Chapter 3 is basically an extension of Chapter 2. I argue that verbs work like nouns by showing that they too fit the patterns set for nouns and can therefore undergo the same rules suggested for nouns in Chapter 2. The addendum to Chapter 2 and 3 reviews the treatment of tone in previous descriptions.

Finally, Chapter 4 constitutes the second major part of this dissertation. I argue that the tone rules discussed in Chapter 2 take place in two postlexical domains: the clitic group and the phonological phrase. To derive these domains, I assume the theory of Prosodic Hierarchy. I argue that KiYaka requires reference to both the relational and the end-based versions of the theory of Prosodic Hierarchy.

CHAPTER 2

NOUNS

2.0 Introduction

One characteristic that sets the tone system of KiYaka apart is the remarkable tonal variation observable on nouns and verbs. The most interesting data come from nouns because they present more variation than verbs do. Specifically, nouns exhibit tonal phenomena not observed in verbs in that there are tone groups that contain only nouns whereas there are no tone groups composed exclusively of verbs. This is important because the generalisations reached for nouns can easily be assumed for verbs. Consequently, I discuss nouns first. In many ways, subsequent chapters will be developments of the analysis presented in this chapter.

The chapter is organised as follows. I begin by briefly illustrating the phonetic tones in section 1. In section 2 I describe tonal variation as it is reflected in the different tone groups and tone patterns of nouns. Section 3 introduces the analysis. I discuss the notions of tone donation and accent, and provide an algorithm for the derivation of the tonal allomorphs or tone patterns. Finally, I discuss the accent and tone rules. The domains of application of the tone rules are merely mentioned and not justified in this chapter, and they will be covered in Chapter 4. Section 4 gives sample derivations of all the four tone patterns for nouns from all six tone groups. Finally, section 5 discusses lexical tone donation in compounds and verbs, respectively.

2.1. Phonetic Tones

There are three phonetic tones in KiYaka. First, there is the standard distinction H(igh) vs L(ow), as can be observed with the underlined syllable (*ko*) in the following examples.

(1) a. yeko pé
5separation as well
As for the separation as well, ...

b. hekó pe
5tsetse as well
As for the tsetse as well, ...

The underlined syllable is L in (1)a but H in (1)b.

The third phonetic tone is a high tone that is relatively higher in pitch than the regular high tone. I will call this R(aised) high tone or simply R. The difference between the regular H and the raised H can be observed on the last and underlined syllable in the following two words.

(2) a. yekó
5separation
As for the separation, ...

b. hekó
5tsetse
As for the tsetse, ...

The underlined syllable is realised with a higher pitch (about 10Htz) in (2)a than in (2)b. Another difference reinforced by the tone difference on these syllables is that the vowel of the last syllable is fully audible in (2)a, but it is almost voiceless in (2)b.

We thus have the following phonetic tones in KiYaka: raised high tone (R), high tone (H), and low tone (L).

2.2 Tone Groups and Tone Patterns

As mentioned above, there are two major characteristics that distinguish the tone system of KiYaka from the other systems known in the literature on tone. First, each stem (noun or verb) can surface with as many as four different tone patterns (henceforth T). I label these patterns T1, T2, T3, and T4, respectively. The patterns

are illustrated by the examples in (3). Note in particular the tone of the noun stem *khoko*.

(3)	T1.	kya khóko	(It's) of a /the chicken
	T2.	khokó ládidi	as for the chicken, it disappeared
	T3.	khoko ládidi, wa kabeénga	the chicken that disappeared is red
	T4.	kya khókó kí-ládidi	It's of a/the chicken that disappeared

In these examples, we see that the noun *khoko* has the following respective tone melodies: RL, LR, LL and RR.

Second, noun stems fall into six lexical groups. Following van den Eynde (1968), I will call these tone groups. The existence of tone groups is not in itself anything special. There are in fact many unrelated languages where nouns are grouped in a similar way. This is for example the case for Kikuyu (Clements 1984) and Mende (Leben 1978). Nevertheless, the tone groups in KiYaka remain a unique phenomenon. What makes the tone groups in KiYaka different is not apparent until we know about their underlying structures. We will see later that contrary to the situation in Kikuyu and Mende, the tone groups in KiYaka are not associated with specific tone melodies. The table below gives the six tone groups as well as the four tone patterns for each noun stem.

(4) Tone Patterns and Tone Groups

	T1	T2	T3	T4	gloss
G1.1	khóko	khokó	khoko...	...khókó...	'chicken'
	yéko	yekó	yeko ...	...yékó ...	separation'
	ndóongo	ndoongó	ndoongo...	...ndóóngó ...	'needle'
	má-dya	ma-dyá	ma-dya...	...má-dyá ...	'food'
	kú-dya	ku-dyá	ku-dya ...	... kú-dyá ...	'to eat'
	phákú	phakú	phaku ...	...phákú...	'tax'
	táma	tamá	tama...	...támá...	'cheek'
	táangu	taangú	taangu ...	...táángú ...	'sun'
	tháangu	thaangú	thaangu ...	...tháángú ...	'time'
	n'lóongo	n'loongó	n'loongo ...	...n'lóeongó ...	'medicine'
	masóle	masolé	masole ...	...masólé...	'fields'

	mbĭ̂si	mbisĭ̂	mbisi ...	..mbĭ̂sĭ̂...	'meat'
	mvûtu	mvutû	mvutu ...	...mvûtû ...	'answer'
	nzâ̂di	nzadĭ̂	nzadi ...	...nzâ̂dĭ̂...	'big river'
	ngûba	ngubâ̂	nguba ...	...ngûbâ̂...	'peanuts'
G1.2	ndoô̂ngo	ndoongô	ndoongo...	...ndoô̂ngô ...	'palm wine'
	taâ̂ta	taatâ̂	taata...	...taâ̂tâ̂ ...	'father'
	ma-loô̂ngi	ma-loongĭ̂	ma-loongi ...	...ma-loô̂ngĭ̂ ...	'lessons'
	ndoô̂nga	ndoongâ̂	ndoonga ...	...ndoô̂ngâ̂ ...	'row, line'
	mboô̂mbo	mboombô	mboombo...	...mboô̂mbô...	'nose'
	mi-loô̂mbo	mi-loombô	mi-loombo...	...mi-loô̂mbô...	'kidneys'
	maâ̂fu	maafû	maafu ...	...maâ̂fû ...	'earth, sand'
	khaâ̂ka	khaakâ̂	khaaka...	...khaâ̂kâ̂...	'grandparent'
	thaâ̂ngi	thaangĭ̂	thaangi ...	...thaâ̂ngĭ̂...	'bed'
	n'loô̂ngo	n'loongô	n'loongo ...	...n'loô̂ngô...	name of tree
	mbaâ̂nzi	mbaanzĭ̂	mbaanzi...	...mbaâ̂nzĭ̂	'eagle'
	nzaâ̂ngi	nzaangĭ̂	nzaangi ...	...nzaâ̂ngĭ̂ ...	'monkey'
G2.1	mû-tû	mu-tu	mu-tu...	...mû-tû ...	'person'
	zô̂bâ̂	zoba	zoba...	... zô̂bâ̂ ...	'idiot'
	ku-sâ̂lâ̂	ku-sala	ku-sala...	...ku-sâ̂lâ̂ ...	'to work'
	nzâ̂lâ̂	nzala	nzala...	...nzâ̂lâ̂ ...	'hunger'
	tô̂mâ̂	toma	toma ...	...tô̂mâ̂ ...	'arrow'
	ki-dĭ̂mâ̂	ki-dima	ki-dima...	...ki-dĭ̂mâ̂...	'period'
	ngô̂lô̂	ngolo	ngolo ...	...ngô̂lô̂ ...	'strength'
	tsĭ̂sĭ̂	tsisi	tsisi ...	...tsĭ̂sĭ̂...	'eyebrows'
	ma-fûtâ̂	ma-futa	ma-futa ...	...ma-fûtâ̂ ...	'oil'
	ba-yâ̂kâ̂lâ̂	ba-yakala	ba-yakala...	...ba-yâ̂kâ̂lâ̂...	'men'
G2.2	ngoô̂mbé	ngoombe	ngoombe...	...ngoô̂mbé ...	'cow'
	ku-saâ̂lâ̂	ku-saala	ku-saala...	... ku-saâ̂lâ̂ ...	'to remain'
	khaâ̂kâ̂	khaaka	khaaka...	...Khaâ̂kâ̂ ...	'vindictiveness'
	ngaâ̂ngâ̂	ngaanga	ngaanga ...	...ngaanga...	'master'
	ndaâ̂ndâ̂	ndaanda	ndaanda ...	...ndaâ̂ndâ̂ ...	'cotton'
	mbuû̂ndû̂	mbuundu	mbuundu ...	...mbuû̂ndû̂...	'heart'
	mviĭ̂ndû̂	mviindu	mviindu ...	...mviĭ̂ndû̂...	'dirt'
	ngiĭ̂ndû̂	ngiindu	ngiindu ...	... ngiĭ̂ndû̂ ...	'thoughts'
	mbaâ̂ndû̂	mbaandu	mbaandu ...	...mbaâ̂ndû̂ ...	'example'
	ku-laâ̂mbâ̂	ku-laamba	ku-laamba...	...ku-laâ̂mbâ̂ ...	'cooking'
	ngaâ̂ngû̂	ngaangu	nggaangu ...	...ngaâ̂ngû̂...	'intelligence'
	nduû̂ndû̂	nduundu	nduundu ...	...nduû̂ndû̂...	'albino'
G3.1	kâ̂tĭ́ka	katĭ́ka	katĭ́ká ...	...kâ̂tĭ́ká...	'liver'
	mbû̂lúmbúlu	mbulumbúlu	mbulumbúlú...	...mbû̂lúmbúlú...	'insect'
	phêlénde	phelénde	phelénde...	...phêlénde ...	name of place
	tsô̂ngíni	tsongíni	tsongíni...	...tsô̂ngíní ...	'red ants'
	ki-fwânísu	ki-fwanísu	ki-fwanísú...	...ki-fwânísú...	'drawing'
	thêmóthémo	themothémo	themothémó...	...thêmóthémó...	'star'
	tâ̂xíi	taxíi	taxíi...	...tâ̂xíí...	'taxi'
	kâ̂fée	kafée	kafée...	...kâ̂fée...	'coffee'

	võkáa	vokáa	vokáa...	...vókáá...	'avocado'
	frĩgóo	frigóo	frigóo...	...frĩgóó...	'refridgerator'
	vwãyúu	vwayúu	vwayúu...	...vwãyúú...	'holigan'
G3.2	lẽélό	leeló	leeló...	...lẽélό...	'today'
	hẽkó	hekó	hekó ...	...hẽkó...	'tsetse'
	hũúní	huuní	huuní...	...hũúní...	'thirst'
	ki-tsẽkó	ki-tsekó	ki-tsekó...	...ki-tsẽkó...	'bed bug'
	ki-tsõmbó	ki-tsombó	ki-tsombó...	...ki-tsõmbó...	name of insect
	n'tẽétó	n-teetó	n'teetó ...	...n'tẽétó...	'limits of field'
	mphõósí	mphoosí	mphoosí...	...mphõósí...	'whistling'
	ma-yẽnó	ma-yenó	ma-yenó ...	...ma-yẽnó...	'breasts'
	bi-tsũmbú	bi-tsumbú	bi-tsumbú ...	...bi-tsũmbú...	'stories, tales'
	ba-khẽétó	ba-kheetó	ba-kheetó...	...ba-khẽétó...	'women'

In the table above, the nouns fall into three major groups (G1, G2, and G3) according to the characteristics they exhibit in the different tone patterns. The subgrouping (G1.1 and G1.2, G2.1 and G.2, G3.1 and G3.2) is motivated by certain group-internal differences. For instance, G1.1 and G1.2 differ from each other in the location of the R in T1. Finally, G1.1 nouns can involve up to four syllables, while G1.2 nouns have only the syllable structure CVVCV (see Appendix A).

G2 nouns are completely low in T2 and T3. G2.1 and G2.2 nouns are distinguished by the location of the stem-initial raised H or R as well as the length of this syllable. G2.1 nouns have a short stem-initial syllable while G2.2 nouns have a long stem-initial syllable. The raised H falls on the only one mora of the stem-initial syllable in G2.1 and on the second mora of the same syllable in G.2.2.

G3 nouns share the following factor, which also distinguishes them from the other groups: they surface with an H in every tone pattern. However, G3.1 and G3.2 are distinguished by the location of the H tone which is present in all tone patterns. This tone is on the penultimate syllable in G3.1 but on the final syllable in G3.2. A closer look at the table above (4) also reveals that G3.2 has a restricted syllable structure, namely CV(V)CV.

2.3 Analysis

The analysis I argue for in this study is based on the following claim: the tonal alternations are derived by phonological rules, conditioned in part by the position of a word within a clitic group. The assumptions are that utterances are divided into phonological phrases (ϕ) which are further divided into clitic groups (C) by phrasing rules. In addition, many words have a floating high tone, which they donate to another word to the right if both words share the same domain. Finally, donation of the floating H tone is only possible within a specific domain: the clitic group. Below I discuss the notion of tone donation and how it accounts for the patterns of the data.

2.3.1 Tone Donation

Tone donation refers to the fact that a H tone specified for a morpheme is often realised on a different word to the right of the domain of specification of the tone. In more specific terms, the four surface tonal patterns (T1-T4) follow from two independent factors: namely, 1) the presence or the absence of a H donor morpheme to the left of the word; and 2) the position (final or nonfinal) of the word in the domain, which I assume is the clitic group (C).

In order to fully convey this notion, I introduce new terminology concerning the movement and realisation of tone. I will call a morpheme with a floating and thus donatable H tone a donor morpheme. If such a donor morpheme is present to the left of a word and this H is later realised on the stem initial syllable of the following word, we will call this word "marked"; otherwise, it is "unmarked". With regard to the position the word occupies in the domain, we will call a word "final" if it domain-final; otherwise, it is "nonfinal".

Combinations of these variants define four possible tonal allomorphs, each of which corresponds to one of the four tone patterns illustrated in the table above: T1) marked final, T2) marked nonfinal, T3) unmarked final, and T4) unmarked nonfinal. In the present approach, the table of (2) translates as shown below.

(5)

(T1) Marked Final	(T2) Unmarked Final	(T3) Unmarked Nonfinal	T4 Marked Nonfinal
[H ... ___]C	[... ___]C	[... ___ X]C	[H ... ___ X]C

In these representations, we see that the marked patterns are characterised by the presence of an H to the left within the clitic group. This H will be donated to an eligible following syllable. (5) also shows that unmarked patterns have no such H preceding within the clitic group, which is the domain of tone donation.

One donor morpheme that we can use to illustrate tone donation is the associative morpheme. In the following illustration, the associative morpheme *kya* is composed of the class 7 prefix *ki-* and the morpheme *-a*, whose exact role is not known at the moment. We see that all the nouns which follow *kya* have a H on their respective stem-initial syllables.

(6)

G1.1	kya ndóongo	'it's of the needle'
G.1.2	kya ndoóngo	'it's of the palmwine'
G2.1	kya zóbá	'it's of the idiot'
G2.2	kya ngoómbé	'it's of the cow'
G3.1	kya kátíka	'it's of the liver'
G3.2	kya hékó	'it's of the tsetse'

The claim is that a donor morpheme can be diagnosed in that it will donate a H to any following word in its phrase.

Using this test, we can determine which of the basic tone groups are donors. The following examples feature a possessive construction. The possessive is made

up of the class prefix and the third person singular stem *-aandi*. (The prefix which occurs before *-aandi* varies according to the class of the head noun and is independent of tone).

(7)				
	G1.1	yeko	dyáandi	'his separation'
	G1.2	ndoongo	záandi	'his palmwine'
	G2.1	zoba	dyaandí	'his idiot'
	G2.2	ngoombe	zaandí	'his cattle'
	G3.1	katíká	dyáandi	'his liver'
	G3.2	hekó	dyaandi	'his tsetse'

The donor morpheme test in (7) reveals that G1.1, G1.2, and G3.1 are donor groups while G2 and G3.2 are not. Relating the data here to the table (4), it appears that the nouns in (7) bear T3 because they serve as donors when they occur in the following frame: [... ___ ...]C.

So far, we have examples of T1 (noun stems in (6)), and T3 (possessed nouns in (7)). Let us now exploit the notion of donor morpheme to illustrate T4. In the following examples the initial donor is the first part of the discontinuous morpheme *ka ... ko*, used to negate a noun.

(8)					
	G1.1:	Ka	yékó	kó	'it's not a separation'
	G1.2:	Ka	ndoóngó	kó	'it's not palmwine'
	G2.1:	Ka	zóbá	ko	'it's not an idiot'
	G2.2:	Ka	ngoómbé	ko	'it's not a cow'
	G3.1:	Ka	kátíká	kó	'it's not a liver'
	G3.2:	Ka	hékó	ko	'it's not a tsetse'

In these examples, *ka* donates its floating H to the noun. Then each noun contributes its own floating H (if it has one) to the toneless ko. The surface forms of ko confirms our earlier claim that G1.1, G1.2 and G3.1 are donor groups while G2 and G3.2 are not. We can tell this because *ko* is high after G1 and G3.1 nouns but low after G2 and G3.2. The syllables that do not get a H tone by tone donation will receive a H by a

variety of fill-in tone rules. It is important to note that the tone of what comes after the noun stem (e.g. *ko*) is irrelevant for T4 to obtain.

While T4 obtains in a phrasal context where a noun stem is preceded by a donor and followed by a potential recipient, T2 occurs in the opposite context. That is, no donor morpheme precedes the noun stem and no other word follows the noun stem.

(9)			
	G1.1	yekó	'as for the separation, ...'
	G1.2	ndoongó	'as for the palmwine,...'
	G2.1	zoba	'as for the idiot, ...'
	G2.2	ngoombe	'as for the cattle,...'
	G3.1	katíka	'as for the liver, ...'
	G3.2	hekó	'as for the tsetse, ...'

The donated H often skips an unpredictable number of syllables to attach to a syllable to the right in the phrase. This long distance shift is exemplified below. The only high pitched syllable is the landing site of the H donated by *kya*.

(10)				
	1 syllable:	ky-a	yéko	'of separation'
		7-of	5-separation	
	2 syllables:	ky-a	ma-yéko	'of separations'
		7-of	6-separation	
	3 syllables	ky-a	ku ma-háta	'of the villages'
		7-of	to 6-village	
	4 syllables	ky-a	ku ba-mi-loóngi	'of among teachers'
		7-of	to 2-4-teacher	

In these particular examples, the high tone of *kya* surfaces on the stem-initial syllable of a noun stem to the right of the associative morpheme. If more than one stem follows, the tone attaches to the stem closest to *kya*. We will see later that the tone can also dock to an enclitic.

The system presented so far does not seem to account for the minimal pair *yekó* 'as for the separation' vs *yéko* 'it's a/the separation' given in (11). This apparent counterexample can be taken care of by positing that KiYaka has a copula composed of only a floating H tone. Such a copula H tone is also attested in Kukuya (Paulian 1975) and Chaga (McHugh 1990). This copula is present in one of the occurrences of the noun *yeko* (11)a, but not in the other (11)b. The derivation of this pair is schematically shown below.

(11) a. [H + yeko] ---> yéko (marked final) 'It's a/the separation'

b. [yeko] ---> yekó (unmarked final) 'As for the separation, ...'

In this example, the noun *yeko* is final in its clitic group in both (11)a and (11)b because nothing follows it. In addition, the noun is marked in (11)a because it is preceded by a floating H tone, which surfaces on the stem-initial syllable of the noun. In (11)b, as there is no such an H tone, the noun is unmarked. *Yeko* is thus marked-final in (11)a and unmarked-final in (11)b. Evidence that the H tone is a copula comes from the fact that it can't precede verbal constructions (since it is itself a verb).

To sum up, we see that the four tone patterns can be derived by referring to the notion of donor morpheme and the position of the noun in the phonological word: the four tone patterns result from the oppositions donor/non-donor and final/non-final.

2.3.2 Accent

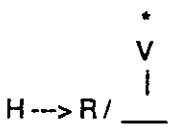
The notion of tone donation would be incomplete without addressing the two following questions. First, what is the landing site of the donated tone? Second, can the answer to the first question account for the distinction between R and H? I discuss these two issues below, beginning with the surface contrast between R and H.

As was mentioned earlier, KiYaka has three phonetic tones: L, H, and R. To account for the different surface tonal phenomena, I propose that KiYaka has basically the H-L opposition supplemented by accent. The H is specified underlyingly and can be prelinked or floating, but the L is supplied by default according to the following rule:

(12)

As for the R, I suggest that it is just the phonetic realisation of H on accented syllables. Specifically, the H is converted into R by the following phonetic rule.

(13) H-RAISING: Realise an accented syllable linked to H as R.



The accentual analysis must be defended against the obvious alternative that H and R are phonemically distinct tones. The arguments are as follows.

First, the surface distribution of R is restricted. R occurs only 1) on stem initial syllables of all stems (nouns and verbs), and 2) on the stem final syllables of G1 and G2. I claim that these are exactly the syllables that receive accent in KiYaka by rules that I will discuss later.

Second, when floating Hs are moved around by rules, they can associate to accented or unaccented syllables. The phonetic realisation of the H varies depending on whether it associates with an accented or an unaccented syllable. This is illustrated

in (14). Recall that G1.1 is a donor group. In (14), a noun from this group contributes its H tone to a later morpheme in the phonological word.

(14) a. ndoongo yíña
needle that
'that needle'

b. ndoongo pé
needle aswell
'the needle as well'

The data in (14) indicate that we have a donated H tone in both cases. However, the H donated by the noun in (14)a falls on an accented syllable while the one donated by the same noun in (14)b docks on an unaccented syllable. This difference is reflected phonetically in that the latter yields a H and the former its higher-pitched allotone: R.

Although the distribution of the accent is restricted, the accent is not fully predictable. So for instance, only the placement of the accent on the first or second mora of the stem initial syllable of *ndoongo* makes the difference between 'needle' and palmwine'.

(15)	a.	G1.1	kya ndóongo	'it's of the needle'
	b.	G.1.2	kya ndoõngo	'it's of the palmwine'
	c.		ndoongõ	'as for the needle/palmwine'

While the placement of the initial accent distinguishes 'needle' and 'palmwine', failure for this accent to be realised (because no H has been donated) results in an ambiguous form (15)c. We will see later that the rule that assigns initial accent is quite general but some stems (e.g. 'palmwine') have lexical marking that makes it possible for them to receive the accent on a different mora.

Additional support for accent is provided by examples such as (10) repeated here as (16).

(16)	1 syllable:	ky-a 7-of	yêko 5-separation	'of separation'
	2 syllables:	ky-a 7-of	ma-yêko 6-separation	'of separations'
	3 syllables	ky-a ku 7-of to	ma-hâta 6-village	'of the villages'
	4 syllables	ky-a ku 7-of to	ba-mi-loŏngi 2-4-teacher	'of among teachers'

The data here show that the distance between the domain of specification of the H tone and its actual landing site is unpredictable. Unless some special characteristic is recognised for some of these syllables, it is difficult to account for this long distance tone shift. The accent is the special feature we need to predict the landing site of the donated H. In more specific terms, the donated H is attracted by accented syllables, as shown in (17).

(17)	1 syllable:	ky-a yêko H	'of separation'
	2 syllables:	ky-a ma-yêko H	'of separations'
	3 syllables	ky-a ku ma-hâta H	'of the villages'
	4 syllables	ky-a ku ba-mi-loŏngi H	'of among teachers'

This long distance tone shift is particularly difficult to achieve within a purely tonal analysis. The accent not only designates the landing site of the donated tone, but also accounts for the surface R/H distinction.

In the ongoing exploration of Bantu tone systems, several accentual analyses have been suggested (e.g. Goldsmith 1982, 1984; Hyman 1982). But accent in these studies is an alternative to tone. The accent I propose is different in that it co-exists with tone. Tone and accent co-existence means three different things for KiYaka. First, as I will show below, KiYaka has some words with only tone and others with only accent. Second, tone and accent can also co-exist within individual noun roots. Finally, we have just seen that accent is not just an abstract device as in other studies, but has phonetic correlates, provided it coordinates with the appropriate tone: H. However, with no H docked to it, an accented syllable is phonetically just L.

In summary, the derivation of surface tones is as follows. Accents are assigned to certain syllables of the underlying structures. Then the H tone will associate with tone bearing units (TBU) according to tone rules, most of which are subject to phrasal conditions. As was suggested above, syllables that do not get a H tone will be assigned L by default. Since a floating H can link to any type of syllable, it can surface as H or as R, depending on whether it associates with an unaccented or accented syllable. These rules are discussed in the following section.

2.3.3 Accent Rules

I propose that the different tone groups have the underlying structures shown in (18).

(18)

G1.1	G1.2	G2.1	G2.2	G3.1	G3.2
[CV(V)CV]	[CVVCV]	[CVCV]	[CVVCV]	[CVCVCV]	[CVCV]
[H]	[H] [+D]	[ ]	[ ]	[H H]	[H]

The brackets in (18) indicate stem boundaries. These structures also indicate that when nouns in G1.1 and G1.2 share the syllable structure CVVCV, they cannot be distinguished on the basis of the underlying tonal specification: they each have one floating H tone. These two groups will only be distinguished by the placement of the accent; this reveals the limited phonemic role of accent. The fact that only the placement of the initial accent can distinguish G1.1 and G1.2 noun stems provides independent evidence for the lexical nature of accent rules. As was suggested earlier in our discussion of donor morphemes, G2 nouns are toneless. G3 nouns have a prelinked H tone, supplemented by an additional floating H in G3.1, which makes this group a donor group.

Finally, I assume that in these and subsequent representations the OCP holds at the morpheme level. In addition, the OCP must be able to distinguish linked from floating tones. Where the application of a tone rule creates a representation that violates the OCP, the consecutive associations will be collapsed.

The first set of rules to apply to the underlying representations (henceforth UR) are those which assign accents to noun and verb stems. The rationale for the early application of accent rules is that in most cases, the landing site of the floating tones is determined by the location of the accent. The initial accent is assigned to the stem initial syllable by the rule formulated in (19).

(19) INITIAL ACCENT ASSIGNMENT: Assign an accent on the stem-initial syllable

a. V ---> V /stem [CV __ :lexically marked noun stems (G1.2), toneless nouns (G2.2); most verb stems (except Remote Past).

b. $V \rightarrow \overset{*}{V}$ / stem [C __ : elsewhere (i.e., most noun stems (except G1.2 and toneless nouns), verbs in Remote Past and Imperative with Object prefix.

When Initial Accent is assigned, the forms in (18) look like those given below in (20).

(20)

G1.1	G1.2	G2.1	G2.2	G3.1	G3.2
*	*	*	*	*	*
[CVVCV]	[CVVCV]	[CVCV]	[CVVCV]	[CVCVCV]	[CVCV]
[H]	[H]	[ ]	[ ]	[H H]	[H]

(21) FINAL ACCENT ASSIGNMENT:

Assign an accent to the rightmost syllable of a stem containing no linked H.

$V \rightarrow \overset{*}{V}$ / __]stem where stem contains no $\overset{H}{V}$

The output of this rule is shown in (22).

(22)

G1.1	G1.2	G2.1	G2.2	G3.1	G3.2
* *	* *	* *	* *	*	*
[CVVCV]	[CVVCV]	[CVCV]	[CVVCV]	[CVCVCV]	[CVCV]
[H]	[H]	[ ]	[ ]	[H H]	[H]

The rule in (21) means that the prelinked H tone is in complementary distribution with the final accent. This in turn suggests that the prelinked H tone and the accent are the same thing. If we push the argument further, we could thus replace the accent by a prelinked H as was argued for other languages in Pulleyblank (1983). However, this approach does not hold in the case of KiYaka for several reasons.

First, the prelinked H in KiYaka exhibits special distinguishing characteristics. For instance, the syllable that hosts a prelinked H always surfaces with a H tone in all

contexts. The data show that only certain syllables of G3 nouns can surface with a H tone in all contexts. If we assumed that accent is a prelinked H tone, we face the challenge of distinguishing the Hs that are realised in all contexts (G3 nouns) and those that are realised in some contexts but not in others (G1 and G2).

Second, what I refer to as the prelinked H in KiYaka is stable in that it cannot be donated to another syllable. But the other groups (G1 and G2) do not exhibit such a characteristics. In addition, the accent contributes a phonetic realisation (raised H tone) that the prelinked tone does not have. In the near minimal pair given below, the H links to an accented syllable of the noun *yeko* by rule. The result is a raised H. We know that this H is linked by rule because when this rule does not apply (e.g. when the noun donates its H), the noun is completely Low (*yeko pé*). However, the last syllable of *heko* has a prelinked H because the noun always has a H tone on this syllable in all phrasal contexts. The prelinked H is lower in pitch than the raised H.

(23) a. yekó (H) 'as for the separation'

b. hekó (H) 'as for the tsetse'

Furthermore, replacing the accent by the prelinked H would work only in a strictly tonal analysis. However, there is sufficient empirical evidence to demonstrate that KiYaka is not exclusively either tonal or accentual. In particular, it is not clear how a tonal analysis could handle the long distance tone shift illustrated in (10) and (16).

Following are examples of these representations in our sample nouns composed of *ndoongo* (needle), *ndoongo* (palmwine), *ngoombe* (cow), *katika* (liver), and *heko* (tsetse).

(24)

G1.1	G1.2	G2.1	G2.2	G3.1	G3.2
* *	* *	* *	* *	*	*
[ndoongo]	[ndoongo]	[zoba]	[ngoombe]	[katika]	[heko]
[H]	[H]	[ ]	[ ]	[HH]	[H]

The forms in (24) indicate that G3 nouns have both a prelinked H and an accent. In addition, we see that G1.1 and G1.2 are only distinguished by the initial accent when both share the same syllable structure CVVCV.

It is the claim of the analysis that all stems - nouns and verbs- must fit in the representations in (18). Because verbs are basically toneless, they cannot have a prelinked H and thus G3 does not contain any verb forms. However, verb stems usually get a H tone by affixation of a tense marker. Verb forms thus belong exclusively to G1.1, G1.2, G2.1, and G2.2, as can be witnessed from the following data.

(25)	G1.1.	ba-lūuka	they had learned (Remote Past)
	G1.2.	ba-luúkidi	they learned (Immediate Past)
	G2.1	ku-luka	to vomit
	G2.2	ku-luuka	to learn (by experience)

The respective representations of these verb forms are given below. Accent placement varies with tense. In the verbs with a long stem initial syllable, most tenses pattern with the infinitive in that the accent goes on the second mora. Such forms thus belong to G1.2 or G2.2, depending on the tonal structure. G2.1 does not contain any verb with a long stem initial syllable. The infinitive is toneless; the H tone in the finite stems is supplied by the suffixes *-a* for Remote Past (rp) and *-idi* for Immediate Past (ip), respectively.

(26)

G1.1	G1.2	G2.1	G2.2
ba [luuka]]	[ba[luukidi]]	___	[ku [luuka]]
[H [H]]	[H[H]]		[[ ]]

Now contrast these forms with the following data, which show a verb with a short initial syllable. Here the infinitive is G2.1 and both the Remote Past and Immediate Past belong to G1.1 because there is no vowel length involved in the stem initial syllable.

(27)

G1.1	ba-lůka	they had vomited
	ba-lůkidi	they vomited
G2.1	ku-luka	to vomit

(28)

	G1.1	G1.2	G2.1	G2.2
a.	ba [luka]]	___	[ku [luka]]	___
	[H [H]]		[[ ]]	
b.	[ba [lukidi]]			
	[H[H]]			

Again, the gaps under G1.2 and G2.1 in this table indicates that these groups contain only stems with a long vowel in the initial syllable. More data of this type will be discussed in chapter 3.

2.3.4 Tone Rules

We turn now to the tonal rules of KiYaka. But before discussing individual rules, I would like to say a word on the special nature of tone shift in KiYaka. As was mentioned earlier, tone donation takes place from morpheme to morpheme and

not necessarily from one syllable to the immediately following syllable, as is the case for Kikuyu (Clements 1984) and Chaga (McHugh 1984). In KiYaka, tone shifts to an immediately following syllable only if there is a morpheme boundary between the donor and the recipient of the H.

That tone donation occurs from morpheme to morpheme is significant for the theory of Prosodic Hierarchy. As developed in Selkirk (1980, 1984, 1986), Nespor and Vogel (1986), and Hayes (1984), this theory assumes bracket erasure inside the clitic group or phonological phrase. That is, morphological information is not available to phonological rules that apply at this prosodic level. However, the KiYaka data suggest otherwise. Specifically, tone moves from one domain of specification to another but within the boundaries of the clitic group. It is this mismatch between the domain of specification of tone and the domain of its association that I call tone donation. Because of the independent nature of tiers in the autosegmental framework, the absence of morphological brackets in the prosodic constituent will make it impossible for us to tell these different domains. In other words, failure to keep these internal boundaries will defeat the notion of tone donation crucial to the present analysis.

Most tone rules are postlexical but there are a few cases where tone donation occurs in the lexicon. While this lexical application takes place within the word boundaries, two domains are relevant for the postlexical application of tone rules. These are the clitic group and the phonological phrase (p-phrase). These domains are discussed in detail in Chapter 4 but I will briefly introduce them here.

The clitic group is the smallest of the postlexical domains. It is minimally composed of a content word but the content word can be accompanied by function

words that are grammatically dependent on it. Consequently, a phrase containing more than one content word contains more than one clitic group.

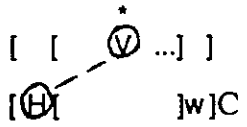
The phonological phrase is the largest postlexical domain. It is minimally composed of a clitic group. Typically, the phonological phrase will consist of a head and all the material that falls under its maximal projection. A full discussion is provided in Chapter 4.

2.3.4.1 Clitic Group bounded Tone Rules

Tone donation is achieved either by a rule of H-Attraction to an accented syllable or by a rule of H-Shift to a non-accented syllable. The clitic group is the domain of tone donation. Tone attraction is formulated as in (29).

(29) H-ATTRACTION

Associate a floating H to the first unlinked accented syllable to the right of its domain;

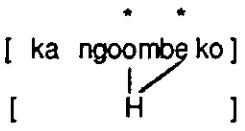


(where ... can contain unlinked accented or unaccented TBUs)

The illustration in (30) shows the application of H-Attraction to the output of accent rules. In this example the floating H that is attracted by the accent is the copula H tone; thus the forms mean 'it's a N'.

(30)

G.1	G1.2	G2.1	G2.2	G3.1	G3.2
* *	* *	* *	* *	*	*
[[ndoongo]]	[[ndoongo]]	[[zoba]]	[[ngoombe]]	[[katika]]	[[heko]]
[H[H]]	[H[H]]	[H[ ]]	[H[ ]]	[H[H H]]	[H[H]]



Depending on the syntactic structure of this construction, it is very possible that a copula H tone precedes the morpheme *ka*. However, the presence of such a H tone would not make a difference for the phonology because the negative particle *ka* has a floating H within the boundaries of the same clitic group.

It has been established that tone donation groups noun stems into two major categories: donor and non-donor morphemes. However, there are numerous cases where this distinction is blurred because the receiving morpheme surfaces with a H tone, even after non-donor morphemes. I discuss two such cases in this work. One concerns "N + Demonstrative" constructions and will be dealt with in Chapter 4. The other case concerns the data below (34), which feature the phrase 'as for the N as well, ...'. N stands for any noun.

(34)

G1.1	ndoongo	pé	'as for the needle as well, ...'
G1.2	ndoongo	pé	'as for the palmwine as well, ...'
G2.1	zoba	pé	'as for the idiot as well, ...'
G2.2	ngoombe	pé	'as for the cow as well, ...'
G3.1	katíká	pé	'as for the liver as well, ...'
G3.2	hekó	pe	'as for the tsetse as well, ...'

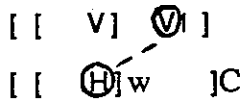
The major observation here is that with the exception of G3.2, the word following the noun stem is H even after non-donor noun stems. The question is then how to account for this difference in the patterning of 5 items of the 6 tone groups.

A quick look at these forms suggests that one and the same rule places the H tone on *pe*. But a closer examination reveals that two separate rules are responsible for the surface tone of *pe*. The first rule shifts the floating H tone of the donor morpheme to the following morpheme (*pe*) if what follows the floating tone does not contain an

accent, within the clitic group. The rule is formulated below.

(35) H-SHIFT

If no accented syllable is available to the right of the domain of the tone, associate the floating H to the following syllable within the same clitic group;



We know that the donor groups are G1.1, G1.2, and G3.1. Consequently, through H-Shift (35), the floating H of *ndoongo* (needle), *ndoongo* (palmwine), and *katika* (liver) will shift and dock to *pe* in G1.1, G1.2, and G3.1, respectively. Note that *pé* is low after G3.2.

(36)

G1.1	G1.2	G3.1	G3.2	
[[ndoongo] pe]	[[ndoongo] pe]	[[katika] pe]	[[heko] pe]	
[[H] H]	[[H] H]	[[HH] H]	[[H] H]	Input
[[ndoongo] pe]	[[ndoongo] pe]	[[katika] pe]	---	
[[H] H]	[[H] H]	[[HH] H]		H-Shift
[ndoongo pe]	[ndoongo pe]	[katika pe]	[heko pe]	
[H H]	[H H]	[HH H]	[H H]	Output

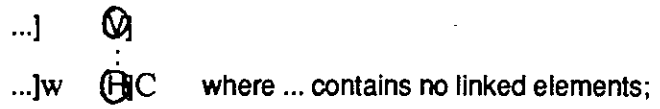
The output of H-Shift is submitted to other rules yet to be introduced. In brief, the floating H of *pe* will delete in all four groups. At this stage, we already see that *pe* is high after G1.1, G1.2, and G3.1 nouns, but it is low after G3.2 because nouns in this group do not have a floating or donatable H. In G3.1 the leftmost H will spread

rightward to *ka*. Finally, toneless syllables will receive L by default and the final output will be like the target forms of (34).

To complete the paradigm in (34), we need a second rule to apply to non-donor stems. This is a default rule that will link the floating H of *pe* to the last TBU of the clitic group. It is a default rule because it applies only in the event prelinking and all the rules that we have discussed so far fail to associate tone to TBUs within the clitic group. C-Final H association links any floating H tone to the final syllable of the clitic group.

(37) C-Final H ASSOCIATION

Attach a floating H to the last syllable of a branching clitic group if no H is previously linked in the clitic group.



The target forms for the illustration of C-Final H association are provided in (38).

(38)

G2.1	zoba	pé	the idiot as well
G2.2	ngoombe	pé	the cow as well

These forms are derived as shown in (39).

(39)

G2.1	G2.2	
* *	* *	
[[zoba] pe]	[[ngoombe] pe]	
[[ ]w H]C	[[ ]w H]C	Input
---	---	H-Shift
* *	* *	
[zoba pe]	[ngoombe pe]	
:	:	
[H]	[H]	C-Final H Assoc.

After application of C-Final H association, the rest of the syllables get L by default and we have the correct results. C-Final H association is the last rule to attach tone to TBUs within the clitic group.

It will have been observed that both H-Shift and C-Final H association require that the clitic group be branching. However, even though these two rules have the same results, they remain distinct rules because the source of the H tone is different in each case. On the whole, the data of (34) look alike on surface. This is just one instance of different rules conspiring to produce similar results. In fact, two distinct rules are involved H-Shift (35) and C-Final H Association (37). It should be made clear here that the difference in these rules is determined by the tonal specification of the stems involved. In clearer terms, only donor groups feed H-Shift; constructions involving non-donor groups can reach the same results through a different rule: C-Final H association. Since the deciding factor in these two rules is the tonal specification of the stems involved, the need for two different rules makes it possible to avoid direct reference to tone groups in rule formulation. Below I discuss another such rule that is remarkably similar to the rule of C-Final H association because both rules refer to the same edge but different labels.

2.3.4.2 P-Phrase bounded Tone Rules

The last rule that associates floating tones and TBUs applies only if no H tone is linked in the phonological phrase. In this case, a floating H can dock to the last syllable of the phonological phrase.

(40) ϕ-FINAL-H ASSOCIATION

> If no TBU follows the domain of the floating H, associate the H to the last syllable of the p-phrase, provided the phrase contains no linked H.

[... Ⓥ]
:
[... Ⓗ]ϕ (where ... contains no associated elements)

This is the rule that is responsible for the derivation of T2 forms like *ndoongó* (needle), *ndoongó* (palmwine). To illustrate, let us examine how these ambiguous forms are derived.

After accent placement, the different forms have the configuration of the input in (41). Since this structural description is not appropriate for H-Attraction, H-Support, H-Shift, and C-Final, none of these rules will apply. The C brackets are then removed. At this point in the derivation, only ϕ-Final level rules can associate tone and TBUs. And this is exactly what ϕ-Final H association does.

(41)

G1.1	G1.2	
* *	* *	
[[ndoongo]]	[[ndoongo]]	
[[H] C]ϕ	[[H] C]ϕ	Accents
---	---	C-Final H
* *	* *	
[ndoongo]	[ndoongo]	
:	:	
[H]ϕ	[H]ϕ	ϕ-FinalH
* *	* *	
[ndoongo]	[ndoongo]	
|	|	
[H] ϕ	[H] ϕ	Output

It is crucial to remember here that the representation of the two stems 'needle' and 'palmwine' can be distinguished only by the placement of the initial accent. But the initial accent does not make this distinction on surface unless it is associated with a H. In these examples the initial accent does not link to a H tone. Instead, it is the final

accent that gets a tone by ϕ-Final H association. Since the final accent is not distinctive, we fail to distinguish the two forms. This explains why these two nouns are realised identically in this context.

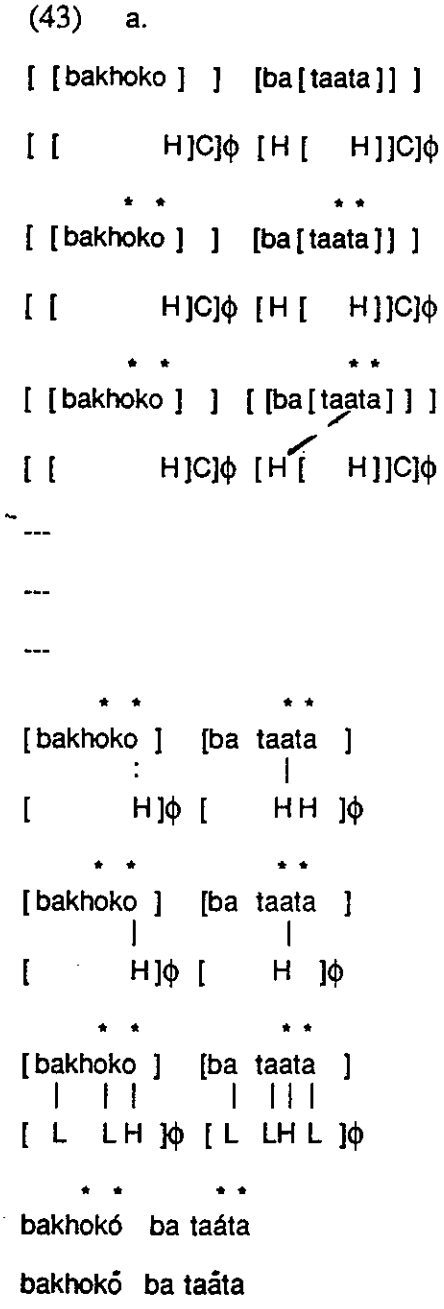
The formulation of C-Final H association and ϕ-Final H association raises the question of whether this is not the same rule. I argue here that these are different and indepent rules although their respective results are similar. The impression that this may be a single rule comes from the fact that the same edge is involved: the right edge. Following the organisation of the prosodic hierarchy, the right edge of a smaller domain can also be the edge of an immediately higher constituent. But this does not necessarily mean that we can collapse these rules. Below I discuss data that provide the crucial evidence showing that C-Final H and ϕ-Final H association are different rules. The data concern a string of words that has a different tonal output depending on phrasing.

(42) a. bakhokó ba taâta
2chicken of 1father
As for the chickens, they are father's.

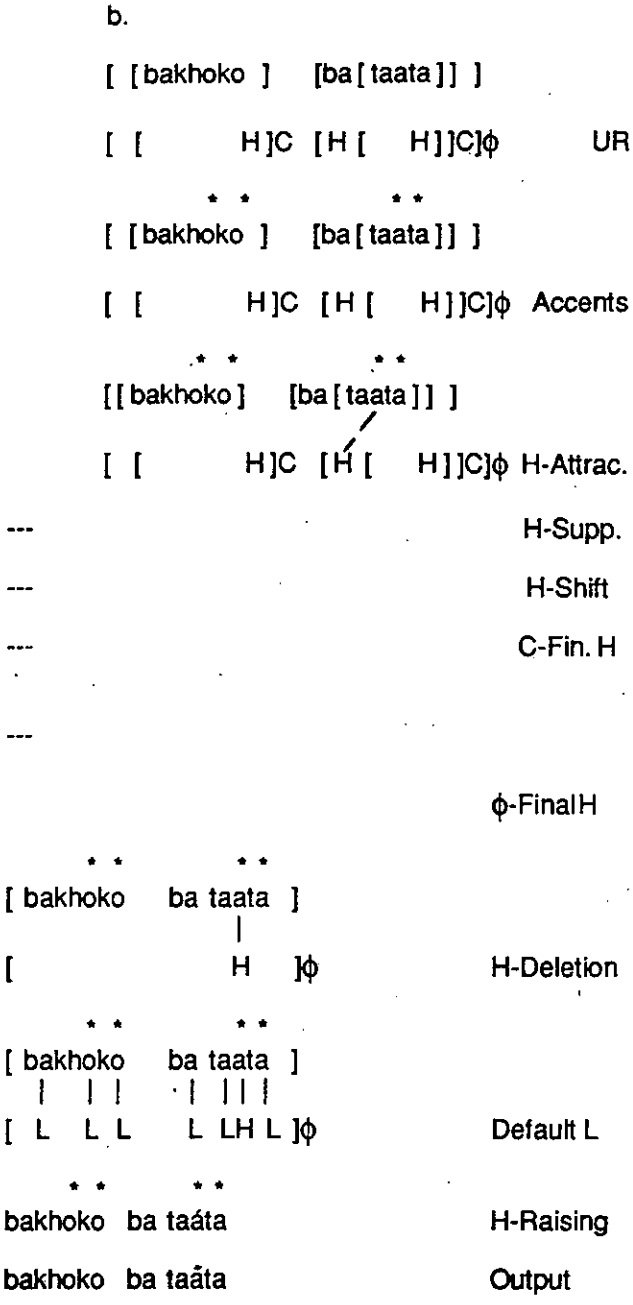
b. bakhoko ba taâta
2chicken of 1father
As for father's chickens, ...

As far as phonology is concerned, the major difference between (42) a and b is the presence versus the absence of H tone on *bakhoko*. To account for this difference, I suggest that although *bakhoko* is C-Final in both constructions, it can receive a H tone only in (42)a because it is ϕ-final. I will argue later that the difference in phrasing reflects the difference in the syntax of these two constructions. In this particular case, *bakhoko* is the unmodified subject of a clause in (42)a but the head of a modified NP in (42)b.

(43) a.



b.



In the derivation above, only two rules associate tone to TBUs: H-Attraction, which applies in both (43) a and b, and ϕ-Final Association, which affects only (43)a. But note as well that C-Final H Association, which is required in the derivation of the

target forms in (38), does not apply to the constructions in (43) because here we need the ϕ-Final H association rule in order to distinguish these two phrasal groupings.

Finally, note that if we construct similar forms with a clitic after the first noun, it will become clear that the domain-final tone associates to the edge of the clitic group and not the p-phrase.

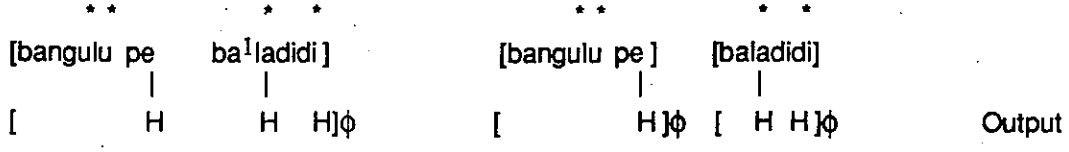
(44) a. bangulu pé bálâdidi ...
2pig too 2disappear-ip
The pigs that disappeared as well ...

b. bangulu pé balâdidi
2pig too 2disappear-ip
The pigs as well disappeared.

These forms are derived as shown in (45).

(45)

a.	b.	
[[[bangulu] pe] [ba[ladidi]]]	[[[bangulu] pe]] [[ba[ladidi]]]	
[[[ ] H]C [H[H]]C]ϕ	[[[ ] H]C]ϕ [[H[H]]C]ϕ	Input
[[[bangulu] pe] [ba[ladidi]]]	[[[bangulu] pe]] [[ba[ladidi]]]	
[[[ ] H]C [H[H]]C]ϕ	[[[ ] H]C]ϕ [[H[H]]C]ϕ	Accents
[[[bangulu] pe] [ba[ladidi]]]	[[[bangulu] pe]] [[ba[ladidi]]]	
[[[ ] H]C [H[H]]C]ϕ	[[[ ] H]C]ϕ [[H[H]]C]ϕ	H-Attr.
---	---	H-Shift
[[bangulu pe] [baladidi]]	[[bangulu pe]] [[baladidi]]	
[[H]C [H H]C]ϕ	[[H]C]ϕ [[H H]C]ϕ	C-FinalH



The point in the derivation of (45) is to determine how *pe* gets a H tone in both (44)a and (44)b. If we assume that C-Final H association is responsible for placing this tone in both (44)a and (44)b, we can account for everything else that follows in the derivation. Namely, let us note that the output of C-Final H association creates the right environment for Plateauing in (45)a. By this rule, the subject agreement marker *ba-* of the verb *ba-ladidi* receives a high tone by left-to-right spreading of the tone of *pe*. (45)b does not undergo Plateauing because this rule is ϕ–bounded and that *pe* is also ϕ-Final. The output of C-Final H association does not undergo ϕ-Final H association because the conditions are not met. The rest of tone rules will apply as appropriate. A complete derivation is provided in Appendix B.

Let us now examine what happens assuming that *pe* receives tone by ϕ-Final H association. The first thing to note is that ϕ-Final H association will place tone on *pe* only in (45)b since this is the only structure that satisfies the conditions. In (45)a, a different mechanism is required to get tone on *pe* and *ba-*. This mechanism cannot be spreading because it will be difficult to find a principled way of limiting this leftward spreading to only a few syllables. This option should be rejected because it is simply too costly by requiring two separate rules: ϕ-Final H association to derive (45)b, and a different rule to derive (45)a.

---

[1] This subject agreement marker will get a H tone through a left-to-right tone spreading process I call Plateauing. This process is possible in (44)a since the two clitic groups share the same p-phrase; in (44)b, the same marker is not subject to Plateauing since it is at the edge of separate p-phrase. The p-phrase bounded rule is introduced and illustrated later in this section (47).

It is clear from the discussion above that C-Final H association is distinct from ϕ-Final H association. ϕ-Final H association is necessary in (43), and C-Final H association is responsible for the tone of *pe* in (44)a and (44)b.

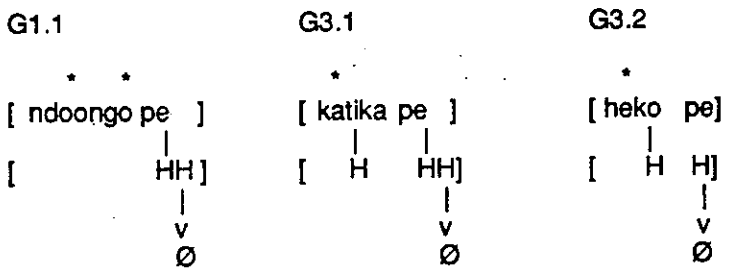
After the tone association rules discussed so far have applied, tones which are not yet linked delete by the following rule.

(46) FLOATING-H DELETION (H-DELETION)

Ⓗ---> Ø

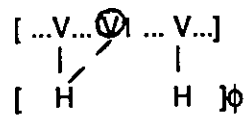
To illustrate H-Deletion, let us refer to the output of (36) above. G2 has no H to delete. But the rule will apply to G1.1, G3.1 and G3.2.

(47)



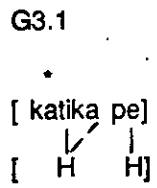
We have now covered the major tone association rules. The remaining rules that can associate tone and TBUs are fill-in rules. The first of these is Plateauing. According to this rule all toneless syllables flanked by Hs become H by rightward spreading of the H to the left of the domain. Unlike the earlier rules, Plateauing is p-phrase bounded, not clitic group-bounded.

(48) PLATEAUING (left to right, iterative)



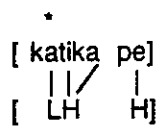
As an example of Plateauing, let us consider the G3.1 noun in (47). We observe that prior application of H-Shift to G3.1 created the appropriate conditions for Plateauing. That is, we have a toneless syllable flanked by two Hs. The result is that the toneless syllable also gets a H tone.

(49)



The second fill-in rule is the default L insertion, introduced in (12). This rule states that every syllable still toneless at this point of the derivation gets L by default. (50) shows the output of this rule applied to (50).

(50)



Further cases of this type will be examined below under the phonology of the p-phrase.

Now let us examine a phonological phrase containing two clitic groups. The data in (51) comprise two clitic groups. The first clitic group is made up of the noun stem *bakhoko* and the second of the associative marker *ba* followed by the noun stem *taata*.

(51) bakhõkõ bá táâta
2chicken of 1father
it's father's chickens

In (51) only one tone is linked in each clitic group. The rest of the string of H tones is the result of Plateauing. In (52) below, I illustrate how each of the clitic groups gets its H tone separately. Then I will show the two clitic groups concatenated (53).

(52)

a.	b.	
[[bakhoko]]	[ba [taata]]	
[H[H]w]C	[H [H] w]C	UR
* *	* *	
[[bakhoko]]	[ba [taata]]	
[H[H]w]C	[H [H] w]C	Accents
* *	* *	
[[bakhoko]]	[ba [taata]]	
[H[H]w]C	[H [H] w]C	H-Attraction

The partial derivation in (52) indicates that each clitic group has a single tone associated by H-Attraction. In (53), both clitic groups share the same p-phrase.

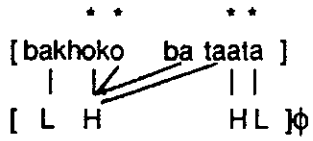
(53)

* * * *	
[[bakhoko] [ba taata]]	
| |	
[[H]C [H]C]ϕ	H-Deletion
* * * *	
[bakhoko ba taata]	
| |	
[H H]ϕ	Plateauing

Application of H-Attraction in each of the clitic groups has created the context required for Plateauing, which affects the last syllable of the stem *ba-khoko* , the associative marker *ba*, and the first mora of the stem-initial syllable of *taata*. Then toneless

syllables receive a default L. The derivation of these forms is completed with the application of H-Raising (13). This rule realises a H associated with accent as R.

(54)



Default L

bakhókó bá tááta — H-Raising

bakhõkõ bá tááta — Output

The effects of H-Raising can be seen on the last syllable of the stem *ba-khoko*. The last syllable of *taata* does not undergo H-Raising because it is L. It is also noteworthy that a R (on the last syllable of *bakhoko*) has resulted from Plateauing. Other examples of this kind will be pointed out as appropriate.

2.3.4.3 Rule Inventory

To conclude this section, here is a summary of the rules that have been suggested, in their respective order of application.

(55). A. Accent Rules

1.	Initial Accent	(19)
2.	Final Accent	(21)

B. Tone Rules

3.	H-Attraction	(29)
4.	H-Support	(31)
5.	H-Shift	(35)
6.	C-FinalH	(37)
7.	ϕ-FinalH	(40)
8.	H-Deletion	(46)
9.	Plateauing	(48)
10.	Default L	(12)
11.	H-Raising	(13)

A few remarks are in order concerning the accentual character of the present analysis and the rules in particular. First, observe that with the exception of the default rule, all tone rules apply to H, which suggests that Low is underspecified. In addition, it can also be observed that Low tones are always peripheral. Specifically, a string of tones belonging to the same tone domain never contains a L tone flanked by H tones. This supports the claim that only the H is specified underlyingly.

Second, it will be recalled from several studies and in particular McCawley's work (1970; 1978) that accentual languages are characterised by the specification of only one H tone per morpheme. The analysis shows that this is the case for KiYaka. The one H tone per morpheme is also at work in G3 because in spite of the presence of two H in certain morphemes, the two tones are distinguishable: one is prelinked, the other is floating. The tone rules also distinguish these two tones. It will be remembered for instance, that only the floating H can undergo H-Attraction, H-Shift, H deletion, and raising to R.

Action at a distance, whereby tone is attracted to a later accented syllable, is another characteristic of accentual languages that the present analysis has revealed for KiYaka. Finally, we see that the rules of KiYaka follow the sequence predicted by McCawley (1978), according to which in an accentual language, all accent rules precede tone rules. If accent assignment does not precede the earliest KiYaka tone rule, lexical pairs such as 'needle' and 'palmwine' will not be distinguishable. For the same reason, we will also fail to predict the landing site of the H tone in those cases where it skips over several syllables (10).

2.4 Sample Derivations

In this section, I show how the rules discussed in the preceding section derive the different tone patterns given in the table in (4). I will first discuss marked patterns, and then the unmarked ones. For each of these patterns, I will first show the derivation of the final and then the nonfinal patterns.

2.4.1 Marked Patterns

It should be remembered that marked tone patterns are characterised by the application of H-Attraction because a floating H always precedes the noun stem in the underlying representation.

2.4.1.1 Marked Final

The illustration below features the derivation of a marked noun which constitutes a clitic group on its own. The floating H is supplied in these examples by the copula morpheme, which is composed of this tone only. Following are the target forms:

(56)	G1.1	yěko	it's a separation
	G1.2	ndoǒngo	it's palmwine
	G2.1	zǒbá	it's an idiot
	G2.2	ngoǒmbě	it's a cow
	G3.1	kǎtíka	it's a liver
	G3.2	hěkó	it's a tsetse

The tones of these forms are derived as shown in (57).

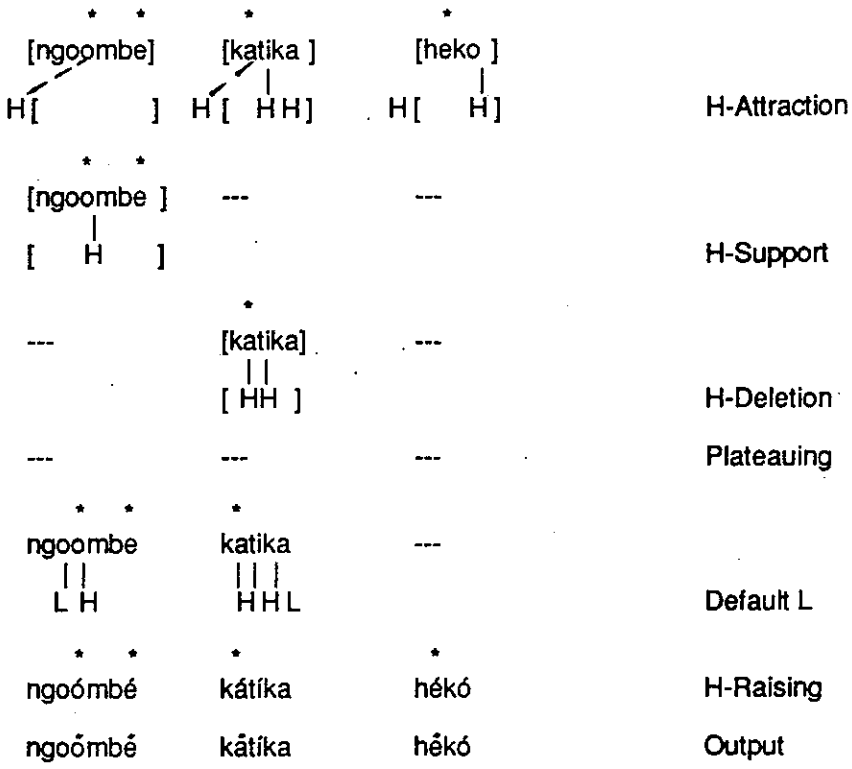
(57)a

G1.1	G1.2	G2.1	
[yeko]	[ndoongo]	[zoba]	
H][H]	H][H]	H][H H]	Underlying

* *	* *	* *	
[yeko]	[ndoongo]	[zoba]	
H][H]	H][H]	H][HH]	Accents
* *	* *	* *	
[yeko]	[ndoongo]	[zoba]	
H][H]	H][H]	H][ ]	H-Attraction
---		* * [zoba] [H]	H-Support
* * [yeko] [H]	* * [ndoongo] [H]	---	H-Deletion
---	---	---	Plateauing
* * yeko H L	* * ndoongo L H L	* * zoba H	Default L
* * yéko	* * ndoóngo	* * zoba	H-Raising
yẽko	ndoõngo	zôbâ	Output

(57)b

G2.2	G3.1	G3.2	
[ngoombe]	[katika]	[heko]	
H][ ]	H][HH]	H][H]	Underlying
* * [ngoombe]	* [katika]	* [heko]	
H][ ]	H][HH]	H][H]	Accents



In (57) the accents are assigned as expected. Only G1.1 and G2.2 receive a final accent because they have no prelinked H tone. H-Attraction attaches the copula H to the stem initial syllable of all nouns. In G2, H-Support is automatic after H-Attraction. H-Shift and Final H do not apply because the structural descriptions are not met. Then H-Deletion takes care of the floating tones of G1.2 and G3.1. Plateauing does not apply since the conditions are not met for this rule. TBUs without tone at this stage receive a low tone by default. Finally, H tones attached to accented syllables are raised to R.

Other morphemes that donate a H tone to a following stem and thus produce this pattern include the associative morpheme (58)a, the conjunction of coordination *ye* (58)b, the vocative a marker *a* (58)c, the negative *ka...* (58)d, as well as noun stems.

(58) a. kya mayêko
7of 6separations
Of separations

b. taata ye maáma
1father and 1mother
Father and mother

c. amaáma
mother
Mother!

d. ka ndóóngó kó
it's not 9needle not
It's not a needle

e. ndoongo ndóongo
9needle 9needle
The real needle

Some of these cases are discussed elsewhere in this thesis. Examples like (58)a can be seen in (6), (16) and (17). (58)d is covered in the section below. Forms of the type (58)e are examined and derived in chapter 4. Finally, one additional donor morpheme is a H tone inserted by rule. It is also introduced and discussed in Chapter 4. The few non-donor proclitics are the locative prefixes *ku* (to, at), *ha* (on) and *mu* (in).

2.4.1.2 Marked Nonfinal

We will illustrate the derivation of marked nonfinal pattern with the "ka NP ko" construction, which as mentioned earlier, is used to negate a noun. The target forms are repeated here for convenience as (59).

(59)

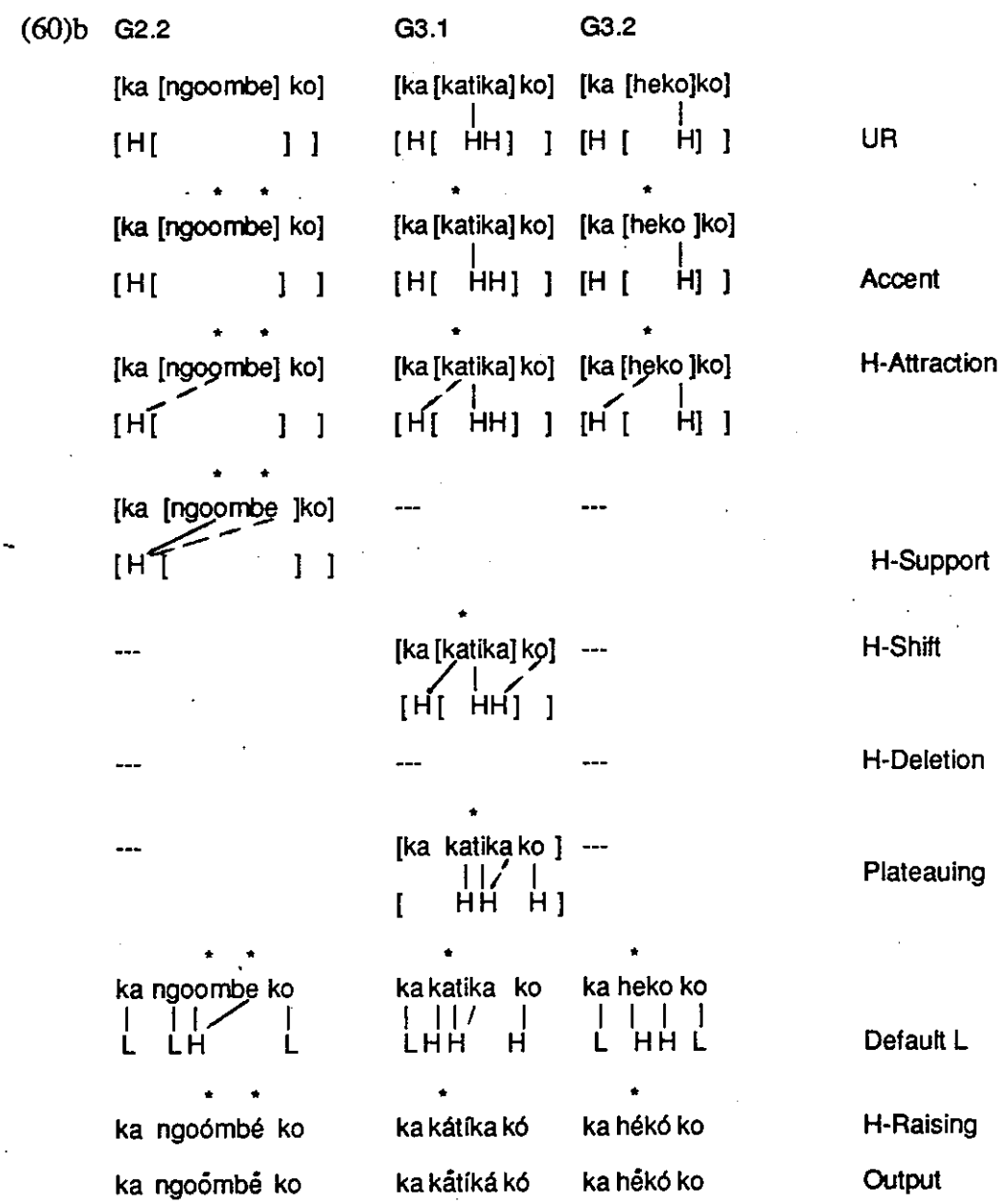
G1.1:	Ka	yêkó	kó	'it's not a separation'
G1.2:	Ka	ndoõngó	kó	'it's not palmwine"
G2.1:	ka	zóbá	ko	'it's not an idiot
G2.2:	Ka	ngoõmbé	ko	'it's not a cow'
G3.1:	Ka	kâtíká	kó	'it's not a liver'
G3.2:	Ka	hêkó	ko	'it's not a tsetse'

In these examples, it is crucial to note the surface tone of *ko*. It is H in G1.1 and G3.1, but L in G2 and G3.2. This corresponds to G1.1 and G3.1 having a H to donate, as opposed to G2 and G3.2, which have no H to contribute to the clitic *ko*.

(60)a

G1.1	G1.2	G2.1	
[ka [yeko] ko]	[ka [ndoongo] ko]	[ka [zoba] ko]	
[H[H]]	[H[H]]	[H[ ]]	UR
[ka [yeko] ko]	[ka [ndoongo] ko]	[ka [zoba] ko]	
[H[H]]	[H[H]]	[H[ ]]	Accent
[ka [yeko] ko]	[ka [ndoongo] ko]	[ka [zoba] ko]	
[H[H]]	[H[H]]	[H[ ]]	H-Attrac.
---		[ka [zoba]ko]	
		[H [ ]]	H-Support
[ka [yeko] ko]	[ka [ndoongo] ko]	---	
[H[H]]	[H[H]]		H-Shift
---	---	---	H-Deletion
[ka yeko ko]	[ka ndoongo ko]	---	
[H H]	[H H]		Plateauing
ka yeko ko	ka ndoongo ko	ka zoba ko	
L H H	L LH H	L H H	Default L
ka yékó kó	ka ndoóngó kó	ka zoba ko	H-Raising
ka yêkô kó	ka ndoôngô kó	ka zôbâ ko	Output

(60)b



In the above examples the floating H tone attracted by the initial accent of the following stem comes from the negation *ka*. This H could also be the copula; the results would be exactly the same for the phonology. As usual, H-Support spreads the donated H to the whole stem of G2 since this stem is toneless. H-Shift (35) attaches the floating H to the C-Final vowel in both G1.1 and G3.1. H-Deletion

and Plateauing are not applicable. A default L is assigned to every syllable still toneless. Note here that without the floating H in G3.1, ko would surface with a L tone, which is incorrect. Finally, H-Raising converts every H that coincides with accent to R. The derived forms match the target forms in (59).

2.4.2 Unmarked Patterns

Recall that unmarked tone patterns are labelled so because the nouns they characterise do not bear a H tone on their stem-initial syllable. In terms of the underlying representations, the noun stems are not preceded by a floating H tone in the clitic group. Unmarked patterns are thus characterised by the non-application of H-Attraction in the phrase-initial clitic group.

Other morphemes that receive H tone by H-Shift like *ko* include *pe* (as well) and the object agrement markers for nouns that belong to classes 3 -18.

(61) a. taata pé
1father as well
Father as well

b. tu-suumb-idi byá, bití.
we-buy-ip 8it 8chair
We bought it, the chairs.

In (61)b, *bya* indicates agreement between the verb and its object *biti* 'chairs', which belongs to class 8. I have suggested in Kidima (1987) that object marker enclitics are composed of the prefix of the head noun followed by *-a*, a short form for *-aawu* (*aawu* is reserved for emphatic use). In the present case, *biti* is class 8 and its class prefix is *bi-*. (See table of agreement markers on page 9).

2.4.2.1 Unmarked Final

The unmarked tone pattern can be observed on a noun which is final in a clitic group, as is the case when a noun stem constitutes a clitic group on its own (42). The target forms for the derivation of the unmarked final pattern are given below.

(62)

G1.1	yekó	'as for the separation, ...'
G1.2	ndoongó	'as for the palmwine...'
G2.1	zoba	'as for the idiot...'
G2.2	ngoombe	'as for the cow, ...'
G3.1	katíka	'as for the liver, ...'
G3.2	hekó	'as for the tsetse, ...'

Here, particular attention should be paid to the final syllable of the near minimal pair *yekó* and *hekó*. That syllable is realised with R in the former but with H in the latter. This difference in surface tone correlates with the accented last syllable in *yeko* and with the non-accented (because it is prelinked) last syllable in *heko*.

(63)a

G1.1	G1.2	G2.1	
[yeko]	[ndoongo]	[zoba]	
[H]	[H]	[ ]	Underlying
* *	* *	* *	
[yeko]	[ndoongo]	[zoba]	
[H]	[H]	[ ]	Accent
* *	* *		
[yeko]	[ndoongo]	---	
:	:		
[H]	[H]		ϕ-FinalH
---	---	---	
			H-Deletion

	---	---	---	Plateauing
	* *	* *	*	
	yeko	ndoongo	zoba	
	L H	L L H	L L	Default L
	* *	* *		
	yekó	ndoongó	---	H-Raising
	yekǒ	ndoongǒ	zoba	Output
(63)b	G2.2	G3.1	G3.2	
	[ngoombe]	[katika]	[heko]	
	[ ]	[H H]	[H]	Underlying
	* *	*	*	
	[ngoombe]	[katika]	[heko]	
	[ ]	[HH]	[H]	Accent
	---	---	---	ϕ–Final-H
	---	* [katika] [H]	---	H-Deletion
	---	---	---	Plateauing
	* *	*	*	
	ngoombe	katika	heko	
	L L L	L H L	L H	Default L
	---	---	---	H-Raising
	ngoombe	katíka	hekó	Output

As expected, H-Attraction and H-Shift do not apply in (63). H-Support, which is always fed by H-Attraction, fails as well. ϕ-Final-H attaches the only H tone of the domain to the C-Final syllable in G1.1. The floating H in G3.1 is deleted by H-Deletion. The structural description for Plateauing is not met. And toneless syllables receive L by default. Then H-Raising takes place.

2.4.2.2 Unmarked Nonfinal

In this second example of unmarked tone pattern, the noun is followed by pe 'too, as well', which is underlyingly H, to make up the phrase /NP pe/. The target forms are given in (64).

(64)

G1.1	yeko	pé	'the separation as well, ...'
G1.2	ndoongo	pé	'the palmwine as well, ...'
G2.1	zoba	pé	'the idiot as well, ...'
G2.2	ngoombe	pé	'the cow as well, ...'
G3.1	katíká	pé	'the liver as well, ...'
G3.2	hekó	pe	'the tsetse as well, ...' (Note: *pe* is L here only)

It is important to note that *pe* has a low tone after the G3.2 noun *hekó*.

(65)a

G1.1	G1.2	G2.1	
[[yeko]pe]	[[ndoongo] pe]	[[zoba] pe]	
[[H]H]	[[H]H]	[[ ] H]	Underlying
[[yeko]pe]	[[ndoongo] pe]	[[zoba] pe]	
[[H]H]	[[H]H]	[[ ] H]	Accent
[[yeko]pe]	[[ndoongo] pe]	---	
[[H]H]	[[H]H]		H-Shift
---	---	[[zoba] pe]	
		[[ ] H]	C-FinalH
[yeko pe]	[ndoongo pe]	---	
[H]	[H]		H-Deletion
---	---	---	Plateauing
yeko pe	ndoongo pe	zoba pe	
L L H	L L L H	L L H	Default L

	* *	* *	* *	
	yeko pé	ndoongo pé	zoba pé	H-Raising
	yeko pé	ndoongo pé	zoba pé	Output

(65)b

G2.2	G3.1	G3.2	
[[ngoombe] pe]	[[katika] pe]	[[heko] pe]	
[[ ]H]	[[HH] H]	[[H] H]	Underlying
* *	*	*	
[[ngoombe] pe]	[[katika] pe]	[[heko] pe]	
[[ ] H]	[[HH] H]	[[H] H]	Accent
	*		
---	[[katika] pe]	---	H-Shift
	[[HH] H]		
* *			
[ngoombe pe]	---	---	C-Final H
[H]			
	*	*	
---	[katika pe]	[heko pe]	
	[H H]	[H]	H-Deletion
	*		
---	[katika pe]	---	
	[H H]		Plateauing
* *	*	*	
ngoombe pe	katika pe	heko pe	
L L L H	L H H	L H L	Default L
* *	*	*	
ngoombe pé	katíká pé	hekó pe	H-Raising
ngoombe pé	katíká pé	hekó pe	Output

Once again, it is crucial to observe the surface tone of *pe*. It is H in all cases except after G3.2, because nouns in this group have no floating H to contribute to a following

item in the clitic group. In this group, the floating H of *pe* may not link to it because the clitic group already has a linked H. In G2, *pe* has a H on the surface. This is the underlying H tone of *pe*, which attaches to the latter only because it is C-Final and that there is no other H linked in the clitic group. *Pe* gets a H tone donated by the stem in G1.1 and G3.1 through H-Shift. *Pe* surfaces with its own H after G2.2 *ngoombe* through C-Final H association. H-Deletion takes care of the still unlinked Hs. Only G3.1 qualifies for Plateauing.

In conclusion, the present analysis accounts for all the facts of KiYaka tone described in section 1. First, the tone groups are accounted for by positing differing arrangements of accent, floating H, and linked H. Second, the different tone patterns can be derived in a simple and principled way without referring to grammatical functions. This is achieved by assuming a postlexical analysis that recognises that the relative position a noun occupies in a clitic group is crucial for its tone assignment.

The distinction between plain high tones and raised high tones on one hand, and that between floating and prelinked high tones on the other, is also significant in the present analysis. With the introduction of accent, we can now account for the fact that within noun stems, it is only nouns with prelinked high tones which always have a high tone on a certain syllable, no matter what the phrasal context. However, no word has a raised high tone in all contexts on a certain syllable.

2.4.3 Two Further Tone Patterns

There are two additional patterns for certain stems. These follow from rules already given. Specifically, stems that take their initial accent on the second mora of the stem initial syllable (G1.2 and G2.2) exhibit additional patterns in cases where the first mora of this syllable falls within the domain of Plateauing and thus surfaces with

a H tone. The standard four patterns for some of these stems repeated from (4) are given below.

(66)	T1	T2	T3	T4	
G1.2	ndoóngo taáta	ndoongó taatá	ndoongo... taata...	...ndoóngó ... ...taátá ...	'palm wine' 'father'
G2.2	ngoómbé mbuúndú	ngoombe mbuundu	ngoombe... mbuundu...	...ngoómbé ... ... mbuúndú ...	'cow' 'heart'

Here are the additional patterns for these nouns.

(67)	T1a	T2	T3	T4a	
G1.2	ndóóngo tááta	--- ---	--- ---	...ndóóngó ... ...táátá ...	'palm wine' 'father'
G2.2	ngóómbé ku-sáálá	--- ---	--- ---	...ngóómbé ... ... ku-sáálá ...	'cow' 'to remain'

As can be observed, these subpatterns are all marked patterns T1 and T4. These patterns are derivable in the following type of environment.

(68)

a.
```
        * *              * *
[  [CVCV  ]    [ [ CVVCV...  ] ]
   /              /
[H [       ]C   [H [      H   ]C]ϕ
```

b.
```
        * *              * *
[  [CVCV  ]    [ [ CVVCV...  ] V1 ]
   /              /        /
[H [       ]C   [H [      H   ]C  H]ϕ
```

The phonological phrase in (68) contains at least two clitic groups and the CVVCV word is in the second clitic group. When H-Attraction applies to both these clitic groups, it creates the appropriate context for Plateauing, since Plateauing is bounded

by the P-phrase, not the clitic group. As an example, let us examine *táấta* and *táấtấ* in the following constructions.

(69) a. bakhṓkṓ bá táấta
cop-2chicken 2of 1father
It's father's chickens.

b. bakhṓkṓ bá táấtấ pé
cop-2chicken 2of 1father too
It's father's chickens too.

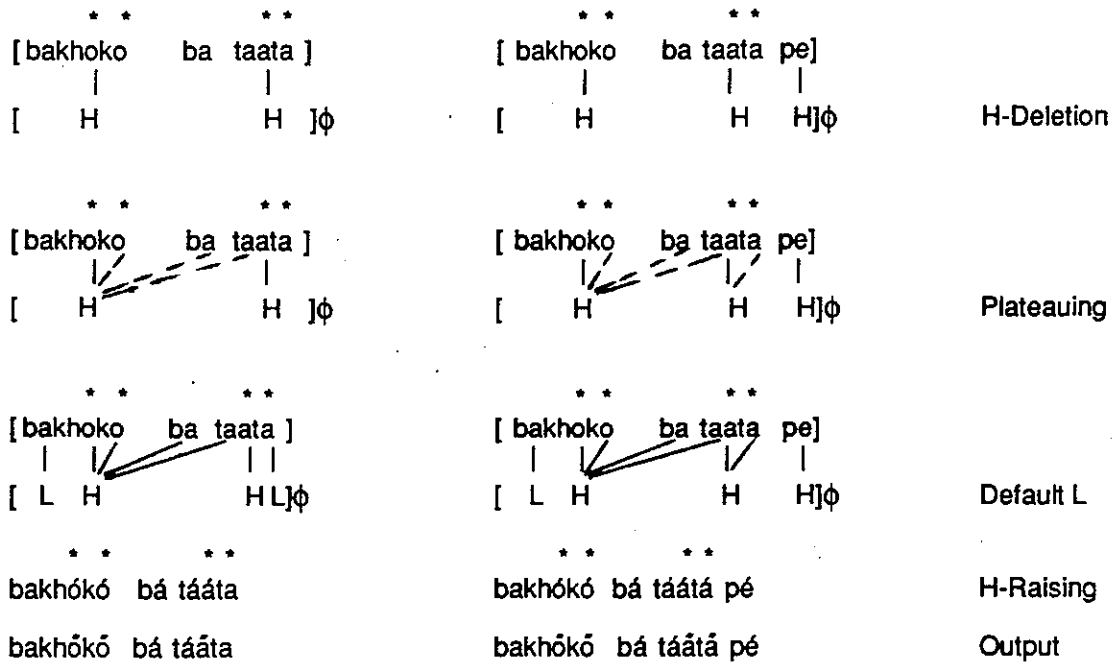
The derivation of these forms is as shown in (70) below.

(70) a.

```
[ [bakhoko ]   [ba [taata ] ] ]
[H[        H]C  [H [    H]]C]ϕ
        * *          * *
[ [bakhoko ]   [ba [taata ] ] ]
[H[        H]C  [H [    H]]C]ϕ
        * *          * *
[ [bakhoko ]   [ [ba [taata ] ] ]
[H[        H]C  [H [    H]]C]ϕ
---
---
---
---
```

b.

```
[ [bakhoko ]   [ba [taata ] pe] ]
[H[        H]C  [H [    H]w H]C]ϕ      UR
        * *          * *
[ [bakhoko ]   [ba [taata ] pe ] ]
[H[      H]C    [H [    H]w   H]C]ϕ    Accents.
        * *          * *
[ [bakhoko ]   [ba [taata ] pe ] ]
[H[        H]C  [H [    H]w H]C]ϕ      H-Attrac.
---                                    H-Supp.
        * *          * *
[ [bakhoko ]   [ba [taata ] pe ] ]
[ [      H H]C  [ [  H H]w  H]C]ϕ      H-Shift
---                                    C-Fin. H
---                                    ϕ-Final H
```



These additional patterns are possible because *bakhoko* is preceded by a copula H in the case of (70)a, and because of *pe* following *taata* in the case of (70)b. The copula H is attracted by the initial accent of the noun *bakhoko*, while the H of the associative morpheme ba links to the accented mora of the initial syllable of *taata*. The verb has tone to the left of the first mora of *taata* . Application of H-Attraction to these two stems creates the appropriate conditions for Plateauing, which affects the first mora of the stem initial syllable of *taata* and thus yields the subpattern *tá̋á̋ta*.

The second subpattern obtains because the presence of *pe* after the noun allows for the floating H of *taata* to shift to *pe*. This triggers Plateauing between the H on *taata* and the H shifted to pe. The result is a H tone on the second syllable of *taata*, which gives the subpattern *tá̋á̋tá̋*.

In the case of *ngoombe* and *mbuundu*, there will not be any tone shift to *pe* since these nouns are nondonor. However, the pattern will be realised since these

stems are toneless and thus undergo H-Support, which will spread the H tone received from the left to the whole stem.

In sum, the analysis reveals that most stems exhibit four tone patterns while G1.2 and G2.2 stems have six tone patterns, four of which are marked.

2.5 Tone Donation in the Lexicon

The preceding sections have shown that the complex tonal behavior of KiYaka nouns can be derived with a fairly small set of rules. Additional support for the analysis can be found in the lexical application of H-Attraction. In this section I discuss two cases of H-Attraction in the lexicon. One involves the derivation of new lexical items through reduplication and compounding, and the other illustrates the same rule as it applies to verb forms.

2.5.1 Derived Noun Stems

2.5.1.1 Reduplication

It is the claim of the present study that the table of tone groups given in (4) is representative for all KiYaka nonderived nouns. In other words all KiYaka nonderived nouns fall within these groups. If the analysis is correct, it is only reasonable to expect the tone group membership of new nouns to be a direct result of the analysis. I will show in this section that the derivation of new nouns is in fact straightforward and that these new nouns fall within the major tone groups of (4).

To illustrate the derivation of new lexical items, I will discuss two examples showing that when a noun is derived through the reduplication of a G1.1 stem, the resulting form belongs to G3.1. In the first example, I will use the noun stem *nima* (back) to derive the reduplicated form *lu-nimanĺma* (backward). The second example

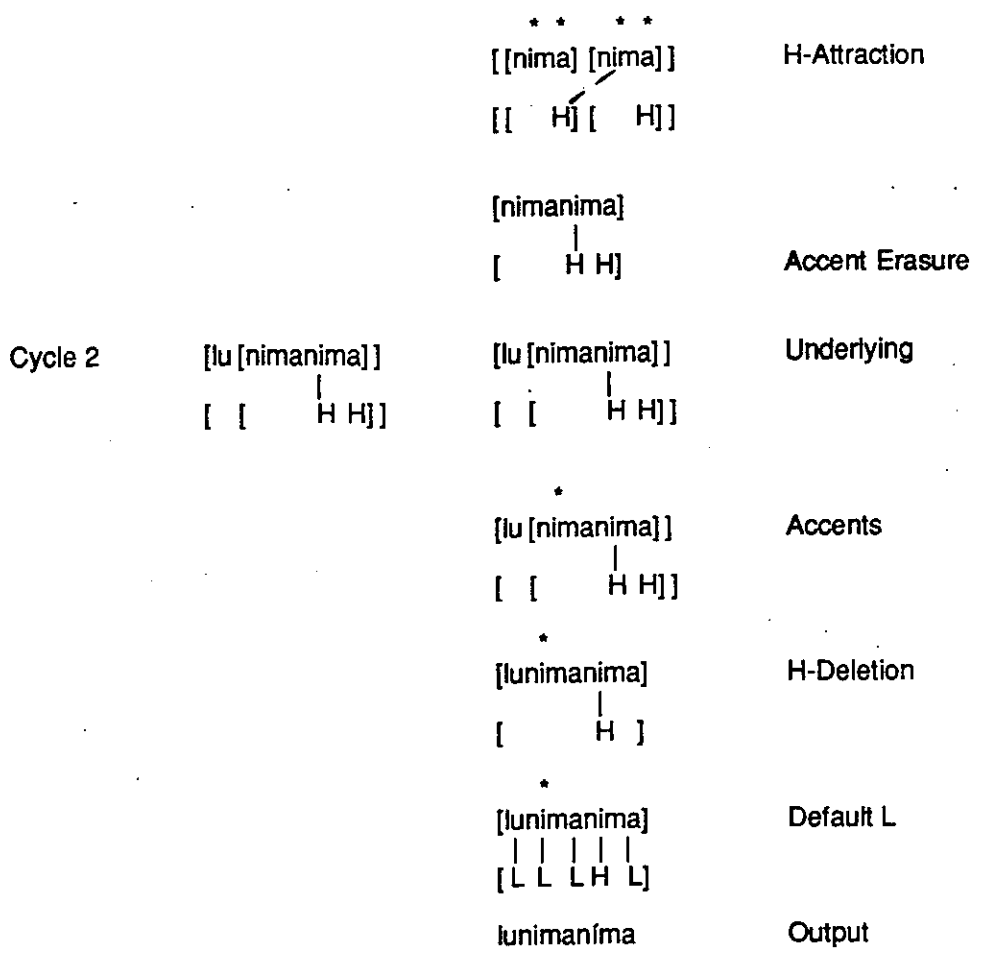
concerns the derivation of *madyámadya* (glutton) from *madya* (food). In this second example, the prefix is copied along with the monosyllabic stem. An account will be provided for the aberrant behaviour of the prefix.

We can tell that *nima* is G1.1 and *lu-nimaníma* G3.1 by their respective tone patterns within the same respective contexts (71). *Nima* (back) patterns like the typical G1.1 *khoko* (chicken) and *lu-nimaníma* like the typical nonderived G3.1 *katíka* (liver).

(71)	T1	T2	T3	T4	
G1.1	khóko	khokó	khoko...	...khókó...	'chicken'
	níma	nimá	nima...	...nímá...	'back'
G3.1	kátíka	katíka	katíká ...	...kátíká...	'liver'
	lu-nímáníma	lu-nimaníma	lu-nimanímá...	...lu-nímánímá...	'backward'

The target form then is *lu-nimaníma*. I will assume that KiYaka reduplication occurs in the prosodic constituent by copying both the segmental and the tonal tiers. Since reduplication takes place after accents are assigned, the accents are also copied, thus creating the appropriate conditions to trigger H-Attraction in the lexicon.

(72) Cycle 1	Morphological Structure	Prosodic Structure	
	[nima]	[nima]	Underlying
	[H]	[H]	
		* *	
		[nima]	Accents
		[H]	
		* * * *	
		[[nima] [nima]]	Compounding
		[[H] [H]]	



It is crucial to note that the tonal representation of the new stem at the outset of Cycle 2 is exactly like that of a nonderived noun like *katĺka* 'liver'. The new stem has a linked H and there is a floating H following the linked H. At the end of the first cycle, the new stem also has four accents. But these accents are not available at the outset of the second cycle, which in fact is the underlying representation of the new lexical item. To account for the loss of the accents at this level, I will refer to the theory of Prosodic Constituency (Inkelas 1989) and suggest the following account.

It is assumed by the structure posited in (18) that the accents are not part of the underlying morphological structure. In the same way, the underlying form for the new noun in (73) has no accents. The accents are assigned in the prosodic constituent and

are available only in this constituent. It follows that compounding and all other rules involving accents apply within the prosodic constituent, where as I suggested earlier morphological information is apparent for the purposes of phonology.

(74) ACCENT ERASURE : end of cycle 1 (lexicon)

* ------> Ø

If *lu-nimanĺma* were involved in a certain construction, it would receive only the initial accent and would undergo all subsequent tone rules just like *katĺka* and other G3.1 nouns. Finally, let us observe that there is nothing special about the nominal prefix in the above example. In the second example of reduplication I discuss below, the prefix gets special treatment because the noun stem is monosyllabic.

Stems that are derived by reduplication like *lu-nimanĺma* include *tseendetséende* 'with horns' from *tseende* (horns), *maambamaámba* 'watery' from *maamba* (water), *kikhadikhadi* 'sour' from *khadi* (bitter), *kitsonitsóni* 'shy' from tsoni (shame), *mookomoóko* 'empty-handed' from *mooko* (hands), and *phiiphaphiipha* 'nightly' from *phiipha* (night).

In the second example of reduplication, the derivation of the tonal representation of reduplication is carried out in the same manner as above. In addition, this second example also reveals the treatment of monosyllabic stems. The noun *madya* 'food' is used to illustrate. *Madya* consists of the nominal prefix *ma-* followed by the monosyllabic root *dya* (eat). *Madya* belongs to G1.1, as can be witnessed by its patterning with *khoko*.

(75)	T1	T2	T3	T4	
G1.1	khṍko	khokṍ	khoko...	...khṍkṍ...	'chicken'
	mā̀-dya	ma-dyā̀	ma-dya...	...mā̀-dyā̀...	'food'

Since *madya* is G1.1, it must receive two accents. This raises the question of the placement of one of the accents. To deal with this situation, I assume that KiYaka is subject to a prosodic requirement according to which a prosodic stem (represented by p) must contain at least two syllables.

(76) Minimal Prosodic Stem: KiYaka

[σ σ]p

To satisfy (76), monosyllabic roots are are mapped into their respective prosodic constituents as in (77).

(77) Prefix Rebracketing

[σ [σ]m]m+1 ---> [σ σ]p

Following (77), the mapping of *madya* into the prosodic constituent looks like (78).

(78)

Morphological Structure		Prosodic Structure
[ma[dya]]		[madya]
	--->	
[[H]m]		[H]p

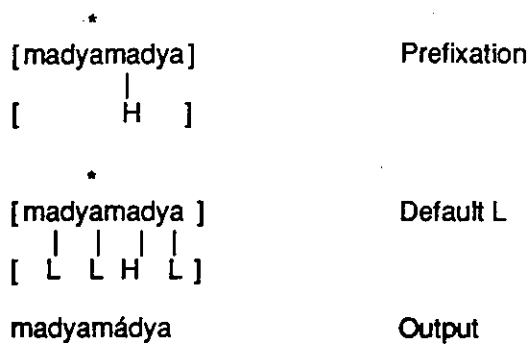
At this stage, *madya* is ready to host accents. The initial accent goes on the prefix *ma-* and the final accent on the only vowel of the root. The process of reduplication copies the segmental material as well as the tones and the accents. The resulting structure provides the right environment for the H of the first occurrence of *madya* to be attracted by the initial accent of the second occurrence of the same noun.

(79)

Cycle 1	Morphological Structure	Prosodic Structure	
	[ma [dya]]	[madya]	UR
	[[H]]	[H]	
		* *	
		[madya]	Accents
		[H]	
		* * * *	
		[[madya] [madya]]	Compounding
		[[H] [H]]	
		* * * *	
		[[madya] [madya]]	H-Attraction
		[[H] [H]]	
		[madyamadya]	
		|	
		[H H]	Accent Erasure

Cycle 2

[ma[dyamadya]]	[ma[dyamadya]]	Underlying
|	|	
[[H H]]	[[H H]]	
	*	
	[ma[dyamadya]]	Accents
	|	
	[[H H]]	
	*	
	[ma[dyamadya]]	H-Deletion
	|	
	[[H]]	



Here again, the underlying tone of the new lexical item *ma-dyamádya* is exactly like that of *ma-katíka*. The accents are lost in the same way as in the case of *llu-nimanítma* That is, the new noun is now stored in the morphology and accents are not available in this part of the lexicon.

Another significant phenomenon takes place when the new noun is stored in the lexicon. The stem of the derived noun contains three syllables (*dyamádya*) and not four as was the case for *lu-nimanítma*. This just means that the initial *ma-* is correctly read as a prefix in the morphology. Contrary to *madya*, which receives the initial accent on the prefix *ma-* in Cycle 1, the new noun in Cycle 2 has the initial accent on the first *dya* because 1) from the point of view of the morphology *ma-* is always a prefix and that *dya* is the stem initial syllable; and 2) the requirement that triggered the special treatment of the prefix is already met in the morphology since the root has more than one syllable.

The preceding discussion has shown that H-Attraction applies in the lexicon. To determine the tone group membership of the new stems, we just need to observe the four patterns that a newly derived stem exhibits in the different phrasal contexts posited earlier in (5). Thus for instance, the two lexical items derived above pattern as shown in the table below.

(80)	T1	T2	T3	T4	
G3.1	kâtíka mbûlúmbúlu	katíka mbulumbúlu	katíká ... mbulumbúlú...	...kâtíká... ...mbûlúmbúlú...	'liver' 'insect'
	madyâmádya lunímáníma	madyamádya lunimaníma	madyamádyá... lunimanímá...	...madyâmádyá... ...lunímánímá...	'glutton' 'backward'

Checking this patterning against the table in (4) represented here by the stems *katíka* and *mbulumbúlu,*, it appears that these forms pattern exactly like *katíka* or *mbulumbúlu,* which belong to G3.1. We must conclude that the new noun stems belong to G3.1.

2.5.1.2 Compounding

In addition to reduplication, compounding is another way to derive new lexical items in a very systematic way. Compounds are derived by the following rule.

(81) [ ]X, [ ]Y ---> [[ ]X [ ]Y]Z

Given that the table in (4) concerns only underived stems, I will assume in this section that X, Y, and Z are underived stems. Consequently, the rule in (81) means that any of the underived noun stems in (4) can be added on or added to any of the other stems. Such a combination predicts thirty-six possible new noun stems from the six tone subgroups. In the table below, I give the makeup of the potential noun stems resulting from compounding in the upper row of figures. The lower row of figures refers to the number of combinations, each of which is a potential new noun stem (82).

(82) Possible combinations of underived noun stems

1.1+1.1 *1*	*1.1+1.2* *2*	*1.1+2.1* *3*	*1.1+2.2* *4*	*1.1+3.1* *5*	*1.1+3.2* *6*
1.2+1.1 7	1.2+1.2 8	1.2+2.1 9	1.2+2.2 10	1.1+3.1 11	1.1+3.2 12
2.1+1.1 *13*	*2.1+1.2* *14*	2.1+2.1 15	2.1+2.2 16	2.1+3.1 17	2.1+3.2 18
2.2+1.1 *19*	*2.2+1.2* *20*	*2.2+2.1* *21*	*2.2+2.2* *22*	2.2+3.1 23	2.2+3.2 24
3.1+1.1 25	3.1+1.2 26	3.1+2.1 27	3.1+2.2 28	3.1+3.1 29	3.1+3.2 30
3.2+1.1 31	3.2+1.2 32	3.2+2.1 33	3.2+2.2 34	3.2+3.1 35	3.2+3.2 36

The combinations predicted in the table above do not necessarily exist as actual words. The combinations which are matched by actual nouns are given in italics in the table above (82). Below I provide examples of words that represent these combinations. The nouns are presented in their T2 pattern in (83).

(83) Derived Noun stems

1.	ngudikhóongo (mother- polygamy):	'father's other wife'
2.	nlophondiíndi	name of region
3.	nzilanzénga (road-cut):	'shortcut'
4.	mayimbangoónde	name of village
5.	nlophophélénde	name of village
6.	tatakhétó (father-female):	'paternal aunt'
13.	nzengankanû (cut-problem):	'judgement'
14.	nzalamaambâ (hunger-water):	'thirst'
19.	ngaangankisî (master-fetish):	'fetishist'
20.	ngaanganzaambî (master-god):	'priest'
21.	ngaangabuka (master-heal):	'medical doctor'

22. ngaangangoombo (master-divination): 'fortune teller'

Among the observations to make about this list, let us first note that there are many gaps. (Only twelve combinations correspond to actual noun stems). Some of the gaps may be accidental. However, some of the combinations could also be ruled out because they would violate the principles underlying the structures. For instance, combinations involving G3 exclusively should be ruled out because they would yield nouns with two prelinked tone, which will contradict the generalisation according to which only one tone is specified per morpheme.

The absence of most combinations involving G1.2 can also find an explanation in the analysis. The structures in (18) assume that G1.2 is a restricted group for noun stems since it is lexically marked. This can also observed by the rarity of nouns that fit this group. Given this, compounds involving G1.2 should also be expected to be even more scarce.

The new lexical items listed in (83) are derived as shown below. The derivation of items 1-6 is featured in (84)a; 13, 14, 19, and 20 in (84) c and d; 21 and 22 in (84)e.

(84)a Target forms:

ngudikhóonço ngudi (G1.1) + khoongo (G1.1)	'father's other wife'
n'lophondiíndi n'lopho (G1.1) + ndiindi (G1.2)	name of region
nzilanzéngá nzila (G1.1) + nzenga(G2.1)	'shortcut'

Cycle 1

Morphological Structure

[ngudi] [khoongo]	[n[lopho]] [[ndiindi]]	[[nzila]] [[nzenga]]		
[H] [H]	[[H]] [[H]]	[[H]] [[ ]]		UR

Prosodic Structure

[ngudi]			
[H]			Pref. Rebracketing
[ngudi] [khoongo]	[nlopho] [ndiindi]	[nzila] [nzenga]	
[H] [H]	[H] [H]	[H] [ ]	
* * * *	* * * *	* * * *	
[ngudi] [khoongo]	[nlopho] [ndiindi]	[nzila] [nzenga]	
[H] [H]	[H] [H]	[H] [ ]	Accents
* * * *	* * * *	* * * *	
[[ngudi][khoongo]]	[[nlopho][ndiindi]]	[[nzila][nzenga]]	
[[H][H]]	[[H][H]]	[[H][ ]]	Compounding
* * * *	* * * *	* * * *	
[[ngudi][khoongo]]	[[nlopho][ndiindi]]	[[nzila][nzenga]]	
[[H][H]]	[[H][H]]	[[H][ ]]	H-Attrac.
		* * * *	
---	---	[[nzila][nzenga]]	
		[[H][ ]]	H-Support
[ngudikhoongo]	[nlophondiindi]	[nzilanzenga]	
[H H]	[H H]	[H]	Acc. Erasure

Cycle 2

Morphological Structure

[ngudikhoongo]	[n[lophondiindi]]	[nzilanzenga]	
[H H]	[[H H]]	[H]	UR

Prosodic Strucure

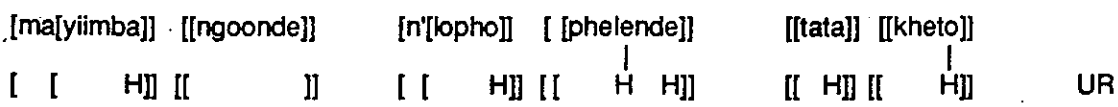
[ngudikhoongo]	[n[lophondiindi]]	[nzilanzenga]	
[H H]	[[H H]]	[H]	
*	*	*	
[ngudikhoongo]	[n[lophondiindi]]	[nzilanzenga]	
[H H]	[[H H]]	[H]	Accents
*	*		
[ngudikhoongo]	[n[lophondiindi]]	---	
[H]	[[H]]		H-Deletion
*	*	*	
[ngudikhoongo]	[nlophondiindi]	[nzilanzenga]	
[H]	[H]	[H]	Prefixation
*	*	*	
[ngudikhoongo]	[nlophondiindi]	[nzilanzenga]	
[L L H L L]	[L L LH L]	[LL H]	Default L
---	---	---	H Raising
ngudikhóongo	nlophondiíndi	nzilanzéngá	Output

(84)b Target forms:

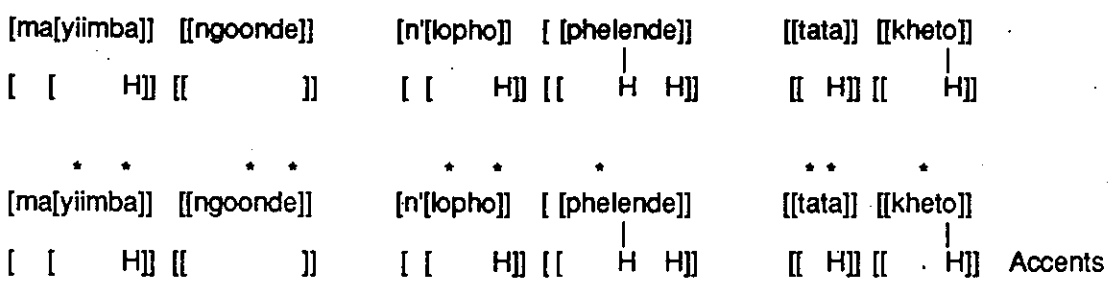
mayiimbangoónde mayiimba (G1.1) + ngoonde G2.2)	name of village
n'lophophélénde n'lopho (G1.1) + phelénde G3.1)	name of village
tatakhétó tata (G.1) + kheto (G3.2)	'paternal aunt'

Cycle 1

Morphological Structure

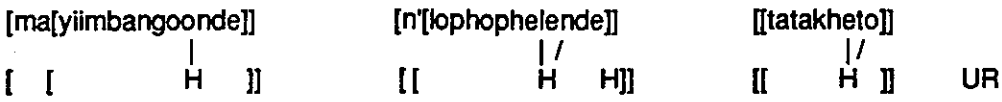


Prosodic Structure

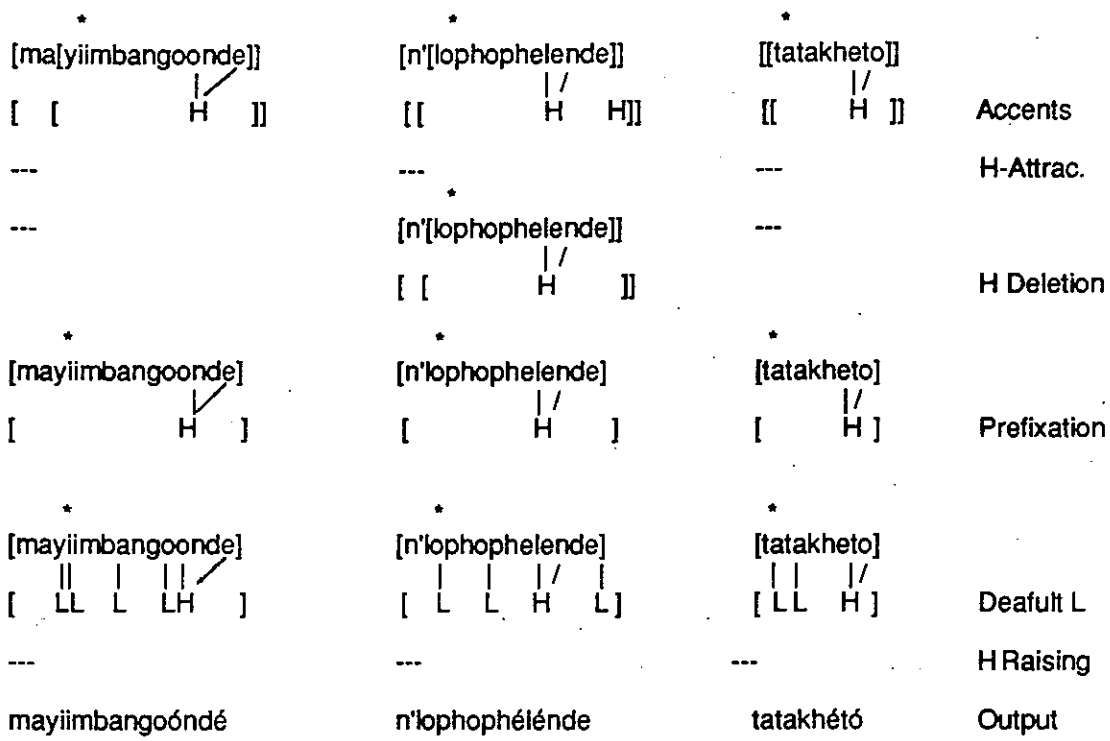


Cycle 2

Morphological Structure



Prosodic Structure



(84)c Target forms: nzengankanu 'verdict'
nzenga (G2.1) + nkanu (G1.1)

nzalamaamba 'thirst'
nzala (G2.1) + maamba (G1.2)

Cycle 1

Morphological Structure

[nzenga] [nkanu] [nzala] [maamba]

[ ] [H] [ ] [H] UR

Prosodic Structure

[nzenga] [nkanu] [nzala] [maamba]

[ ] [H] [ ] [H]

[nzenga] [nkanu] [nzala] [maamba]

[ ] [H] [ ] [H] Accents

```
     *   *     *  *          *  *     *   *
[ [nzenga] [nkanu] ]     [[nzala] [maamba] ]
[[        ] [     H]]     [[      ] [       H]]        Compounding
---                      ---                          H-Attraction
[nzengankanu]            [nzalamaamba]
[              H]        [              H]             Acc. Erasure
```

Cycle 2

<u>Morphological Structure</u>

```
[nzengankanu]            [nzalamaamba]
[              H]        [              H]             UR
```

<u>Prosodic Structure</u>

```
[nzengankanu]            [nzalamaamba]
[              H]        [              H]

    *         *              *         *
[nzengankanu]            [nzalamaamba]
[              H]        [              H]             Accents
---                      ---                          H-Attraction
    *         *              *         *
[nzengankanu]            [nzalamaamba]
              :                        :
[              H]        [              H]             C-FinalH
    *         *              *         *
[nzengankanu ]           [nzalamaamba]
   |   |   |  |             | |   | |   |
[  L   L   L  H]         [  LL  LL   H]                Default L
    *         *              *         *
nzengankanú              nzalamaambá                   H-Raising
nzengankanú              nzalamaambá                   Output
```

(84)d Target forms: ngaangankisí 'fetishist'
ngaanga (G2.2) + nkisi (G1.1)

ngaanganzaambi' 'priest'
ngaanga (G2.2) + nzaambi (G1.2)

Cycle 1

Morphological Structure

[ngaanga] [nkisi]	[ngaanga] [nzaambi]	
[ ] [H]	[ ] [H]	UR

Prosodic Structure

[ngaanga] [nkisi]	[ngaanga] [nzaambi]	
[ ] [H]	[ ] [H]	
* * * *	* * * *	
[ngaanga] [nkisi]	[ngaanga] [nzaambi]	
[ ] [H]	[ ] [H]	Accents
* * * *	* * * *	
[[ngaanga] [nkisi]]	[[ngaanga] [nzaambi]]	
[[ ] [H]]	[[ ] [H]]	Compounding
---	---	H-Attraction
[ngaangankisi]	[ngaanganzaambi]	
[H]	[H]	Acc. Erasure

Cycle 2

Morphological Structure

[ngaangankisi]	[ngaanganzaambi]	
[H]	[H]	UR

Prosodic Structure

[ngaangankisi]	[ngaanganzaambi]	
[H]	[H]	
* *	* *	
[ngaangankisi]	[ngaanganzaambi]	

[H]	[H]	Accents
---	---	H-Attraction
* *	* *	
[ngaangankisi]	[ngaanganzaambi]	
:	:	
[H]	[H]	ϕ-Final H
* *	* *	
[ngaangankisi]	[ngaanganzaambi]	
|| | | |	| | | || |	
[LL L LH]	[LL L LL H]	Default L
* *	* *	
ngaangankisí	ngaanganzaambí	H-Raising
ngaangankisí	ngaanganzaambí	Output

(84)e Targert forms: ngaangabuka 'doctor'
ngaanga (G2.2) + buka (G2.1)

ngaangangoombo 'future teller'
ngaanga (G2.2) + ngoombo (G2.2)

Cycle 1

Morphological Structure

[ngaanga] [buka]	[ngaanga] [ngoombo]	
[ ] [ ]	[ ] [ ]	UR

Prosodic Structure

[ngaanga] [buka]	[ngaanga] [ngoombo]	
[ ] [ ]	[ ] [ ]	
* * * *	* * * *	
[ngaanga] [buka]	[ngaanga] [ngoombo]	
[ ] [ ]	[ ] [ ]	Accents
* * * *	* * * *	
[[ngaanga] [buka]]	[[ngaanga] [ngoombo]]	
[[ ] [ ]]	[[ ] [ ]]	Compounding
---	---	H-Attraction

[ngaangabuka]	[ngaangangoombo]	
[ ]	[ ]	Acc. Erasure
Cycle 2		
Morphological Structure		
[ngaangabuka]	[ngaangangoombo]	
[ ]	[ ]	UR
Prosodic Structure		
[ngaangabuka]	[ngaangangoombo]	
[ ]	[ ]	
* *	* *	
[ngaangabuka]	[ngaangangoombo]	
[ ]	[ ]	Accents
--- ---	--- ---	H-Attrraction H-Deletion
* *	* *	
[ngaangabuka]	[ngaangangoombo]	
|| | | | [LL L L L]	|| | || | [LL L LL L]	Default L
* *	* *	
ngaangabuka	ngaangangoombo	H-Raising
ngaangabuka	ngaangangoombo	Output

As far as tone group membership is concerned, it is determined in the same way. Each noun stem is put in the four different phrasal contexts described in (5). The the patterning of each of the noun stems is compared to that of the other nouns in the table of (4). There are understandably new stems that do not fit completely in any of the tone groups in (4). This is due to the fact that compounding has created new configurations. For instance, underived nouns generally do not contain doubly-prelinked Htones or middle long syllables. It seems that there are more restrictions on

new tonal configurations than morphological ones. In fact, compounding derives nouns of the latter type. In the table below, the first noun for each tone group is a canonical form from the table in (4).

(85)

	T1	T2	T3	T4
G1.1	khóko	khokó	khoko...	...khókó...
	nzengankánu	nzengankanú	nzengankanu...	...nzéngánkánú...
G1.1a	nzalamaámba	nzalamaambá	nzalamaamba...	...nzálámáámbá...
G1.2	ndoóngo	ndoongó	ndoongo...	...ndoóngó ...
	ngaangankísi	ngaangankisí	ngaangankisi...	...ngáángánkísí...
G1.2a	ngaanganzaámbi	ngaanganzaambí	ngaanganzaambi...	...ngáángánzáámbí...
G2.2	ngoómbé	ngoombe	ngoombe...	...ngoómbé ...
	ngaangabúká	ngaangabuka	ngaangabuka ...	...ngáángábúká...
G2.2a	ngaangangoómbó	ngaangangoombo	ngaangangoombo...	...ngáángángóómbó...
G3.1	kátíka	katíka	katíká ...	...kátíká...
G3.1a	nzwánkáanda	nzwankáanda	nzwankáándá...	...nzwánkáándá...
G3.1b	n'lóphóndííndi	n'lophondiíndi	n'lophondiíndí...	...n'lóphóndííndí...
G3.1 c	n'lóphóphélénde	n'lophophélénde	n'lophophélénde...	...n'lóphóphélénde...
G3.2	hékó	hekó	hekó ...	...hékó...
G3.2a	nzílánzéngá	nzilanzéngá	nzilanzéngá...	...nzílánzéngá ...
	tátákhétó	tatakhétó	tatakhétó...	...tátákhétó...
G3.2b	mayímbángóóndé	mayiimbangoóndé	mayiimbangoóndé...	...mayímbángóóndé...

The table above confirms that establishing tone group membership is quite straightforward for most of the derived lexical items. However, it appears that T1 and T4 are not what we should expect for items 13, 14, 19, 20, 21, and 22 of (83). In T1, the only R occurs on the penultimate mora for items 13, 14, 19, 20; this R occurs on the penultimate mora and spreads to the last syllable in 21 and 22. In T4, The Rs are

on the penultimate and the last moras in all the items in question, while the preceding moras receive a H tone by Plateauing. Given that R is the phonetic realisation of a H tone linked to an accented mora, these items must have the accents on the penultimate and the last syllable, respectively.

The difference between the first set (which includes 13, 14, 19, 20) and the second set (which includes 21 and 22) lies in the tonal underlying structure of the second member of the compound. While the first member of the compound is toneless in both sets, the second member is toneless only in the case of items 21 and 22. It is not clear to me at this stage why these nouns behave this way and I can only speculate and suggest what follows. The rule of Accent Erasure may apply differently to these forms. It may be also possible that these are transitional patterns towards a completely accentual system. In any case, the fact remains that in the derivation of all these forms, the first member of the compounding process is toneless.

In summary, the foregoing discussion not only demonstrates the lexical nature of H-Attraction; it also reveals an important aspect of the predictive power of the analysis presented in this work. In particular, the data on compounding make the point that the rules suggested in this analysis help derive new lexical items in a principled way.

2.5.2 Verb forms

Although this chapter is mainly concerned with the tone of nouns, I will briefly discuss a few verbal forms to provide further support that tone donation occurs in the lexicon. To the extent that prefixation takes place in the lexicon, verb forms provide additional evidence that H-Attraction applies in the lexicon. The illustrative data involve verb stems preceded by a donor prefix. Such is the case of the third person

prefixes of IP. The singular has no segmental material and is thus composed of only the floating H tone. The plural prefix is *ba-*.

(86) a. tádidi
Ølook-ip
s/he looked at

b. ba-tádidi
they-look-ip
they looked at

The underlying representations of these verbs are as in (87). They belong to G1.1 and thus receive two accents, just like the nouns this tone group. The floating tone in the stem is part of of the tense marker suffix /-ili/, here appearing as the allomorph [-idi].

(87) a. [[tadidi]]
[H[H]]

b. [ba[tadidi]]
[H[H]]

From these representations, the forms in (86) are derived in a straightforward way. As usual the accents are assigned to the initial and final syllables of the stem. Then H-Attraction applies, associating the floating H of the prefix to the stem initial syllable of the verb. The floating H of the stem deletes. A default low tone is assigned to every toneless mora. Finally, high tones that co-occur with accent on the same mora are raised to R.

(88) a. [[tadidi]] b. [ba[tadidi]]
[H[H]] [H[H]] UR

	* *		* *	
a.	[[tadidi]]	b.	[ba[tadidi]]	
	[H[H]]		[H[H]]	Accents
	* *		* *	
a.	[[tadidi]]	b.	[ba[tadidi]]	
	[H[H]]		[H[H]]	H-Attraction
	* *		* *	
a.	[tadidi]	b.	[batadidi]	
	[H]		[H]	H-Deletion
	* *		* *	
a.	[tadidi]	b.	[batadidi]	
	[H L L]		[L H L L]	Default L
	* *		* *	
	tádidi		batádidi	H-Raising
	tãdidi		batãdidi	Output

Let us now contrast these forms with the non-third person forms whose prefix is toneless. In this case, there is no tone donation lexically. The verb may not surface with a tone on the stem initial syllable. Instead, the verb can receive its own H on the last syllable of the phonological phrase.

(89) a. tu-tadidí
we-look-ip
We looked.

b. lu-tadidí
you/pl-look-ip
You looked.

The derivation of the non-third persons is subject to a phrasal rule, namely to ϕ-Final H association. This can be seen in (90).

	[[H]]		[[H]]	UR
	* *		* *	
a.	[tu [tadidi]]	b.	[lu [tadidi]]	
	[[H]]		[[H]]	Accents
	---		---	H-Attraction
	---		---	H-Shift
	* *		* *	
a.	[tutadidi]	b.	[lutadidi]	
	:		:	
	[H]		[H]	ϕ-FinalH
	* *		* *	
a.	[tutadidi]	b.	[lutadidi]	
	| | | |		| | | |	
	[L L L H]		[L L LH]	Default L
	* *		* *	
	tutadidí		lutadidí	H-Raising
	tutadidí		lutadidí	Output

As evidence for the phrasal nature of the rule that links the only H tone to these verbs, note that if there were another word following the verb, the H would be shifted to that word through H-Shift. For instance, the H of the verb could surface on *pé* as as in (91).

(91)	a.	tutadidi pé	we looked as well
	b.	lutadidi pé	you/pl looked as well

2.6 Summary

I have shown in this chapter that the complex tonal phenomena of KiYaka nouns can be accounted for by a set of accent and tone rules. The analysis presupposes a number of assumptions. First of all, KiYaka has both tone and accent in the lexicon. Only the H tone is specified underlyingly and most of these tones are

floating. Due to tone donation these floating tones generally link to tone bearing units to the right of their domains of specification. The Low tone, which actually means the absence of tone, is supplied by default very late in the derivation.

Moreover, I have established that this system is better described by referring to the phonological context in which a word occurs as well as the position that the word occupies in the phrase. Specifically, I have shown that with the exception of noun compounding and a few verb forms where tone rules apply at the word level, most rules have the clitic group and the phonological phrase as their domains.

By ignoring the phrasal aspects of the tone rules, the authors of previous descriptions were forced to assign a grammatical role to tone. One major problem with their approach is that they did not make any specific predictions as to how function words, which have no semantic function, acquire tone. In the present analysis, function words get tone by either lexical prelinking or by tone donation, Plateauing or default. As will become clear in Chapter 3, this thesis also provides a unified system for nouns and verbs, contrary to the separate nominal and verbal systems characteristic of previous descriptions.

CHAPTER 3

VERBS

3.0 Introduction

The major claim underlying the analysis of the tone of verbs is that with the exception of a few minor differences, tone works exactly the same way in verbs as it does in nouns. This is so because in both nouns and verbs tone is determined by the same conditions. Specifically, we need to know two things to predict tone: on the one hand, we need to know the phrasal as well as the phonological context, and on the other, the tone group the stem belongs to. With regard to the phrasal context, it is crucial to know whether a stem (noun or verb) is phrase-final or not. As for the phonological context, we can tell what tone a stem will bear depending on whether it is preceded by a floating H or not.

Membership in a tone group plays an equally important role in determining the tone of a stem. We saw earlier that tone group membership is a function of the morphological shape and the tonal specification for nouns. Tone group membership is also predictable on the same basis for verbs. In addition, tense distinctions play a role in the assignment of tone group membership for verbs. That is, some verbal forms can be assigned to different tone groups on the sole basis of their tense irrespective of their morphological shape and tonal specification.

The objective of this chapter is thus to show that nouns and verbs constitute a unified tonal system in KiYaka. To achieve this objective, it suffices to show that verb forms fall into the tone groups that were set for nouns. Once a form fits into one of the six tone groups, it undergoes the necessary rules like all the other members of that group.

This chapter is divided into two sections. Section 1 covers two major topics: the tone patterns and tone groups of both infinitives and finite verbs. In section 2, I examine additional patterns in verb forms with a long stem-initial syllable.

3.1 Tone Patterns and Tone Groups

It was observed in Chapter 2 that each noun stem can surface with as many as four different tone patterns (six for stems in G1.2 and G2.2). Verb stems can also bear four tone patterns. Observe the tone on the verb stem *tadidi* in the following constructions.

(1) T1. kima tu-tâdidi
7thing we-look-P
The thing we looked at ...

T2. tu-tadidí madya ma taâta
we-look-P 6food 6of 1father
We looked at father's food

T3. tu-tadidi mǎdyâ má táâta
we-look-P 6food 6of 1father
We looked at father's food (instead of something else)

T4. ba-tâdídí mǎdyâ má táâta
they-look-P 6food 6of 1father
They looked at father's food (instead of something else)

In these examples we notice that the verb stem *tadidi* bears the following respective tone melodies: RLL, LLR, LLL, and RLR.

The second major characteristics we observed concerning the tone of nouns was their membership in different tone groups. Verbs also fall into some of the tone groups we established for nouns. The table below indicates that verbs fall into four tone groups intead of six as was the case for nouns.

(2) Tone Patterns and Tone Groups

	T1	T2	T3	T4	Gloss
G1.1	...tu-tâdidi	tu-tadidí	tu-tadidi ...	...tu-tâdídí ...	we looked
	...twa-súumba	twa-suumbá	twa-suumba ...	...twa-súúmbá ...	we had bought
G1.2	... tu-diídi	tu- diidí	tu-diidi ...	... tu-diídí ...	we ate
	... tu-suúmbidi	tu-suumbidí	tu-suumbidi ...	... tu-suúmbídí ...	we bought
G2.1	ku-sálá	ku-sala	ku-sala ...	... ku-sálá ...	to work
	ku-lóká	ku-loka	ku-loka ...	... ku-lóká ...	to bewitch
G2.2	ku-saálá	ku-saala	ku-saala...	...ku-saálá ...	to remain
	ku-looká	ku-looka	ku-looka ...	...ku-looká ...	to dry up
G3.1	---	---	---	---	
G3.2	---	---	---	---	

In the table above, the verbs fall into the subgroups of two tone groups (G1 and G2) according to the characteristics they exhibit in the different tone patterns. But there are no verbs that fall in G3. This simply means that there are no verbs with a prelinked H tone. In fact we will see that verbs are basically toneless. However, verb stems will often be observed with a floating H tone. Such a H tone is usually acquired through affixation.

As was the case for nouns, the subgrouping (G1.1 and G1.2, G2.1 and G2.2) is motivated by group-internal differences. For example, G1.1 and G1.2 differ only in the location of the R in T1. Specifically, the R is on the first mora of the stem-initial syllable of the verb in G1.1, while the R is on the second mora of the same syllable in G1.2. In terms of the analysis, these subgroups are determined by the location of the initial accent.

One major difference between nouns and verbs is their respective membership in G1.1 and G1.2. We observed earlier that G1.2 contained only a few nouns and all of them are of the form CVVCV. Most nouns of the same structure belong to G1.1.

In addition, these two tone groups contain the few noun minimal pairs based on accent.

The situation is completely different with verbs. G1.2 contains verb stems longer than CVVCV. As far as the distribution of the CVVCV verbs between G1.1 and G1.2 is concerned, we have exactly the opposite situation from what is the norm for nouns. In fact most CVVCV verbs belong to G1.2 while a limited number of them fall under G1.1. In the case of verbs, the location of the accent in the stem-initial syllable is not phonemic; rather, this location of the accent correlates with differences in tense. These facts will become clearer as we discuss them in detail in the sections below.

3.1.1 Infinitives

The simple infinitive verb in KiYaka is composed of the verb root preceded by the infinitive marker *ku-* and followed by the final vowel (FV) /-a/. The examples below make this point.

(3)			
	kŭ-ta	/ku-ta-a/	to hit
	kŭ-dy-a	/ku-di-a/	to eat
	ku-sâl-â	/ku-sal-a/	to work
	ku-tâl-â	/ku-tal-a/	to look
	ku-saâl-â	/ku-saal-a/	to stay
	ku-baâl-â	/ku-baal-a/	to be hard

Infinitives typically exhibit the four tone patterns that have been observed with nouns. Note the tone of each of the occurrences of the infinitive *kudya* (to eat) in the following examples.

(4) a. [bazǒlélé kǔdya]
they-like-ip 15eat
They like to eat

b. [kudyǎ] [mfúnú kwěnǎ]
15eat- necessary 15is
To eat is necessary (It's necessary to eat)

c. [kudya kwa mbǐkǐ] [kwǎ mbi]
15eat- 15of excess cop-15of 9bad
To eat too much is bad

d. [bazǒlélé kǔdyǎ mbǐkǐ]
they-like-ip 15eat excess
They like to eat too much

As can be seen here, the infinitive *kudya* is marked final in (a), unmarked final in (b), unmarked non-final in (c), and marked non-final in (d).

From the point of view of the morphology, KiYaka has three types of infinitive verb roots: 1) CV roots, as in *ku-ta* (to hit) and *ku-di-a* (to eat); 2) CVC roots, as in *ku-sal-a* (to work) and *ku-tal-a* (to look); and 3) CVVC roots, as in *ku-saal-a* (to stay) and *ku-baal-a* (to be hard). We will see later that this division is crucial in terms of the tone groups each infinitive belongs to.

3.1.1.1 CV- Verb Roots

The CV roots can be further divided into two small groups. In the first group of CV roots (a) the only vowel is always a high vowel (i or u) that is generally converted into the corresponding glide (respectively y and w) before the final vowel /-a/. The verb root in the second group (b) always gets the vowel /-a/.

(5)	a.	kǔ-dy-a	ku-dy-ǎ	/ku-di-a/	to eat
		kǔ-fw-a	ku-fw-ǎ	/ku-fu-a/	to die
	b.	kǔ-ta	ku-tǎ	/ku-ta-a/	to hit

Since the infinitives represented by (b) always surface with an -a, the question can be raised whether the root is composed exclusively of the consonant or if it contains an unspecified vowel. The representation of *kuta* in (4) indicates that I have adopted a third position: the stem vowel is a. After suffixation of the FV a, one of the /a/'s is deleted because the sequence V_iV_i (i.e. taa) at the end of a word is not well-formed. Support for this position will be provided later.

All CV infinitives can bear the four tone patterns, as can be seen in the table below. The paradigm shows that CV roots behave like G1.1 stems.

(6) Infinitive patterns with CV Root: G1.1

	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
G1.1	kú-t-a	ku-t-á	ku-t-a...	...kú-t-á...	to hit
	kú-dy-a	ku-dy-á	ku-dy-a...	...kú-dy-á...	to eat
	kú-fw-a	ku-fw-á	ku-fw-a...	...kú-fw-á...	to die
	kú-hy-a	ku-hy-á	ku-hy-a...	...kú-hy-á...	to burn /Intr
	kú-hw-a	ku-hw-á	ku-hw-a...	...kú-hw-á...	to be finished

To account for the tonal behaviour of CV roots, we must explain the occurrence of the H tone in the unmarked final pattern.

We know from the analysis of nouns that the occurrence of a phrase-final H tone in the unmarked pattern indicates that the root has a lexical H. This H tone is realised on the root final mora if the root is phrase-final and no tone is already linked in th domain. Since I am assuming that all infinitives are toneless in KiYaka, I suggest that the H observed in the CV infinitives comes with the FV */-a./* It is assigned to the FV of this restricted group of items by a morphological rule that can be formulated as follows.

(7) FV H Insertion

[[CV] a]

Ø---> H/ [[ ]__]$_{stem}$

The output of this rule will undergo suffixation and then Vowel Deletion (12) will reduce the vowel sequence */aa /* to */a./*

(8) [[ta] a] [taa] [ta]

[[ ] H] ---> [H] ---> [H]

CV infinitive verbs are distinguishable from most of the infinitives in another way as well. In the marked-final pattern, these verbs place the initial raised H tone on the infinitive marker *ku-*, instead of the stem-initial syllable as is the case for most of the infinitives. The marked-final forms for both *kudya* and *kuta* are *kúdy-a* and *kú-ta*, respectively. Given these facts, I will assume that in CV roots, the infinitive marker prefix is rebracketed as part of the root following the prosodic requirement discussed in Chapter 2 (73) and repeated here as (9).

(9) Minimal Prosodic Stem: KiYaka

[σ σ]p

To satisfy (68), monosyllabic roots are are mapped into their respective prosodic constituents as in (73).

(10) Prefix Rebracketing

[σ [σ]m]m+1 ---> [σ σ]p

It is important to note that this rule is in no way particular to verb roots. In fact, this is the same rule that we need (see Chapter 2...) to reanalyse the prefix *ma-* in *madya* (food), which derives from the root *dya* (eat) and the mass noun prefix *ma-*. In the specific case of *kuta*, this infinitive form derives as follows.

(11) [ku [ta]] [[kuta]]
[[H]] ---> [[H]]

Note that we have the underlying tonal representation of G1.1 here.

The CV roots that contain a high vowel undergo an additional rule. Suffixation creates a sequence of a high vowel (i/u) followed by /-a/ that is not allowed on surface; and thus the high vowel will devocalise by glide formation.

(12) Devocalisation

$$\begin{matrix}\mu & & \mu & & \mu & & \mu \\ | & & | & & \not\| & & | \end{matrix}$$
$$\left\{\begin{matrix}[+\text{high}\ ] \\ [+\text{round}]\end{matrix}\right\}\ [\quad]\ \text{---}>\ \left\{\begin{matrix}[+\text{high}\ ] \\ [+\text{round}]\end{matrix}\right\}\ [\quad]\ /\ \underline{\qquad}\ [\text{-cons,-hi}]$$

This rule turns /kudi/ into [kudy] and /kufu/ into [kufw] before the final vowels /-a/, /e/, and /o/. For these cases under consideration, the resulting forms are respectively *kudy-a* and *kufw-a*.

A second rule would apply to forms such as /kuta-a/ to reduce the sequence of identical vowels into one vowel.

(13) Vowel Elision

$$[\text{-cons, - hi, - round}]\ \text{---}>\ \emptyset\ /\ \underline{\qquad}\ +\ \begin{matrix}\mu \\ | \\ [\text{-cons}]\end{matrix}$$

This rule will give us /kuta/ from /kutaa/. The output of these rules is the input to accent rules.

In summary, here is a sample derivation of CV infinitive forms. The underlying representations distinguish two types of CV roots: those where the only vowel is [+high], like /kudi-a/, and the others, like /kuta-a/.

(14)	[ku [di] a]	[ku [ta] a]	
	[[ ]]	[[ ]]	Underlying
	[ku [di] a]	[ku [ta] a]	
	[[ ]H]	[[ ]H]	H- Insertion
	[ku [di a]]	[ku [ta a]]	
	[[H]]	[[H]]	Suffixation
	[ku [dy a]]	[ku [t a]]	Glide Formation
	[[H]]	[[H]]	&Vowel Deletion
	[ku dy a]	[ku t a]	
	[H]	[H]	Prefix Rebracketing
	* *	* *	
	[kudya]	[kuta]	
	[H]	[H]	Accents

It can be seen that these representations are characteristic of G1.1. Now the rest of tone rules can apply as appropriate.

3.1.1.2 CVC- Roots

CVC roots are the most common verb roots. They exhibit the four tone patterns. The following table indicates that CVC roots behave like G2.1 stems.

(15) Infinitive patterns with CVC Roots: G2.1

	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
G2.1	ku-sál-á	ku-sal-a	ku-sal-a...	...ku-sál-á...	'to work'
	ku-tík-á	ku-tik-a	ku-tik-a...	... ku-tík-á...	'to float'
	ku-ték-á	ku-tek-a	ku-tek-a...	...ku-ték-á...	'to sell'
	ku-ták-á	ku-tak-a	ku-tak-a...	...ku-ták-á...	'to go far'
	ku-túk-á	ku-tuk-a	ku-tuk-a...	...ku-túk-á...	'to insult'
	ku-tók-á	ku-tok-a	ku-tok-a...	...ku-tók-á...	'to grind'

The data in (14) reveal several differences between CV and CVC infinitives. First, CVC behave like G2.1 and not like G1.1; second, suffixation precedes prefix rebracketing and thus renders it unnecessary. Finally, these examples also indicate that CVC infinitives have no restrictions on the vowel of the root, as is the case for CV roots.

To account for the toneless nature of G2 infinitives, we must assume that the FV /-a/ is basically toneless. It has an H allomorph for CV roots because only these undergo the rule which inserts a H tone in the domain of the FV -a. Here is a summary of how CVC infinitives are derived. The illustration features the infinitive verb *ku-sal-a* (to work) and *ku-saala* (to stay, to remain).

(16)

[ku [[sal]a]]	
[[[ ]]]	Underlying
[ku [[sal]a]]	
[[[ ]]]	Suffixation

```
        * *
[ku [sala ] ]
[   [    ]]                    Accents
```

This is the typical representation of G2.1, which is characterised by the lack of tone and a short initial syllable. These representations are ready for the application of tone rules.

3.1.1.3 CVVC- Roots

CVVC roots are more common than CV though not as common as CVC. Any vowel can be found in the root, as can be witnessed in the examples in (16). CVVC infinitive verb roots differ from CVC roots in only one feature: CVVC infinitives may receive the stem-initial accent on the first or the second mora; CVC infinitives do not have this choice. The FV /-a/ is toneless in both types of infinitives. So apart from the difference in the placement of the initial accent, we would expect the derivation of CVVC-V stems to be almost like that of CVCV-V stems. Placement of the raised H or accent on the second mora of the stem-initial syllable is typical of G2.2 stems.

(17) Infinitive Patterns with CVVC Roots: G2.2

	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
G2.2	ku-saál-á	ku-saal-a	ku-saal-a...	...ku-saál-á	to stay
	ku-beél-á	ku-beel-a	ku-beel-a...	... ku-beél-á	to be sick
	ku-biímb-á	ku-biimb-a	ku-biimb-a...	...ku-biímb-á...	to try
	ku-baál-á	ku-baal-a	ku-baal-a...	...ku-baál-á...	to be hard
	ku-boól-á	ku-bool-a	ku-bool-a...	...ku-boól-á...	to insult
	ku-buúmb-á	ku-buumb-a	ku-buumb-a...	...ku-buúmb-á ...	to make potery

The following illustrative derivation features the infinitive verb /ku-saal-a/ (to stay):

(18) [ku [[saal] a]]

[[[ ]]] Underlying

[ku [saala]]

[[ ]] Suffixation

In order to derive correctly the raised H, we need to modify the rule that assigns the initial accent in such a way that accent is assigned to the second mora of CVVCV verb stems, in addition to the CVVCV noun stems.

(19) Initial Accent Assignment:
Assign an accent on the stem initial syllable

a. $V \dashrightarrow \overset{*}{V} / _{stem}[CV\_\_$: lexically marked noun stems (G1.2 & G2.2) and most verb stems.

b. $V \dashrightarrow \overset{*}{V} / _{stem}[C\_\_$: elsewhere

When this rule applies to the output of (18), we get the accents on the right mora.

(20) [ku [saala]]

[[ ]] Accents

As a result, this and the other CVVCV stems pattern like G2.2. The appropriate tone rules can now apply to yield the correct surface tones.

In summary, infinitive roots are toneless and they fall in three tone groups: CVC-V stems fall into G1.1 because of the floating H tone assigned to the FV; CVC-V and CVVC-V stems belong to G2 because they are toneless: their FV is toneless. As usual, G2.1 and G2.2 are distinguished by the placement of the accent in the stem-

initial syllable. The former has the initial accent on the first mora while the latter gets the initial accent on the second mora. Finally, the rule which assigns accent to the second mora of the stem-initial syllable of lexically marked noun stems is shown to affect more lexical items among verbs. More cases will be provided which indicate that the placement of the initial accent on the second mora is the general pattern for verbs.

3.1.2 Finite Verb Forms

In spite of the claim that tonal behaviour is similar in both nouns and verbs, it remains true that there are differences that we should expect between nouns and verbs on one hand, and infinitives and finite verbs on the other. One such difference is that some verbs forms do not exhibit a complete inventory of tone patterns as we saw for nouns. In describing this asymmetry, the illustrative data for finite verbs will include tenses that exhibit all four patterns and tenses that have only the two unmarked patterns .

The most obvious difference between nouns and verbs is without any doubt the morphology. The morphology of nouns is quite simple compared to that of verbs because the latter can take several affixes. The finite verb typically has the following morphological structure:

(21) subject marker - tense marker - object marker - Root -Extensions- Tense/Final Vowel

The subject agreement marker (SA) indicates subject-verb agreement and is expressed by a generally obligatory prefix. Depending on the tense, the subject marker is sometimes followed by a prefix tense marker (TM). If a class 1/2 object agreement marker (OA) or the reflexive *di-* is present, it occurs immediately before the verb root (VR). The verb root can be followed by one or more extension morphemes. The last morpheme of the verb stem is the suffix tense marker (TM) or the Final Vowel. Object

markers of class 3 and higher immediately follow the suffix tense marker. They are part of the verbal unit (VU). Some of these constituents can be observed in the following verb form.

(22) tw-a-ba-suumb-il-a-kyá
we-Past-them-buy-appl-Past-it
we had bought it for them

The verbal unit in the example above contains the subject agreement marker *tu-* for the first person plural, the prefix tense marker *a-* for remote past, the object agreement marker *ba-* for a second class benefactive, the verb root *suumb-*, the applicative morpheme *-il-*, the suffix tense marker *-a* for remote past, and finally the object agreement clitic *kya* for a class 7 object. The following table provides the different subject and object agreement markers that can occur in the verb unit.

(23) Noun prefixes and corresponding agreement for verbs markers in KiYaka.

Class	Noun Prefix	Modifier Prefix	SA Prefix	OA Prefix	OA Enclitic	OA Full pronoun
1 1sg	Ø	u-, Ø	/N/, i-	/N/	---	---
2sg	Ø	u-, Ø	u-, Ø	ku-	---	---
3sg	/N'/,mu-,Ø	u-, Ø	ka-,u-,Ø	/N'/	---	yaandi
2a 1pl	ba-	ba-	tu-	tu-	---	---
2pl	ba-	ba-	lu-	lu-	---	---
3pl	ba-	ba-	ba-	ba-	---	yaawu
3	/N'/, mu-	u-	u-	---	SA+a	SA+aawu
4	/N'/, mu-	mi-	mi-	---	SA+a	SA+aawu
5	di-, Ø	di-	di-	---	SA+a	SA+aawu
6	ma-	ma-	ma-	---	SA+a	SA+aawu
7	ki-	ki-	ki-	---	SA+a	SA+aawu
8	bi-	bi-	bi-	---	SA+a	SA+aawu
9	/N/	i-	i-	---	SA+a	SA+aawu
10	/N/	zi-	zi-	---	SA+a	SA+aawu
11	lu-	lu-	lu-	---	SA+a	SA+aawu
12	ka-	ka-	ka-	---	SA+a	SA+aawu
13	tu-	tu-	tu-	---	SA+a	SA+aawu
14	bu-	bu-	bu-	---	SA+a	SA+aawu
15	ku-	ku-	ku-	---	SA+a	SA+aawu

16	ha-	ha-	ha-	---	SA+a	SA+aawu
17	ku-	ku-	ku-	---	SA+a	SA+aawu
18	mu-	mu-	mu-	---	SA+a	SA+aawu

3.1.2.1 Immediate Past

3.1.2.1.a Affirmative Immediate Past

Immediate past (ip) expresses the result of an action that has taken place slightly before the moment of speech. This tense is indicated by the suffix /-ili/, which alternates with /-i/ in CVVC roots whose vowel is a long /a/. The tense marker /-ili/ includes five other allomorphs as can be seen in the following examples.

(24)

	Verb Stems	Infinitive	Allomorph
a.	tu-suumb-idí we-buy- ip we bought	suumb-a buy-FV	[-idi]
b.	tu-sonek-enḗ we-write-ip we wrote	sonik-a write-FV	[-ene]
c.	tu-niimb-iní we-sleep-ip we slept	niimb-a sleep-FV	[-ini]
d.	tu-heeng-elḗ we-dodge-ip we dodged	heeng-a dodge-FV	[-ele]
e.	tu-heeng-ḗ we-create-ip we created	haang-a create-FV	[-e]

The allomorphy in these forms can be accounted as follows. The consonant /l/ of the suffix is realised as [d] before /i/ and as [n] if a nasal consonant precedes it in the stem (nasal harmony). Vowel harmony in KiYaka is complex and requires independent formal study, which is beyond the scope of the present work. According to the descriptive work by Bastin (1983), where the data from KiYaka are well

represented, vowel harmony in KiYaka is part of a larger process called truncation. A formal description of KiYaka vowel harmony can be found in Goldsmith (1985).

Verbs in immediate past exhibit the four tone patterns we have previously observed in both nouns and infinitives. This can be seen for the verb stem *suumbidi* 'bought' in the data below.

(25) a. [tu-suumb-idí] [bakhokó]
we-buy-ip 2chicken
We bought chickens

b. [ba-suúmb-idi] [bakhokó]
they-buy-ip 2chicken
They bought chickens

c. [tu-suumb-idi bakhóko]
we-buy-ip 2chicken
We bought CHICKENS

d. [ba-suúmb-ídí bákhóko]
they-buy-ip 2chickens
They bought CHICKENS

As can be noticed in (25), the stem *suumbidi* is marked final in (a), unmarked final in (b), unmarked non-final in (c), and marked non-final in (d).

Immediate Past exhibits tonal alternation between third and non-third persons when the verb is affirmative and phrase-initial. Third persons always have the H tone on the stem-initial syllable. This tonal alternation is summarised in the following table.

(26)

	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
Non-third persons					
G1.1	...tu-sâd-idi	tu-sad-idí	tu-sadidi...	...tu-sâd-ídí...	we worked
G1.2	...tu-suúmb-idi	tu-suumb-idí	tu-suumb-idi...	...tu-suúmb-ídí...	we bought

Third persons					
G1.1	ba-sâd-idi	---	---	...ba-sâd-ídí...	they worked
G1.2	ba-suûmb-idi.	---	---	...ba-suûmb-ídí...	they bought

One observation should be made here: third person forms never surface with unmarked patterns in this tense, they always exhibit the marked patterns. The different patterns discussed above are summarised in the following table.

We can conclude from this description that the third person prefix has an underlying floating H tone. This floating H is always donated to the verb stem, which is why the latter always surfaces with a H tone on the stem-initial syllable. In other words, the inherent presence of this floating H accounts for the lack of unmarked forms for third person forms. The tense marker /-ili/ also has a floating H that attaches to it when the verb is phrase-final and if no H has been previously linked. After suffixation of the tense marker, the lexical representations of the forms discussed above appear as shown in (27).

(27)	[ba[sadidi]]	[tu[sadidi]]	[ba[suumbidi]]	
	[H[H]]	[[H]]	[H[H]]	Suffixation

These representations show the different verb forms before accent assignment. The accent assignment rule (19) yields the following.

	* *	* *	* *	
(28)	[ba[sadidi]]	[tu[sadidi]]	[ba[suumbidi]]	
	[H[H]]	[[H]]	[H[H]]	Accents

These forms will serve as the input to the tone rules.

CV roots provide further evidence that accents are assigned to stems rather than to roots. For instance, the forms for the verb *kudya* (to eat) are *tu-diidí* for the first person plural and *ba-diídi* for third person person plural. These forms get their accents in the same way as those in (27).

(29)	[ba [diidi]]	[tu [diidi]]	
	[H [H]]	[[H]]	Input
	* *	* *	
	[ba[diidi]]	[tu [diidi]]	
	[H[H]]	[[H]]	Accent

It is significant to note that if the accents were assigned to roots before suffixation, the initial raised H in *badiidi* would fall on the first /i/ and we would have *badíidi*, which is not correct. In order to generate the correct form *badiídi*, the initial accent must be assigned to the second /i/ of the stem-initial syllable, which is not available at the root cycle. On the other hand, the result of assigning accents after suffixation are what we would expect. Finally, let us mention that at this stage the conditions are met for tone rules to apply to these forms exactly the way they would to nouns.

3.1.2.1.b Negative Immediate Past

In the negation of immediate past, the stem-initial and the last syllables of the verb surface as a raised H, while the morae in betweeen (if any) get a regular H.

(30)		
	tu-tǎd-ídí ko	we did not look at
	ba-tǎd-ídí ko	they did not look at
	tu-suůmb-ídí ko	we did not buy
	ba-suůmb-ídí ko	they did not buy

The negative immediate past exhibits only one tone pattern: the marked-nonfinal.

(31)	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
	---	---	---	tu-tâd-ídí ko	we did not look
	---	---	---	ba-tâd-ídí ko	they did not look
	---	---	---	tu-suûmb-ídí ko	we did not buy
	---	---	---	ba-suûmb-ídí ko	they did not buy

There are two obsevations to make here: the alternation between third and non-third persons found in the immediate past is neutralised; and the negation marker *ko*, which follows the verb, is low. But note however that if an OA enclitic is inserted between the verb and the negation marker *ko*, this latter gets a H tone from the OA marker.

(32)		
	tu-tâd-ídí kyó kó	we did not look at it
	ba-tâd-ídí kyó kó	they did not look at it
	tu-suûmb-ídí kyó kó	we did not buy it
	ba-suûmb-ídí kyó kó	they did not buy it

The *kyo* in these examples is the class 7 OA marker *kya* whose vowel undergoes vowel harmony before the higher vowel in the negation marker *ko*. Observe *kya* in (33) for comparison.

(33)		
	tu-tad-idi kyá	we looked at it
	ba-tâdídí kyá	they looked at it
	tu-suumbidi kyá	we bought it
	ba-suûmbídí kyá	they bought it

In view of the data, I can only hypothesise that the tense marker /-ili/ and the subject marker prefixes are toneless in the negative form. It will be remembered that verb stems in the negative always carry the marked pattern. Now the question is where does the H tone that is donated to the verb stem come from.

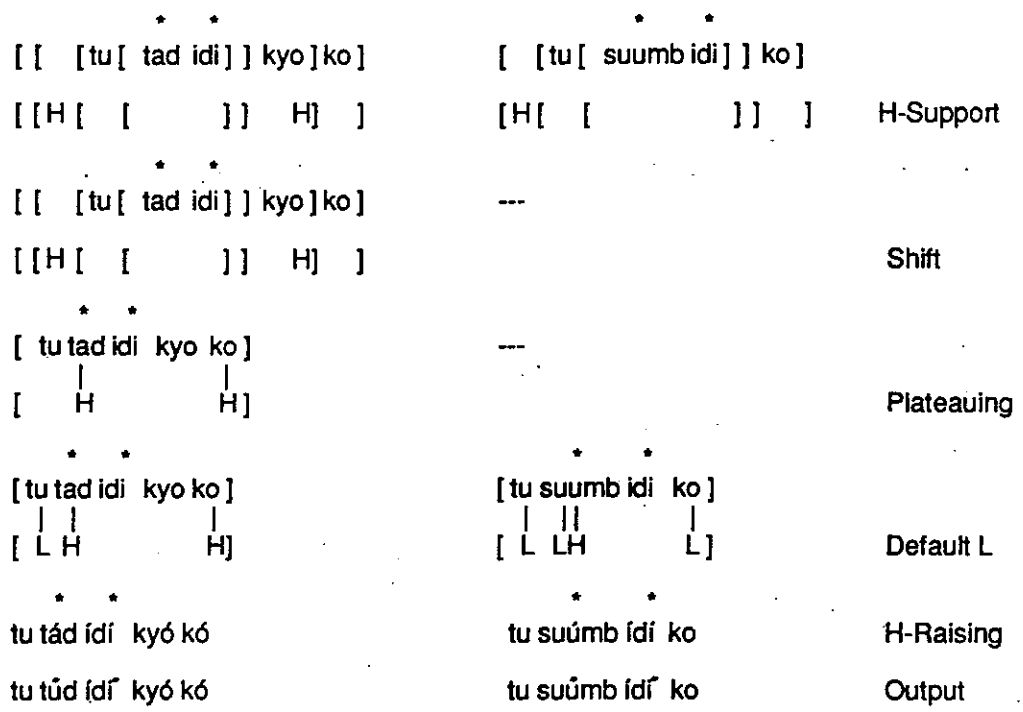
To account for this H tone I will assume the presence of an H to the left of the subject prefix marker. This H tone is reminescent of the H tone in the negation of NP. We saw indeed that the *ka* of *ka ... ko* is a donor. In KiYaka the *ka* does not appear

in the negation of verbs. However, this *ka* is always present in Kintandu[1] , a language closely related to KiYaka. I thus hypothesise that although KiYaka might have lost earlier *ka* preceding the negative form of verbs, the tone of this earlier hypothetical *ka* has nonetheless persisted.

The OA enclitic also has a floating H tone that it donates to *ko*. For illustrative purposes, let us take the forms *tu-tâd-ídí kyó kó* (we did not look at it) to show tone donation from the negative morpheme and the object enclitic; and *ba-suûmb-ídí ko* (they did not buy) to illustrate tone donation from the negation marker as well as the inability of the tense marker /-ili/ to donate tone to *ko*. The derivation starts with the output of the segmental rules that convert /l/ into [d] before /i/ and vowel harmony changing the /a/ of *kya* into [o] before *ko*.

(34)	[[[tu [[tad] idi]] kyo] ko]	[[tu [[suumb] idi]] ko]	
	[[H [[[ ]]] H]]	[H [[[ ]]]]	Input
	[[[tu [tad idi]] kyo] ko]	[[tu [suumb idi]] ko]	
	[[H [[ ]] H]]	[H [[ ]]]	Suffix.
	* *	* *	
	[[[tu [tad idi]] kyo] ko]	[[tu [suumb idi]] ko]	
	[[H [[ ]] H]]	[H [[ ]]]	Accents
	* *	* *	
	[[[tu [tad idi]] kyo] ko]	[[tu [suumb idi]] ko]	
	[[H [[ ]] H]]	[H [[ ]]]	H-Attraction

[1] Kintandu has *ka* in the negation of both nouns and verbs. Thus for instance, in Kintandu the negation of the noun *madya* (food) is *ka mãdyã kó (it is not food)*; the negation of the verb *tutadidi (we looked)* is *ka tutãdídí kó* (we did not look). The negation of the same verb in Kiyaka is simply *tutãdídí kó*. See Daeleman (1966:348-350).



As to why negative forms only exhibit the marked in immediate past, it becomes clear that this is so because of the inherent negative H tone that precedes the verb stems in these structures.

3.1.2.2 Remote Past

3.1.2.2.a Affirmative Remote Past

Remote past (rp) expresses an action that took place a long time ago in the past, at a moment considered not having any relation with the present. Remote past is indicated by the presence of a prefixed (a-) as well as the FV /-a/. Here are some examples.

(35) a. twasalá /tu-a-sal-a/
we-rp-word-rp
we had worked

twasaalá /tu-a-saal-a/
we-rp-stay-rp
we had stayed

Just like in the immediate past, verb forms in remote past exhibit the four tone patterns. Observe the tone of the verb stem *suumb-* in (36).

(36) a. [ba-a-sʊ́umb-a] [madyá]
they-rp-buy-rp food
we had bought the food

b. [tw-a-suumbá] [madyá]
we-rp-buy-rp food
we had bought the food

c. [tw-a-suumba mâdya]
we-rp-buy-rp food
we had bought food

d. [ba-a-sʊ́úmbá mâdya]
they-rp-buy-rp food
they had bought food

Here as in the affirmative immediate past, tonal alternation obtains between third and non-third persons. Non-third persons can have all tone patterns but third person forms always take a raised H on the stem-initial syllable and thus have no unmarked patterns.

(37)	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
Non-third persons					
G1.1	...tu-a-sál-a	tu-a-sal-á	tu-a-sal-a...	...tu--a-sál-á...	we had worked
	...tu-a-tál-a	tu-a-tal-á	tu-a-tal-a...	...tu--a-tál-á...	we had looked
	...tu-a-sáal-a	tu-a-saal-á	tu-a-saal-a...	...tu--a-sáál-á...	we had stayed
	...tu-a-sʊ́umb-a	tu-a-suumb-á	tu-a-suumb-a...	...tu-a-sʊ́úmb-á...	we had bought
Third persons					
G1.1	ba-a-sál-a	---	--	...ba-a-sál-á...	we had worked
	ba-a-tál-a	---	---	...ba--a-tál-á...	we had looked
	ba-a-sáal-a	---	---	...tu--a-sáál-á...	we had stayed
	ba-a-sʊ́umb-a	---	---	...ba-a-sʊ́úmb-á ...	theyhad bought

There is one important observation to make here. Remote past verb forms pattern like G1.1 nouns in that this tense places the raised high on the first mora of the stem-initial

syllable, regardless of the shape of the stem. Remote past is one of the few verb forms that fall into this group predominantly made up of nouns.

We have already seen that the lack of unmarked patterns in third person verbs of affirmative immediate past indicates that the subject prefix has a floating H tone that is always realised on the verb stem-initial syllable. The third person prefix is also a donor in remote past, as can be witnessed in (38)b.

(38) a. twatala kyá we had looked at it
lwatalakyá you/pl had looked at it

b. batálá kyá they had looked at it

The suffix tense marker -a also has a floating H tone that it places on the OA enclitic *kya* (it) in the examples above.

Finally, in view of the patterning of the remote past forms, we are required to revise one of the rules: the Initial Accent Assignment. This rule can be reformulated as follows.

(39) INITIAL ACCENT Assignment:
Assign an accent on the stem initial syllable

a. $V \dashrightarrow \overset{*}{V} / \_\_ [_{stem} CV$: lexically marked noun stems (G1.2 and G2.2)
elsewhere: verb stems (except remote past).

b. $V \dashrightarrow \overset{*}{V} / \_\_ [_{stem} C$: Verbs in remote past
elsewhere: nouns (except G1.2&G2.2)

If we take *ku-saala* (to stay) for illustration, we notice that the initial accent will go on the first mora of the third person *ba-sâala* (they had stayed) but on the second mora of the infinitive *ku-saálá* (to work). The difference in the placement of the initial accent

follows from the fact that the former is remote past and the latter infinitive. The derivation of remote past forms can be schematised as shown below.

(40)

[ba[saala]]	[ku [saala]]	
[H[H]]	H [[ ]]	Input
* *	**	
[ba[saala]]	[ku [saala]]	
[H[H]]	H [[ ]]	Accents

3.1.2.2.b Negative Remote Past

Another difference between remote past and the immediate past can be noticed in the negation. We saw earlier that the immediate past, in the negative, does not donate a H to the negation marker *ko*; remote past does, as can be witnessed below. The suffix tense marker (or maybe FV) /-a/ thus keeps its floating H in the negative as well.

(41)

tu-a-sáálákó	/tu-a-saal-a/	we had not stayed
ba-a-sáálákó	/ba-a-saal-a/	they had not stayed

This example also indicates that just as in the negation of immediate past, the alternation between third and non-third persons is neutralised in the negation of remote past. The result is that only marked patterns are possible in the negation of all persons. More specifically, only the marked non-final pattern is available because of the obligatory presence of *ko* after every verb in the negation. As was pointed out earlier, the verb stem in the negation is preceded by a floating H tone that is part of the negative morpheme. The derivation of the negation of remote past is as shown in (42). The target forms are *twasálá kó* (we had not worked) and *twasaálá kó* (we had not stayed).

(42)

[[twa [[sal]a]ko]]	[[twa[[saal]a]ko]]	
[H[[[ ]H]]]	[H[[[ ]H]]]	Input
[[twa[sala]ko]]	[[twa[saala]ko]]	
[H[[H]]]	[H[[H]]]	Suffixation
* *	* *	
[[twa[sala]ko]]	[[twa[saala]ko]]	
[H[[H]]]	[H[[H]]]	Accents

These are the representations to which the tone rules will apply.

3.1.2.3 FUTURE

3.1.2.3.a Affirmative Future

Verbs in affirmative future are characterised by the presence of the FV /-a/ and the placement of a H tone on the subject agreement prefix.

(43) a. tú-nw-a mambá
we-drink-ft water
we will drink water

b. tú-súúmb-á milelé
we-buy--ft clothes
we will buy clothes

c. tú-bá-sónákán-á nkaandá
we-them-write-appl-ft letter
we will write a letter to them

We see in these examples that the subject prefix gets a H tone regardless of the length of the stem. In the data below, the tone of the OA enclitic (*ma, mya,* and *wa,* respectively) tells us that the stems from CV roots (44) are donors while the others are not. This reminds us of the asymmetry observed earlier between CV infinitives and the others. The FV gets a H in the former but remains toneless in the latter.

(44) a. tú-nwá-má mambá
we-drink-ft-it water
we will drink the water

b. tú-súúmbá-mya milelé
we-buy--ft-them clothes
we will buy the clothes

c. tú-bá-sónákáná-wa nkaandá
we-them-write-appl-ft-it letter
we will write the letter to them

The data in both (43) and (44) also reveal that verbs in affirmative future tense exhibit only marked patterns. These patterns are summarised in the following table.

(45)

Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
tú-dya	---	---	...tú-dyá ...	we will eat
tú-súúmbá			...tú-súúmbá ...	we will buy
tú-bá-sónákáná	---	---	...tú-bá-sónákáná ...	we'll write to them

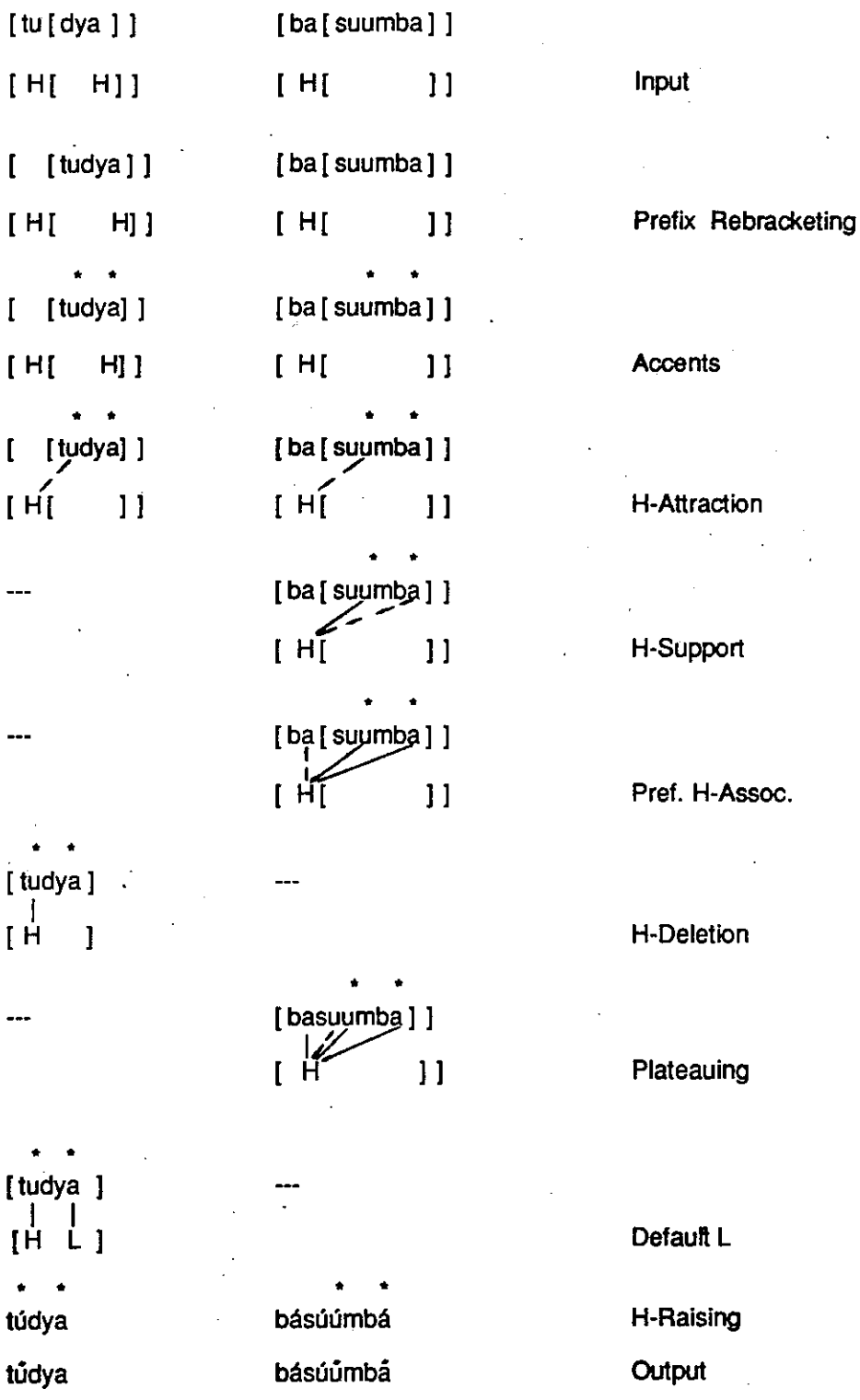
The correct derivation of the affirmative future requires an additional rule that will place a H tone on the subject prefix in all cases. This rule can be formulated as in (46).

(46) Prefix H Association

[CV... [CV ...]
[$_{MS}$ H[$_{St}$] :Affirmative Future

H-Attraction is triggered by the presence of a H tone that I assume is specified for all persons in the Future. The three dots before the stem signal that other morphemes such as object agreement markers may occur between the verb prefix and the verb root. The affirmative future verbs are thus derived as shown in (47).

(47)


[tu[dya]]
[H[H]]
[[tudya]]
[H[H]]
[[tudya]]
[H[H]]
[[tudya]]
[H[ ]]

[tudya]
[H]

[tudya]
[H L]
túdya
tůdya
[ba[suumba]]
[H[ ]]
[ba[suumba]]
[H[ ]]
[ba[suumba]]
[H[ ]]
[ba[suumba]]
[H[ ]]
[ba[suumba]]
[H[ ]]

[basuumba]]
[H]]
---
básúúmbá
básúůmbá
Input
Prefix Rebracketing
Accents
H-Attraction
H-Support
Pref. H-Assoc.
H-Deletion
Plateauing
Default L
H-Raising
Output

3.1.2.3.b Negative Future

In the negative, future forms do not receive a H tone on the subject prefix except in the case of verb stems that derive from CV roots. It will be recalled that the prefix in these forms is reanalysed as part of the stem by rule (10). Examples of negative future are given below.

(48)

tũdyá kó	we will not eat
tutálá ko	we will not look
tusuũmbá ko	we will not buy

The asymmetry between verb stems deriving from CV roots and the other is further expressed in the tone of *ko*: the FV /-a/ is generally a non-donor in the future except for the verb stem derived from a CV root.

As has been noticed throughout the tenses covered earlier, negative verbs exhibit only the marked non-final pattern. This is also true for the negative future.

(49)

Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
---	---	---	tũdyá kó	we will not eat
---	---	---	tutálá ko	we will not look
---	---	---	tusuũmbá ko	we will not buy

The account that was suggested earlier for this pattern in other tenses is applicable to negative future as well. That is, the negation of verbs is expressed by a floating H that precedes the verb and the toneless *ko* placed immediately after the verb. The derivation of negative future is illustrated in (50).

(50)

[[tu [dya]] ko]	[[tu [tala]] ko]	[[tu [suumba]] ko]	
[H[H[H]]]	[H[H[ ]]]	[H[H [ ]]]	Input

[[[tudya]]ko]	---	---	
[H[H[H]]]			Prefix. Rebr.
[[[tudya]]ko]	[[tu[tala]] ko]	[[tu[suumba]] ko]	
[H[H[H]]]	[H[H[ ]]]	[H[H[ ]]]	Accents
[[[tudya]]ko]	[[tu[tala]] ko]	[[tu[suumba]] ko]	
[H[H[H]]]	[H[H[ ]]]	[H[H[ ]]]	H-Attr.
[[[tudya]]ko]	---	---	
[H[H[H]]]			H-Shift
---	[[tu tala] ko]	[[tu suumba] ko]	Prefixation
	[H[H]]	[H[H]]	H-Support
---	---	---	Pref. H Assoc.
[tudya ko]	---	---	
[H H]			H-Deletion
[tudya ko]	---	---	
[H H]			Plateauing
tudya ko	tu tala ko	tu suumba ko	
H H	LH L	L LH H	Default L
túdyá kó	tu tálá ko	tu suúmbá ko	H-Raising
tůdyá kó	tu tálá ko	tu suůmbá ko	Output

3.1.2.4 CONDITIONAL

There are two different ways of expressing conditional actions or states in KiYaka. The first type of conditional is tenseless and has no negative counterpart. The second conditional can be used with most tenses and can be negated.

Conditional 1

The first type of conditional is marked by a suffix /-e/ in CV roots and /-i/ in the others. This marker bears a raised high when the verb is phrase-final, which according to the analysis of nouns and CV infinitives, suggests that the conditional marker has an underlying floating H tone. This H tone is donated to a following morpheme, given the right conditions. Precisely, the H tone that is realised on *kya* in (51)b comes from the verb stem.

(51) a. tudy-é
we-eat-Cond
if we eat

tu-tad-í
we-look-Cond
if we look

tu-suumb-í
we-buy-Cond
if we buy

b. tudye kyá
we-eat-Cond
if we eat it

tu-tad-i kyá
we-look-Cond it
if we look at it

tu-suumb-i kyá
we-buy-Cond it
if we buy it

Conditional 1 constructions do not exhibit any marked patterns because the verb in the conditional is usually phrase-initial. That is, the verb cannot be expected to receive a raised H on the stem-initial syllable. The only chance for a conditional verb to get a raised H on the stem-initial syllable is for the subject marker to have a floating H tone. But this morpheme does not seem to have a H tone. Thus, only the unmarked patterns are possible for Conditional 1.

(52)	Marked Final	Unmarked Final	Unmarked Nonfinal	MarkedGloss Nonfinal	
	---	lu-tad-í	lu-tad-i ...	---	if we look/it
	---	lu-suumb-í	lu-suumb-i ...	---	if we buy /it

These verb forms are derived as shown in the examples below.

(53)	G1.1	G1.2	
	[lu [[tad] i]]	[lu[[suumb] i] kya]	
	[[[ ]H]]	[[[ ]H] H]	Input
	[lu [tad i]]	[lu[suumbi] kya]	
	[[H]]	[[H] H]	Suffixation
	* *	* *	
	[lu [tad i]]	[lu[suumb i] kya]	
	[[H]]	[[H] H]	Accents

As usual, the appropriate tone rule will apply to the output of acent rules.

Conditional 2

The most interesting aspect of Conditional 2 is perhaps the fact that with the exception of the presence of *hó*, the verb form is identical to the immediate past, remote past, and

future. This is so for both the affirmative and the negative. Conditional 2 is thus marked by the presence of *hó* before the verb form. But it is important to note that the subject noun/pronoun can occur between *hó* and the verb.

(54)	Hó	(betô)	tu-suumb-id-í	if we bought
	Hó	(betô)	tu-suumb-id-i má	if we bought them
	Hó	(betô)	tw-a-suumb-á	if we had bought
	Hó	(betô)	tw-a-suumb-amá	if we had bought them
	Hó	(betô)	tú-súúmbá	if we will buy
	Hó	(betô)	tú-súúmbáma	if we will buy them

Both affirmative and Negative are just *hó* + individual tenses as above.

(55)	Hó	(betô)	tu-suúmb-íd-í ko	if we did not buy
	Hó	(betô)	tu-suúmb-íd-í má	if we did not buy them
	Hó	(betô)	tw-a-súúmb-á kó	if we had not bought
	Hó	(betô)	tw-a-súámb-á mó kó	if we had not bought them
	Hó	(betô)	tusuúmbá ko	if we will not buy
	Hó	(betô)	tusuúmbámó kó	if we will not buy them

3.1.2.5 Imperative

3.1.2.5.a Affirmative Imperative

The basic imperative construction is composed of the verb stem, followed by an object if the verb is transitive. It is marked by the suffix /-a/.

(56)	a.	[lu-suumb-á]	[madyá]	buy the food!
	b.	[lu-suumb-a	mádya]	buy food!

In general, the affirmative exhibits only the unmarked patterns.

(57)	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
	---	lu-tal-á	lu-tal-a kyá	---	look / at it
	---	lu-suumb-á	lu-suumb-a kyá	---	buy /it

However, when an OA prefix is present, the affirmative imperative bears only the marked patterns. In addition, the raised H falls on the first mora in CVVC- stems.

(58)	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
	lu-n-tál-a	---	---	...lu-n-tál-á...	look at him
	lu-ba-súumb-a	---	---	...lu-ba-súúmb-á ...	buy them

To account for this tonal alternation in the affirmative imperative, we can assume that the object prefix has an underlying H tone that is donated to the verb stem whenever such a prefix is present. However, the data below indicate otherwise.

(59) a.

tu-tadidí	we looked at
tu-lu-tad-id-í	we looked at you/pl
tu-ba-tad-id-í	we looked at them
lu-tu-tad-id-í	you looked at us
lu-n-tad-idí	you looked at him/her
lu-ba-tad-id-í	you looked at them

b.

twa-talá	we had looked at
twa-lu-talá	we had looked at you/pl
twa-ba-talá	we had looked at them
lwa-tu-talá	you had looked at us
lwa-n-talá	you had looked at him/her
lwa-ba-talá	you had looked at them

c.

tu-tadí	if we look at
tu-lu-tadí	if we look at you/pl
tu-ba-tadí	if we look at them
lu-tu-tadí	you look at us
lu-n-tadí	you look at him/her
lu-ba-tadí	you look at them

These examples are affirmative in immediate past (a), remote past (b), and conditional (c), respectively. Each set indicates that the presence of the OA does not affect the

tonal behaviour of the verb. We can thus conclude that the H tone that we observed in (54) and (55) is not underlyingly part of the OA prefix. I assume that class 1/2 OA markers are toneless. However, they are part of the macro-stem (MS) and receive a grammatical floating H tone in the imperative. This H is inserted by the rule in (59).

(60) Imperative H Insertion

[X [ ]]

Ø ---> H/ [__ [ ]$_{stem}$]$_{MS}$: Imperative; X is OA prefix.

3.1.2.5.b Negative Imperative

The negative imperative is expressed by the floating H before the verb and the suffix /-i/ followed by *ko*.

(61)	a.	lu-tâd-í kó	do not look
	b.	lu-n-tâd-í kó	do not look at him
	c.	lu-sûúmb-í kó	do not buy
	d.	lu-ba-sûúmb-í kó	do not buy them

Like in all the negative constructions described earlier, marked patterns are also typical of negative imperative forms.

(62) Negative Imperative Patterns

	Marked Final	Unmarked Final	Unmarked Nonfinal	Marked Nonfinal	Gloss
a.	---	---	---	...lu-tâd-í kó ...	do not look
b.	---	---	---	...lu-n-tâd-í kó	do not look at him
c.	---	---	---	...lu-sûúmb-í kó	do not buy
d.	---	---	---	...lu-ba-sûúmb-í kó	do not buy them

In both the affirmative and the negative, we see that the verb contributes a H tone to the following morpheme (*kya* in (43) and *ko* in (44)). That is, the imperative suffixes

/-a/ and /-i/ are donor morphemes. Note in addition that the initial accent falls on the first mora in all these forms.

3.2 Two Further Tone Patterns

As was the case for noun stems, there are additional patterns for some verb stems that follow from the rules which have been suggested. Specifically, stems that take their initial accent on the second mora of the stem initial syllable (G1.2 and G2.2) exhibit additional patterns in cases where the first mora of this syllable falls within the domain of Plateauing and thus surfaces with a H tone. The standard four patterns for some of these stems repeated from (2) are given below.

(63)	T1	T2	T3	T4	
G1.2	... tu-díídi	tu- diidí	tu-diidi ...	... tu-diídí...	we ate
	... tu-súúmbidi	tu-suumbidí	tu-suumbidi ...	... tu-súúmbídí...	we bought
G2.2	ku-saálá	ku-saala	ku-saala...	...ku-saálá...	to remain
	ku-lóókâ	ku-looka	ku-looka ...	...ku-lóókâ ...	to dry up

Here are the additional patterns for these forms.

(64)	T1a	T2	T3	T4a	
G1.2	... tu-díídi	---	---	... tu-díídí...	we ate
	...tu-súúmbidi	---	---	... tu-súúmbídí...	we bought
G2.2	ku-sáálá	---	---	... ku-sáálá...	'to remain'
	ku-lóókâ	---	---	...ku-lóókâ ...	to dry up

As can be observed, these subpatterns are all marked patterns T1 and T4. These patterns are derivable in the following type of environment.

(65)

a. [[CVCV] [[CVVCV...]]
[H [ ]C [H[H]C]ϕ

b. [[CVCV] [[CVVCVCV...] V1]
[H [ ]C [H[H]C H]ϕ

The phonological phrase in (65) contains at least two clitic groups and the recipient of the additional pattern occurs in the second clitic group. When H-Attraction applies to both these clitic groups, it creates the appropriate context for Plateauing, since Plateauing is bounded by the P-phrase, not the clitic group. As an example, let us examine *...ba-súúmbidi* and *...ba-súúmbídí...* in the following constructions.

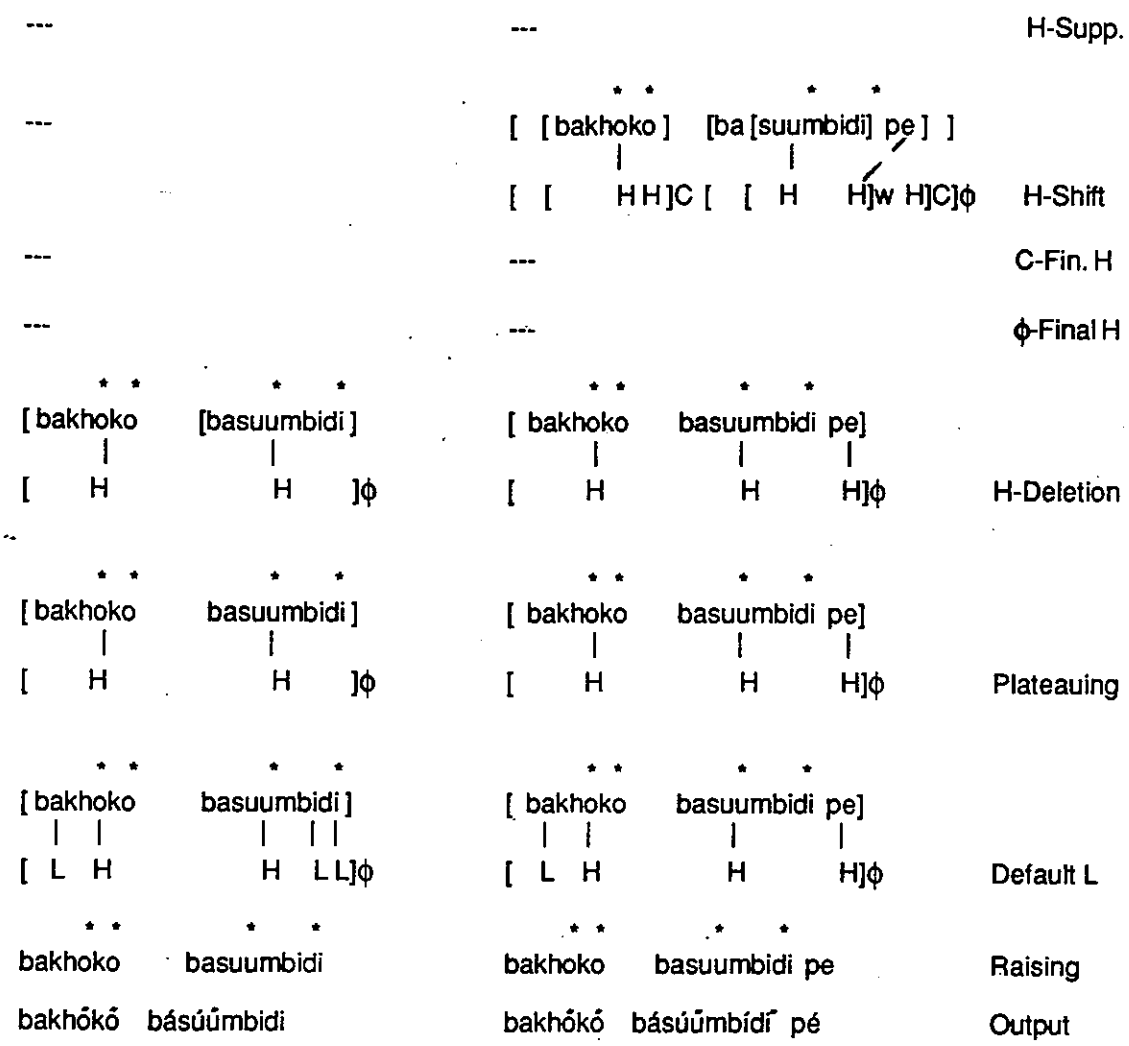
(66) a. bakhókó bá-súúmbidi
cop-2chicken they-buy-ip
It's chickens that we bought.

b. bakhókó bá-súúmbídí pé
cop-2chicken we-buy-ip too
It's chickens that we bought too.

The derivation of these forms is as shown in (67) below.

(67)

a.		b.	
[[bakhoko] [ba [suumbidi]]]		[[bakhoko] [ba [suumbidi]] pe]]	
[H[H]C [H [H]]C]ϕ		[H[H]C [H [H]] w H]C]ϕ	UR
[[bakhoko] [ba [suumbidi]]]		[[bakhoko] [ba [suumbidi]] pe]]	
[H[H]C [H [H]]C]ϕ		[H[H]C [H [H]] w H]C]ϕ	Accent
[[bakhoko] [ba [suumbidi]]]		[[bakhoko] [ba [suumbidi]] pe]]	
[H[H]C [H [H]]C]ϕ		[H[H]C [H [H]] w H]C]ϕ	H-Attr.



These additional patterns are possible because *bakhoko* is preceded by a copula H in the case of (67)a, and because of *pe* following *basuumbidi* in the case of (67)b. The copula H is attracted by the initial accent of the noun *bakhoko*, while the H of the associative morpheme ba links to the accented mora of the initial syllable of *basuumbidi*. The verb has tone to the left of the first mora of *basuúmbidi*. Application of H-Attraction to these two stems creates the appropriate conditions for Plateauing, which affects the first mora of the stem initial syllable of *basuúmbidi* and thus yields the subpattern *basúúmbidi*.

The second subpattern obtains because the presence of *pe* after the noun allows for the floating H of *basuumbidi.* to shift to *pe*. This triggers Plateauing between the H on *basuumbidi* and the H shifted to *pe*. The result is a H tone on the second and third syllables of *basuumbidi,* which gives the subpattern *basúúmbídi.*

In the case of *ku-saala* and *ku-soola*, there will not be any tone shift to *pe* since these nouns are nondonor. However, the pattern will be realised since these stems are toneless and thus undergo H-Support, which will spread the H tone received from the left to the whole stem.

In sum, the analysis reveals that most stems exhibit four tone patterns while G1.2 and G2.2 stems have six tone patterns, four of which are marked.

3.3 Summary

This chapter has basically been an extension of Chapter 2. My goal has been to argue for a unified system for both nouns and verbs. I have shown to this effect that all verb forms acquire tone very much like nouns. I have indeed demonstrated that all verb forms exhibit the same tone patterns when put in the phrasal contexts set for nouns.

The investigation of verbs has also revealed that they fall into the lexical tone groups posited earlier for nouns. Because verbs are underlyingly toneless, no verbs can be found in G3, whose main characteristic is the presence of a prelinked H tone. Instead, verb stems are distributed through G1 and G2 depending on morphological configuration and tense.

ADDENDUM

TO CHAPTERS 2 and 3

1.0 Introduction

This addendum is a brief review of the previous descriptions of tone in KiYaka. Without ignoring the merits of the contribution of each of the previous studies of KiYaka tone, the aim of this review is to contrast the major points of these descriptions and the analysis presented in this dissertation. In particular, the focus of the review will be on those aspects of the previous descriptions that make it impossible to reach a phonological solution to a phonological problem.

It is appropriate to introduce this review after Chapter 3 and before Chapter 4 because all previous studies examined only the tone of nouns and verbs, which is the topic investigated in chapters 2 and 3; they did not consider the phrasal contexts which affect tone in KiYaka. This review is organised as follows. Section 1 presents a brief overview of van den Eynde's (henceforth vdE) description of tone and highlights the major problems. Section 2 reviews Meeussen (1971), and section 3 is an examination of Goldsmith (1987).

1.1 Van den Eynde's description

In this review, I will discuss vdE's treatment of tone of nouns and verbs separately. Since van den Eynde's description distinguishes only H and L, only these tones will be referred to in this review. In particular, I will mark only the H tones; low tones will not be marked.

1.1.1 The Tone of Nouns

With regard to nouns, van den Eynde determined that KiYaka has three tone patterns and three tone groups. The present study has shown that there are more tone patterns and tone groups. In other words, vdE's description is incomplete and non-representative.

1.1.1.1 Tone Patterns

According to vdE, every noun can exhibit three tonal cases as illustrated in (1).

(1)		T1	T2	T3	
	G1	ma-héembo	ma-heembó	ma-heembo	'shoulders'
	G2	ba-ngáándu	ba-ngaandú	ba-ngaandu	'crocodiles'
	G3	ba-ngóómbá	ba-ngoomba	ba-ngoomba	'cows'

In fact, each of these nouns can bear a fourth tone pattern that would show the noun stem with high tones on every syllable.

(2)	T1	T2	T3	T4	
G1	ma-héembo	ma-heembó	ma-heembo	ma-héémbó	'shoulders'
G2	ba-ngáándu	ba-ngaandú	ba-ngaandu	ba-ngáándú	'crocodiles'
G3	ba-ngóómbá	ba-ngoomba	ba-ngoomba	ba-ngóómbá	'cows'

The omission of T4 from this description obscures the role that the position of a noun in phrase plays in determining its tone. Consequently, a systematic account of these patterns makes room for the suggestion that the tone patterns are function of the syntactico-semantic role the noun plays in the construction (see section 1.1.1.3 below).

1.1.1.2 Tone Groups

In van den Eynde's description, KiYaka noun stems fall into three tone groups: G1, G2, and G3 instead of six in my analysis. In the table below, vdE's tone groups are represented by G1.1, G1.2, and G2.2.

(3)	T1	T2	T3	T4	
G1.1	ma-héembo	ma-heembó	ma-heembo	ma-héémbó	'shoulders'
G1.2	ba-ngáándu	ba-ngaandú	ba-ngaandu	ba-ngáándú	'crocodiles'
G2.1	ma-fútá	ma-futa	ma-futa	ma-fútá	'oil'
G2.2	ba-ngóómbá	ba-ngoomba	ba-ngoomba	ba-ngóómbá	'cows'
G3.1	ma-kátíka	ma-katíka	ma-katíka	ma-katíká	'livers'
G3.2	ma-hékó	ma-hekó	ma-hekó	ma-hékó	'tsetse'

It is clear from the analsysis presented in Chapters 2 and 3 that the presence of G3 is important for arriving at a general picture of KiYaka tone system. The existence of G3 is the best evidence that this is not a totally accentual language, since it is this group that contains unaccented prelinked h tones.

1.1.1.3 Tonal Variation

According to vdE, one needs to know two things to predict the surface tone of a noun: the tone group (TG) to which the noun belongs and the "tonal case" (T), which roughly corresponds to a syntactico-semantic function. Let us examine the tone patterns on the noun *yi-sengele* 'ax' in the forms given below.

(4)	tumweené yi-sengelé we saw 7-ax (then), we saw an/the ax	Case 2	undetermined LLH
	tumweene yi-séngele we see-ip 7-ax we saw an ax	Case 1	determinant HLL
	tumweené yi-sengele kya taáta we see-ip 7-ax 7-of 1father we saw father's ax	Case 3	determined LLL

vdE posits three tonal cases for each noun. Each of them reflects the grammatical function of a noun. Thus for instance, Case 1 (my T1) is labelled "cas déterminant" or determinant case because it gives a predicative function to a noun that bears it. All nouns with T1 in the table above have the reading 'It's a N'.

Tonal Case 2 (my T2) is labelled "cas indéterminé" or undetermined because the individual nouns which bear it have a topic function and need not be modified. All nouns with T2 in the table above have a topical reading 'As for N, ...' . This tonal case is generally associated with subject and object nouns. Tonal Case 3 (my T3), which characterises any noun followed by a modifier, is called "cas déterminé" or determined case because such a noun needs to be modified to make its interpretation easier. So for example, the noun 'ax' is followed by 'of father'.

This account of tonal variation is not adequate because as was mentioned earlier, what I call T4 is missing from this description. In fact, we could have a construction like the following.

(5) tumweene yi-séngélé kyá tááta
we-see-ip 7ax 7of 1father
we saw father's ax (instead of someone else's).

In this construction, the noun *yi-sengele* bears the tonal melody HHH. It is not clear what the semantic role of T4 would be in vdE's system. In any case, its absence from

the description hinders any efforts to get the whole picture. In my view, T4 is simply the result of applying the rules, since the analysis is purely phonological.

1.1.2 The Tone of Verbs

vdE posits that the tone of a verb form is determined by its Tonal Type and its Mode. Although "Tonal Type" is not defined, we can assume that it refers to a certain tonal behaviour. "Mode" is defined approximately as 'mood' in French, but vdE assigns the difficulty in conveying the concept to the special nature of the system.

1.1.2.1 Tonal Type

According to vdE, verb forms fall into two tonal types: TI and TII. Although "Tonal Type" is not defined, it is safe to assume that a tonal type groups forms with similar tonal behaviour. Thus for instance, TI includes forms of two tenses: immediate past and remote past. In fact, it is true from the discussion in Chapter 3 that immediate past and remote past are tonally similar. They are distinguished solely by the morphology.

All the other verb tenses are claimed to belong to TII (p.18). However, this claim does not hold. To illustrate, let us note that the forms in (6) through (8) share the same morphology; they are distinguished by their tone.

(6) a. tu-tal-á
we-look-imp
Let us look

b. tu-tal-a kyá
we-look-imp-7it
Let us look at it

(7) a. tú-tálá
we-look-fut
We will look

b. tú-tálá kya
we-look-fut
We will look at it

(8) a. tu-tal-í
we-look-cond
If we look

b. tu-tal-i kyá
we-look-imp-7it
Let us look at it

The imperative (6), the future (7) and the conditional (8) are among the tenses that vdE claims have the same tonal behaviour. We see here that (6) and (8) behave identically tone-wise in smilar phrasal environments. However, the future does not behave like (6) and (8). This just shows that the notion of Tonal Type does not provide a useful grouping. In fact, contrary to "Tonal Case", Tone Group", and "Mode", which are used frequently in the description, "Tonal Type" is mentioned only on page 18 and no where else in the grammar.

In my analysis, the tone patterns of these forms follow from the algorithm given in (5) of Chapter 2. Specifically, we have four unmarked forms: (6) a and b, as well as (8) a and b. The unmarked patterns are subgrouped into unmarked final: (6a) and (8a) on the one hand, and unmarked non-final: (6b) and (8b), on the other. The data in (7) is composed of marked patterns only: marked final (7a) and marked non-final (7b).

1.1.2.2 Modes

The three modes that vdE posits can be defined as follows. The absolutive mode (mode absolutif) can be translated by the French indicative mood. The determinative

mode (mode déterminatif) corresponds to a French relative construction. Finally, the selective mode (mode sélectif) put the focus of contrast on the complement.

This model is inadequate in two main ways. In some cases it fails to account for a fourth pattern; in other cases, it fails to explain the existence of only two patterns. To illustrate, I use the immediate past verb form *tu-tadidi* 'we looked' in the examples below.

(9)	tu-tadidí ba-khokó we look-ip 2chicken (then) we looked at the chickens	Mode 1 (absolutive)	LLH
	tu-tadidi ba-khóko we look-ip 2chicken we looked at the CHICKENS (instead of something else)	Mode 2 (selective)	LLL
	ba-khoko tu-tádidi 2chicken we look-ip the chickens we looked at	Mode 3 (determinative)	HLL

A systematic examination of the data of (9) indicates that the verb stem can bear the melody HHH as shown below.

(10) ba-khókó tú-tádídí pé
cop-2chicken we-look-ip as well
It's the chickens that we looked at as well

The melody HHH is absent from vdE's description and it is not clear what mode it would be.

This system of description also fails to acount for the fact that negative forms count fewer modes (two) than affirmative forms: there is no determinative mode in the negation. Actually, there is only one form for both the absolutive and the selective mode (p44). For the verb we have used to illustrate, the tonal melody in (11) represents both the absolutive and the selective modes.

(11) tu-tádídí ko
we-look-ip neg
we did not look

That negative verb forms bear similar tone patterns finds a simple explanation in this dissertation. We have seen in Chapter 3 that negative verb forms exhibit only marked patterns because the negation inserts a high tone before the subject agreement marker. The existence of such a H tone to the left of the verb stem ensures that there is always a H tone that lands on the stem-initial syllable of the verb, which yields what was termed a marked pattern in Chapter 3.

The verb analysis in vdE's work is not connected to the noun analysis. Instead of looking at the similarities between the tonal behaviour of nouns and verbs, the investigation puts the emphasis on the differences. Such an approach fails to uncover the principles at work in this tone system.

In summary then, vdE's description of tone in KiYaka is characterised by an incomplete number of tone patterns and tone groups and an unprincipled account of tonal variation. Given the limitations of this description, we should expect several of these shortcomings to be characteristic of any other study based solely on this material.

1.2 Meeussen's description

As should be expected, the disadvantages of incomplete data and a too simplistic view of tone by vdE are shared by Meeussen's description. But given the data he had available, Meeussen's description of KiYaka tone is very insightful. It posits the underlying tones for the noun, the verbs (tenses included), the affixes, as well as the different function words. For forms that exhibit T1, he posits a pre-segmental floating H tone but the analysis does not say anything on how this tone is realised on the following stem in some cases but does not in some others. In the

present work, we have seen that the presegmental floating H tone has many sources. It can be underlying or inserted by rule.

Meeussen's description also deserves credit because it recognises the possibility that an additional tone group is necessary. He points out that the word *ma-kulúnzi* (crosses) does not belong to any of the tone groups set by van den Eynde. In fact, *ma-kulúnzi* belongs to G3.1.

1.3 Goldsmith's analysis

Goldsmith's paper is primarily concerned with the tone of Kintandu (based on data from Daeleman 1983). Because of the remarkable similarities between KiYaka and Kintandu, the author assumes that the analysis he proposed for Kintandu could be extended to KiYaka. Altogether this study devotes only three pages to KiYaka. Nevertheless, this paper is theoretically the most ambitious because it makes use of the most recent theoretical advances in phonology. Unfortunately, Goldsmith's account inherits many of the problems of van den Eynde's. In addition, this account has its own shortcomings.

First of all, the grammatical aspect of tone from vdE is maintained. That is, tone assignment is subject to grammatical labels such as subject and object. For example, Goldsmith maintains that Tonal Case I (what I called T2) "is used for subject or object NPs" (1987:90). But as we saw in Chapter 3, verbs can also bear this tone pattern. As a second example, let us consider the author's statement that "When used "predicatively" in the affirmative ("it is an NP"), Tonal case II -my T1- is used,..." (1987:90). Here again, it was shown in Chapter 3, that verbs can also exhibit T1. This is the case of verbs preceded by a third person prefix in Recent Past. They always receive a H tone on their stem initial syllable. In the same way a noun

preceded by an associative morpheme receives bears T1 without necessarily being predicative. As can be seen, the link between grammatical labels like nouns, verbs, predicative and non-predicative and tone makes it difficult to capture the phonological generalisation.

Second, this lexical analysis assumes that some syllables are extrametrical. However, we have seen in Chapter 2 that the number or type of syllables is not relevant for tone association rules in this language. In addition, extrametricality is problematic because accents must be assigned following prefixation; hence Goldsmith's version of extrametricality would violate the widely accepted Peripherality Condition.

Goldsmith posits one of the three patterns (Tonal case I) as underlying and tries to derive the other patterns from it through word level rules. The result is that a different rule is required for every tone pattern. This is unavoidable because the underlying case itself requires a rule.

Both Goldsmith's paper and this dissertation make use of the notion of accent. However, besides the fact that accent accounts for long distance tone shift, there are important differences in the way each study conceives this term. Goldsmith's accent is consistent with the idea of extrametricality and a metrical grid. This is the traditional treatment of a relative accent/stress that does not allow accent on contiguous syllables. This accent has no phonetic value.

My accent is completely different in many ways. It is lexical and even phonemic to a certain extent. It will be remembered that only the accent placement distinguishes items such as *ndôongo* 'needle' and *ndoóngo* ' palmwine'. The accent in this dissertation is certainly phonetic because it is responsible for the difference between a regular H and a raised H tone or R. It can affect contiguous syllables and

no clash avoidance is observed. We have seen that accent is in complementary distribution with the prelinked H in G3.2, which suggests that the accent could well be an autosegment. Given the preceding, it appears that the term "accent" is used in the present work for a lack of better terminology.

1.4 Summary

This review has argued that the previous studies of KiYaka tone are based on incomplete data and an inadequate descriptions. This dissertation presents a more complete and thorough data set. It also provides a very different view of the tone system, one that is purely phonological, rather than morphosyntactic in character. Chapter 4 presents a dimension of this tone system that could not be reached before because of the limitations of the earlier descriptions.

CHAPTER 4

PROSODIC DOMAINS

4.0 Introduction

In chapters 2 and 3, I examined the tone of the two major lexical categories: the noun and the verb. The major findings of these two chapters can be summarised as follows.

a. Only one tone is specified underlyingly: the high tone, which is mostly floating; the low tone is a default tone.

b. Nouns fall into six different lexical tone groups depending on their underlying tonal specification.

c. Verbs are generally toneless. Whatever tone is part of the verbal unit is acquired through affixation.

d. Most content words (nouns and verbs) have two accents, each at one end of the word and regardless of the number of syllables.

e. H tone association is achieved by attraction to accented syllables and by tone shift to unaccented syllables, and by domain-final tone association.

I also claimed in the two preceding chapters that tone association in KiYaka is subject to phrasal conditions. But these phrasal domains were not examined. In this chapter, I determine the domains of application of the rules presented in chapters 2 and 3. Most importantly, I discuss the formation of these postlexical domains.

There are currently two major trends in accounting for rules that refer to phrasal conditions. The first trend assumes that phonological rules have access to syntactic information and that this information should simply be included in the structural description of the phonological rule. This approach, advocated by Clements (1978), Odden (1987), and Kaisse (1985), is generally referred to as the 'direct approach'. The second trend is represented by linguists who think that the direct

approach gives too much power to the phonology. They maintain that phrasal rules refer to prosodic domains which are constructed on the basis of the syntax but are not isomorphic to syntactic structure. This theory, known as the Prosodic Hierachy, was initially developed by Selkirk (1980a; 1980b; 1984; 1986) and has received support from other linguists including Nespor & Vogel (1982, 1983, 1986), Hayes (1989, 1990), as well as many others who contributed to or were cited in Inkelas & Zec (1990).

Even though proponents of the Prosodic Hierarchy believe in prosodic domains derived through the syntax, there is no consensus in terms of how the mapping of the syntax into phonological domains is achieved. The end-based approach, represented by Selkirk (1986) maintains that to determine the necessary domains, one needs only to look for the Xo and Xmax edges in a bottom-up fashion. The Xo determines the smallest domain or the prosodic word and the Xmax detemines the biggest domain or the p-phrase. The only other parameter to consider is the direction, left or right edges. The relational approach to mapping is represented by Nespor & Vogel (1982, 1983, 1986), Hayes (1989) and McHugh (1989). This approach exploits the syntactic relations between the constituents (i.e., c-command, head-complement, etc.) to derive the appropriate domains. Finally, Chen (1990) argues that both the end-based and the relational approaches to mapping are necessary.

To account for the facts of KiYaka phrasal phonology, I will make use of the Prosodic Hierarchy because it is the most promising approach for the complex data of KiYaka. I will share the position taken by Chen (1990) because I need to refer to aspects of both the end-based and the relational theories to correctly derive the prosodic domains of KiYaka.

The chapter is organised as follows. In section 1 I present a brief description of the prosodic hierarchy in general and introduce the relevant levels in KiYaka. In section 2 I discuss the clitic group as one of the prosodic domains at work in KiYaka. I provide data that motivate this phonological domain and discuss its formation. Section 3 is the bulk of this chapter. It covers the phonological phrase, its derivation through the syntax and a syntactic account of free word order.

4.1 The Prosodic Hierarchy

The aim of the Prosodic Hierarchy theory is to account for consistent empirical observations concerning the domains of application of postlexical rules. Among these, domain clustering is the observation that there are sometimes more postlexical rules than there are postlexical rule domains. This suggests that in each language there is a limited set of domains and that each postlexical rule applies within at least one of these domains. The theory of Prosodic Hierarchy provides such a set of domains in which all postlexical rules take place. In addition, each of these domains exhaustively parses the phonological string (the utterance).

Given that different domains or prosodic levels parse the phonological string in different ways, the result of such a process is the hierarchical organisation of the different levels. Each prosodic level of the hierarchy is composed of one or more units of the immediately lower prosodic level. Conversely, each prosodic level is exhaustively contained in the immediately higher prosodic level. This organisation is referred to as 'strict layering' (Selkirk 1984, 1986).

The prosodic hierarchy generally comprises five levels. Here is one of the most recent versions suggested in Nespor and Vogel (1986) as well as Hayes (1989,1990):

(1) The Prosodic Hierarchy:

a. Utterance
b. Intonational phrase
c. Phonological phrase
d. Clitic group
e. Word

Ideally, the utterance is constructed in a bottom-up manner, building larger units from smaller ones at each step. (2) is a schematic illustration of this process.

(2)

Utterance	|				U								|
Intonational phrase	|		I1				|		I2			|
Phonological phrase	|	P1	|		P2			|		P3			|
Clitic group	|	C1	|	C2		|	C3	|	C4	|	C5	|
Word	|	w1	|	w2	|	w3	|	w4	|	w5	|	w6	| w7 |

The number of relevant prosodic levels in a language vary. That is, not all languages need five prosodic levels. The motivation for a particular prosodic level in a language is provided by the existence of one or more rules that have that particular level as their domain of application. In view of this criterion, KiYaka does not seem to have an intonational phrase. Consequently, the discussion of prosodic domains in KiYaka concerns the clitic group, which is made up of words, and the phonological phrase.

4.2 The Clitic Group

The clitic group in KiYaka is minimally composed of a content word (noun, verb, pronoun). In addition, a number of function words can cliticise to the left or right of the content word, depending on the syntax of a the individual words involved. The following are examples of clitic groups whose content word - the host of the clitic group- is a noun.

(3) a. noun stem

ba-khokó
2chicken
the chickens

b. associative + noun stem

kya ba-khóko
7of 2chicken
of the chickens

c. noun stem + adverb

ba-khoko pé
2chicken as well
the chickens as well

d. associative + noun stem + adverb

kya ba-khókó pé
7of 2chicken as well
of the chickens as well

e. associative + locative + noun stem

kyaku ma-hata
7of at 6village
of at the villages

In these examples, the content word is accompanied by proclitics such as the class marker (*ba-, ma-*), the associative morpheme (*kya*) and the locative (*ku*) to its left; the adverb *pé* is an enclitic. The same pattern is also possible with verbs. This can be seen in the data below, where the host of the clitic group is a verb.

(4) a. verb stem

tu-lad-idí
we-disappear-ip
we disappeared

b. verb stem + adverb

tu-suumb-idi pé
we-buy-ip as well
we bought

c. verb stem + object enclitic + adverb

tu-suumb-idi kyá pé
we-buy-ip-it as well
we bought it as well

d. verb stem + adverb

tu-ba-suumb-idi pé
we-them- buy-ip as well
we bought them as well

The data of (4) indicate that proclitics and enclitics are also common with verbs. With the facts of (3) and (4) in mind, we can now formulate the rule responsible for the formation of clitic groups in KiYaka.

(5) Clitic Group Formation: KiYaka

a. Every content word (noun, verb, pronoun) belongs to a separate clitic group.

b. Clitic words (or function words) share the clitic group hosted by the content word on which they are grammatically dependent.

Items that are grammatically dependent include morphemes such as the object agreement markers, associative morphemes, locatives, possessive adjectives, etc. Since these morphemes do not have prosodic independence, they cliticise to whatever constituent they are syntactically linked to if the latter is prosodically independent (i.e. is a noun, a verb, or a pronoun).

There are morphemes whose grammatical dependence is not easy to establish. Such is the case for the conjunction (*ye*) in a conjoined structure. The associative morpheme or connective is another. Although it is morphologically dependent on a preceding head noun, it is prosodically part of the domain of a following stem.

Morphemes of this type cliticise rightward. A floating tone without lexical material within its domain of specification will also cliticise to the right of its domain (e.g. copula H tone, or a H tone inserted by rule). This cliticisation makes sure that exhausting parsing is not violated.

One consequence of the rule of clitic group formation is that a sequence of two content words must be considered as containing two separate clitic groups. This is important because as we will see later, a H tone is inserted at the juncture of such a sequence when both clitic groups share the same p-phrase.

4.2.1 Motivation for the Clitic Group

It was mentioned above that within the theory of Prosodic Hierarchy, a particular prosodic domain can be motivated only by the existence of one or more phonological rules that apply within this domain. Accordingly, KiYaka has two relevant domains for the application of phonological rules beyond the word level. These are the clitic group and the phonological phrase. But in the absence of critical evidence justifying the level of the clitic group, most KiYaka rules can be assumed to take place within the phonological phrase. That is, I will first argue that the domain of these rules could be the p-phrase. Then I will show that to the contrary KiYaka has a domain we can call the clitic group. This level is motivated by the existence of postlexical rules that apply beyond the word level but within a unit smaller than the phonological phrase. These rules are H-Attraction, H-Shift, and C-Final H association.

4.2.1.1 H-Insertion

The analysis has so far assumed that there is only one source for the donated H-tone: the underlying representation of the donor morpheme. In the data covered and depending on the case, this morpheme has been the noun or verb stem, the associative morpheme or connective, the negative *ka*, or the copula H tone. But there is reason to believe that there is another source for such a H tone. This section discusses the rule of H insertion, its motivation and consequences.

Following the notion of tone donation, it was concluded that nouns in G1 and G3.1 are donors because they can place a H tone on the stem-initial syllable of a following morpheme. This is shown in the forms below, where the first mora of the possessive receives a R.

(16)	G1.1	yeko	dy-ā́andi	'his separation'
	G1.2	ndoongo	za-ā́andi	'his palmwine'
	G3.1	katíká	dy-ā́andi	'his liver'

For the same reasons, it was also concluded that nouns in G2 and G3.2 are not donor morphemes because they do not place a H tone on the stem-initial syllable of the following word. The data of (14), repeated here as (17) make this point by the failure of the possessive to receive a R on the stem initial mora.

(17)	G2.1	zoba	dy-aandí	'his idiot'
	G2.2	ngoombe	za-aandí	'his cattle'
	G3.2	hekó	dy-aandi	'his tsetse'

It will be remembered that these nouns are non-donor for different reasons. G2 nouns are toneless; nouns in G3.2 have a prelinked and therefore immobile H tone. At this point, it is significant to observe that the distinction between donor and non-donor groups is neutralised when a demonstrative follows any of these nouns.

(18)	G1.1	yeko	díña	'that separation'
	G1.2	ndoongo	yíña	'that palmwine'
	G2.1	zoba	díña	'that idiot'
	G2.2	ngoombe	zíña	'that cattle'
	G3.1	katíká	díña	'that liver'
	G3.2	hekó	díña	'that tsetse'

If the notion of tone donation as a diagnosis for underlying tones is reliable, then it must be the case that there is another source for the H tone that is donated to the demonstrative after non-donor noun stems. That H tone is responsible for the tonal neutralisation of the usual contrast between donor and non-donor groups.

One may suggest that a grammatical tone is inserted between a noun and a demonstrative. However, examination of additional data indicates that this H tone can be observed in a variety of syntactic environments.

(19) H inserted between:

N ___ relative	zoba tutâdidi	the idiot we looked
N ___ demonstrative	zoba díña	that idiot
V ___ object	tutâdídí'kó kííma	we did not look at anything
V ___ subject	tutâdídí'kó béêto	We did not look
V ___ adverb	tutâdídí'kó báku	we did not look fast
V ___ locative	tutâdídí'kó kúna	we did not look there

In these forms, both the construction-initial noun and verb forms are non-donor. Nonetheless, the following form within the phrase always receives a H. Since the content word is the minimal constituent of a clitic group (5a), each of these constructions contains two clitic groups because each of them contains two stems. The H is inserted between two clitic groups that share the same phonological phrase. In other words, H insertion requires the presence of at least two clitic groups.

The rule that inserts the floating H tone between the toneless donor and the following word is formulated as in (20).

(20) H-INSERTION Rule:
Insert a juncture H inside a non-phrase-initial clitic group.

$$\emptyset \text{ ---> } H / [\ldots [\quad]C \_\_ [\quad]C \ldots]\phi$$

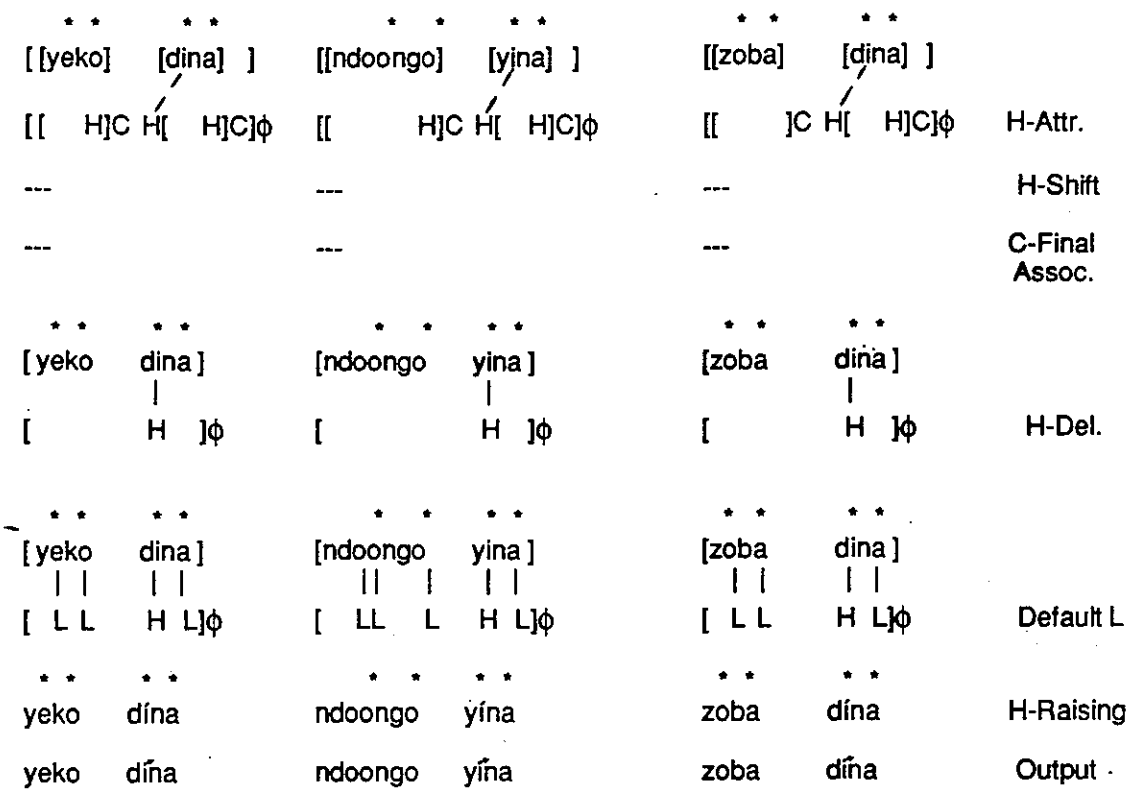
The rule states that as far as a ϕ boundary is not encountered, a H tone is always inserted between two clitic groups. I will assume that H-Insertion precedes even H-Attraction, which it feeds, and it applies at all eligible junctures at the same time. The inserted H will cliticise rightward into the adjacent clitc group. To illustrate H-Insertion, let us witness the neutralisation of the contrast between donor and non-donor groups in the forms of (18) repeated here for convenience.

(21)	G1.1	yeko	dína	'that separation'
	G1.2	ndoongo	yína	'that palmwine'
	G2.1	zoba	dína	'that idiot'
	G2.2	ngoombe	zína	'that cattle'
	G3.1	katíká	dína	'that liver'
	G3.2	hekó	dína	'that tsetse'

These forms are derived as follows.

(22)a

G1.1	G1.2	G2.1	
[[yeko] [dina]]	[[ndoongo] [yina]]	[[zoba] [dina]]	
[[H]C [H]C]ϕ	[[H]C [H]C]ϕ	[[ ]C [H]C]ϕ	UR
* * * *	* * * *	* * * *	
[[yeko] [dina]]	[[ndoongo] [yina]]	[[zoba] [dina]]	
[[H]C H[H]C]ϕ	[[H]C H[H]C]ϕ	[[ ]C H[H]C]ϕ	Accents
* * * *	* * * *	* * * *	
[[yeko] [dina]]	[[ndoongo] [yina]]	[[zoba] [dina]]	
[[H]C H[H]C]ϕ	[[H]C H[H]C]ϕ	[[ ]C H[H]C]ϕ	H-Insert.

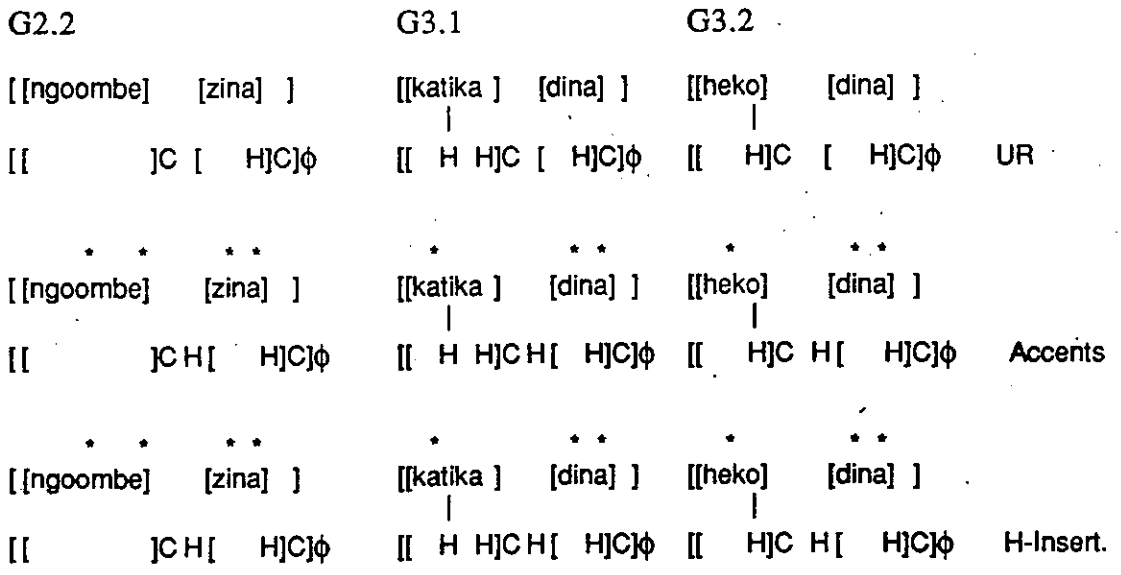

[[yeko] [dina]]
[[H]C H[H]C]ϕ

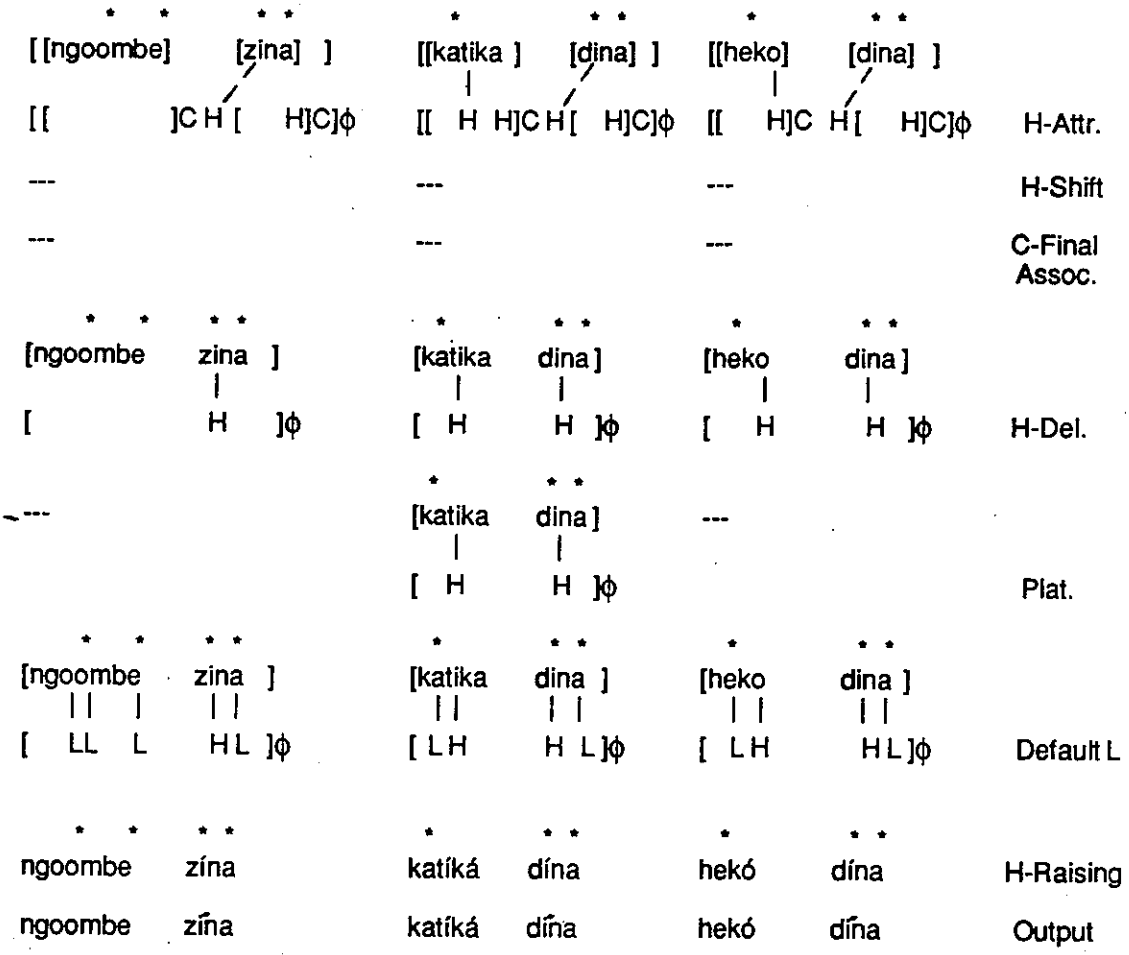
[[ndoongo] [yina]]
[[H]C H[H]C]ϕ

[[zoba] [dina]]
[[ ]C H[H]C]ϕ

H-Attr.
H-Shift
C-Final Assoc.
[yeko dina]
[H]ϕ
[ndoongo yina]
[H]ϕ
[zoba dina]
[H]ϕ
H-Del.
[yeko dina]
[L L H L]ϕ
[ndoongo yina]
[LL L H L]ϕ
[zoba dina]
[L L H L]ϕ
Default L
yeko dína
yeko dĭna
ndoongo yína
ndoongo yĭna
zoba dína
zoba dĭna
H-Raising
Output

(22)b


G2.2
[[ngoombe] [zina]]
[[ ]C [H]C]ϕ
[[ngoombe] [zina]]
[[ ]C H[H]C]ϕ
[[ngoombe] [zina]]
[[ ]C H[H]C]ϕ
G3.1
[[katika] [dina]]
[[H H]C [H]C]ϕ
[[katika] [dina]]
[[H H]C H[H]C]ϕ
[[katika] [dina]]
[[H H]C H[H]C]ϕ
G3.2
[[heko] [dina]]
[[H]C [H]C]ϕ
[[heko] [dina]]
[[H]C H[H]C]ϕ
[[heko] [dina]]
[[H]C H[H]C]ϕ
UR
Accents
H-Insert.



The derivation above accounts for the neutralisation of the usual tonal alternation that distinguishes donor from non-donor morphemes. This neutralisation is possible because a floating H tone is inserted before the demonstrative regardless of whether the noun stem preceding the demonstrative is a donor morpheme or not.

H-Insertion must be ordered before H-Attraction. Ordering H-Insertion before H-Attraction ensures that all applications of H-Attraction, either fed by H-Insertion or otherwise (e.g.underlying representation), take place simultaneoussly. Ordering H-Insertion after H-Attraction has some undesirable and unnecessary effect of requiring an additional cycle in a structure where the phrase-initial clitic group is preceded by a

H tone. This will trigger a first application of H-Attraction. Then a second application of H-Attraction will be required after H-Insertion.

As for the apparent ordering paradox due to the reference to the p-phrase before application of C-bounded rules, let us just observe that this is the nature of domain juncture rules. In fact, it is characteristic for domain juncture rules to refer to two categories. According to Nespor and Vogel (1986:16), these two categories are "the adjacent units involved in the juncture ..., and the unit within which such a juncture must occur in order for the rule to apply ... Since the prosodic categories are organized hierarchally, it follows that the juncture of two units of a particular type can only occur within a larger unit that comprises the two units in questions." In addition, there is evidence that the rules that apply within smaller p-levels do not have to precede those which refer to larger p-levels (Bickmore 1989).

Now that we have motivated both the rule of H-Insertion, we can account for the difference in the tonal behaviour observed above between the N+Possessive and the N+Demonstrative constructions. I claim that these constructions have two different prosodic structures as shown in (23).

(23)	a.	Noun+Possessive	b.	Noun+Demonstrative
		[[N]w [Poss]w]C		[[[N]w]C [[Dem]w]C]ϕ

While the construction N+Possessive is a clitic group, the construction N+Demonstrative contains two clitic groups, both of which share the same phonological phrase. The structural description for H-Insertion is met in (23)b; but not in (23)a. Consequently, a H tone will be inserted between the noun and the demonstrative but not between the noun and the possessive.

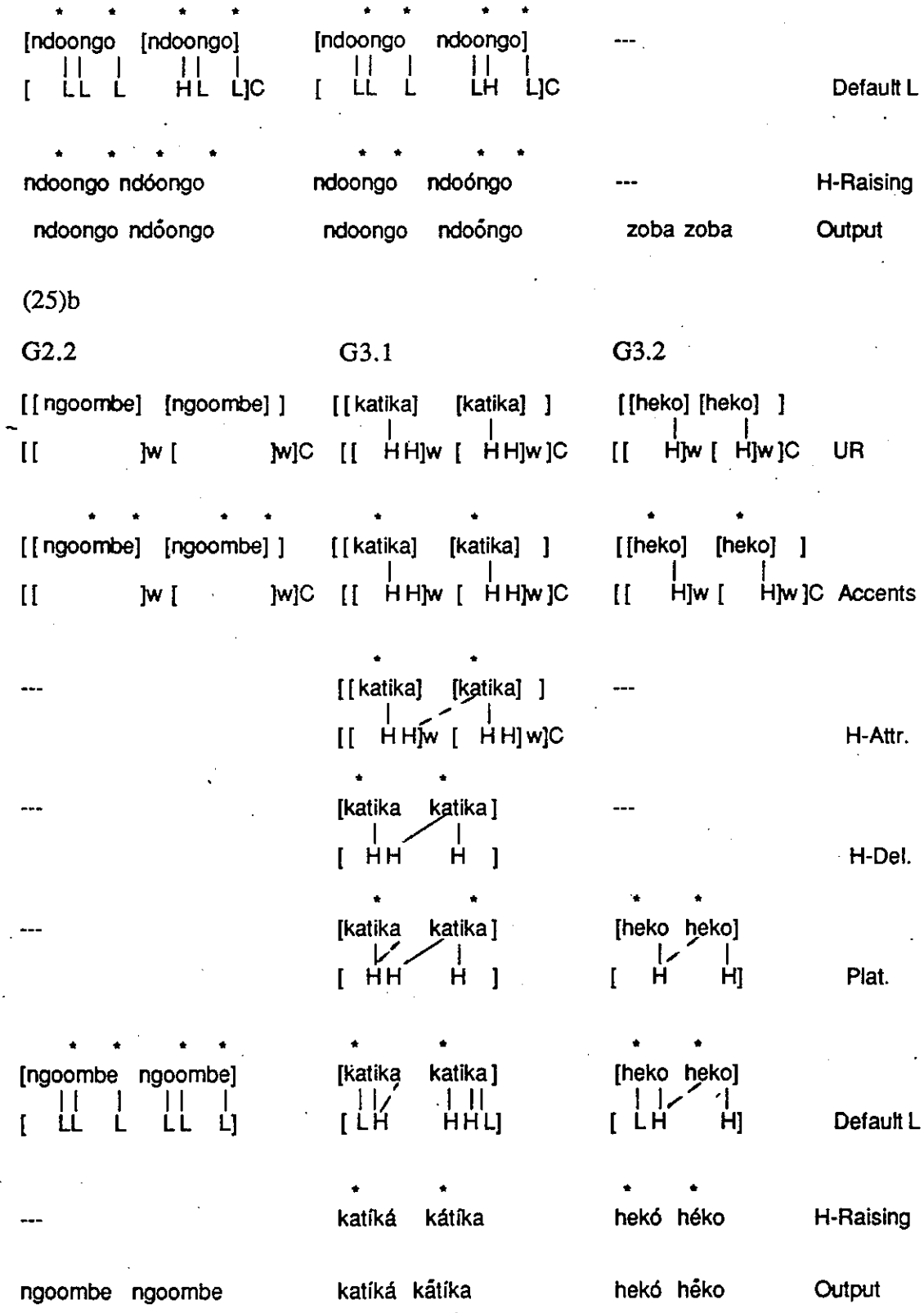
The variety of structures which allow H-Insertion (20) indicates that this rule is common in KiYaka. The same cannot be said for the structures where H-Insertion is not possible. There are indeed very few clitic groups of the type illustrated by Noun+Possessive. One other such construction is the reduplicated form [N N] where the phrase conveys the idea of "the real, the genuine, or true N".

(24)	G1.1	ndoongo ndóongo	'the real needle'
	G1.2	ndoongo ndoóngo	'the real palmwine'
	G2.1	zoba zoba	'the real idiot'
	G2.2	ngoombe ngoombe	'the real cow'
	G3.1	katíká kátíka	'the real liver'
	G3.2	hekó hékó	'the real tsetse'

The tonal shape of these constructions is derived as shown in (25).

(25)a

G1.1	G1.2	G2.1	
[[ndoongo] [ndoongo]]	[[ndoongo] [ndoongo]]	[[zoba] [zoba]]	
[[H]w[H]w]C	[[H]w[H]w]C	[[ ]w[ ]w]C	UR
* * * *	* * * *	* * * *	
[[ndoongo] [ndoongo]]	[[ndoongo] [ndoongo]]	[[zoba] [zoba]]	
[[H]w[H]w]C	[[H]w[H]w]C	[[ ]w[ ]w]C	Accents
---	---	---	H-Insert.
* * * *	* * * *		
[[ndoongo] [ndoongo]]	[[ndoongo] [ndoongo]]	---	
[[H]w[H]w]C	[[H]w[H]w]C		H-Attr.
* * * *	* * * *		
[ndoongo [ndoongo]	[ndoongo ndoongo]	---	
[H]C	[H]C		H-Del.


[ndoongo [ndoongo]
[LL L HL L]C
[ndoongo ndoongo]
[LL L LH L]C

Default L
ndoongo ndóongo
ndoongo ndóongo

H-Raising
ndoongo ndőongo
ndoongo ndoőngo
zoba zoba
Output
(25)b
G2.2
G3.1
G3.2
[[ngoombe] [ngoombe]]
[[ ]w [ ]w]C
[[katika] [katika]]
[[H H]w [H H]w]C
[[heko] [heko]]
[[H]w [H]w]C
UR
[[ngoombe] [ngoombe]]
[[ ]w [ ]w]C
[[katika] [katika]]
[[H H]w [H H]w]C
[[heko] [heko]]
[[H]w [H]w]C
Accents

[[katika] [katika]]
[[H H]w [H H] w]C

H-Attr.

[katika katika]
[HH H]

H-Del.

[katika katika]
[HH H]
[heko heko]
[H H]
Plat.
[ngoombe ngoombe]
[LL L LL L]
[katika katika]
[LH HHL]
[heko heko]
[LH H]
Default L
---
katíká kátíka
hekó héko
H-Raising
ngoombe ngoombe
katíká kâtíka
hekó hêko
Output

Each of the constructions in (24) is a clitic group. H-Insertion is therefore not possible before the second occurrence of the noun stem. As evidence, note that the nouns from non-donor groups G2.1 and G2.2 do not bear a single H tone because these stems are underlyingly toneless. G1 nouns donate their floating H to the second member of the construction, which gives us the only H tone in the domain. The H tones in G3.1 and G3.2 nouns are the combined result of prelinking (G3.1 and G3.2), donation (G3.1) and plateauing (G3.1 and G3.2).

4.2.1.2 Clitic-Group bounded Rules

Apart from H-Insertion, which is p-phrase-bounded, there are clitic-group bounded tone rules which justify the existence of the clitic group. These are H-Attraction, H-Shift, and C-Final H association. To motivate the clitic group as a prosodic domain necessary in the phonology of KiYaka, we need to first recognise that the rule of H-Attraction as discussed in Chapter 2 is a postlexical rule. Second we should remember that H-Attraction is the earliest tone rule that associates tone to TBUs in the language. Consequently, all tone rules that follow H-Attraction are postlexical. With this in mind, let us examine the data in (26).

(26) tutadidi má béêto (madyâ)
we-look-ip- 6it we (6food)
WE looked at it (the food) (= instead of someone else)

Given the definition of the clitic group, the data in (26) must contain at least two clitic groups because we have two content words (the verb *tutadidi* and the subject *béêto*). The rule of clitic group formation also suggests that the verb and the object clitic *ma* form one clitic group and that *beeto* constitutes a separate clitic group.

Turning to rule application now, let us first note that the object clitic *ma* in (26) is H. *ma* receives this H tone by tone shift from the verb. If H-Attraction applies within the phonological phrase, the floating H of the verb will be attracted by the initial accent of the subject *beeto*. The resulting forms are not correct.

(27) a. * tutadidi ma beéto

b.

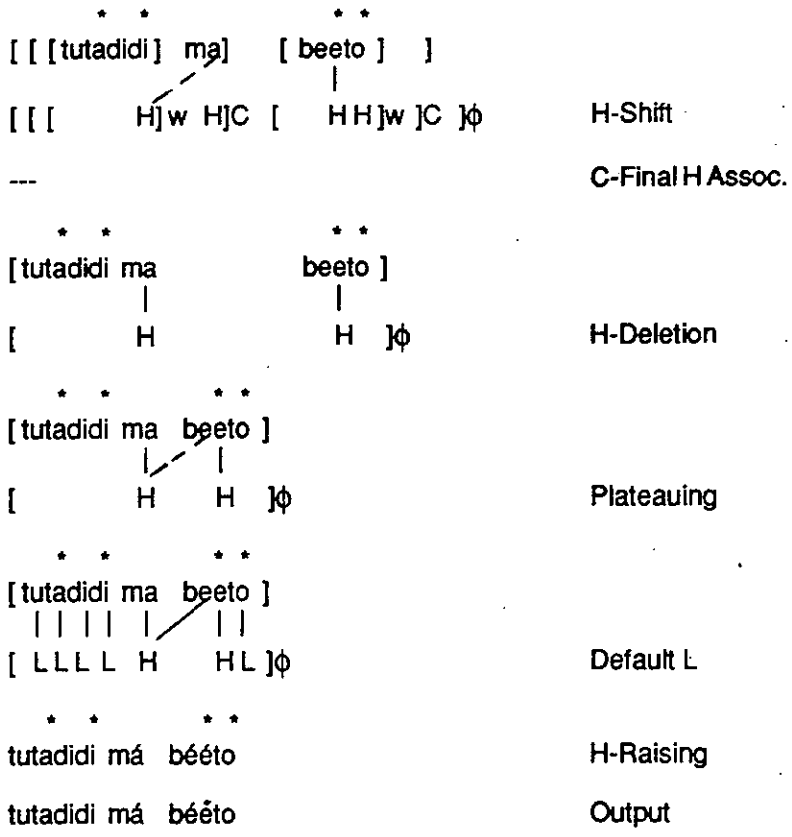
[[tu[tadidi]ma] [beeto]]	
[[[H] H]C [H]C]ϕ	UR
* * * *	
[[tu[tadidi]ma] [beeto]]	
[[[H] H]C [H]C]ϕ	Accents
* * * *	
[[tu[tadidi]ma] [beeto]]	
[[[H] H]C H[H]C]ϕ	H-Insertion
* * * *	
[[tu[tadidi]ma] [beeto]]	
[[[H] H]C H [H]C]ϕ	H-Attraction
—	Plateauing
* * * *	
[tutadidi ma beeto]	
[H]ϕ	H-Deletion
* * * *	
[tutadidi ma beeto]	
[LL LL L LH L]ϕ	Default L
* * * *	
tutadidi ma beéto	H-Raising
* tutadidi ma beéto	Output

The output in (27) is exactly what we would expect if we assume that H-Attraction applies across the clitic group boundaries. However, these forms do not match those of (26) because *ma* and the first mora of *beeto* should be H. But the rule inventory contains no rule that will assign H tone to the left of the initial accent of *beeto*. Since H-Attraction refers to the leftmost floating H, the only way *ma* and the first mora of *beeto* can get H is to posit an additional rule of leftward spreading. While the addition of such a rule is necessary in the present case, it does not play role anywhere else. This is thus an ad hoc rule that would just increase the number of rules in an otherwise more constrained system. Note to the contrary that if H-Attraction occurs within the boundaries of the clitic group, the derivation of the correct forms is guaranteed without any additional rule. We just need to observe that the structural description is not met for H-Attraction to apply within the first clitic group. However, the conditions are met for H-Shift and this rule will place the H of the verb on the object clitic *ma*. This is shown in (28).

(28) a. tutadidi má béẽto (madyå̃)
we-look-ip- 6it we (6food)
WE looked at it (the food) (= instead of someone else)

b.

* * * *	
[[[tutadidi] ma] [[beeto]]]	
[[[H]w H]C [[H]w]C]ϕ	Input
* * * *	
[[[tutadidi] ma] [[beeto]]]	
[[[H]w H]C H[[H]w]C]ϕ	H-Insertion
* * * *	
[[[tutadidi] ma] [[beeto]]]	
[[[H]w H]C H[[H]w]C]ϕ	H-Attraction



It is crucial to notice that just as the H of the verb would not cross the C boundary, the H of the object clitic *ma* fails for the same reasons. The clitic group is thus the domain of H-Shift. After H-Insertion, H-Atraction within the second clitic group. The H tone on the first mora of the stem-initial syllable of *beeto* is the result of Plateauing, which is possible here because the two clitic groups share the same p-phrase.

A second example that illustrates the need for the clitic group involves a toneless noun and the clitic *pé* in the first clitic group.

(29) zoba pé tútâdidi, (lâdidi)
5idiot too we-look at-ip (disappear-ip)
the idiot that we looked at too (disappeared)

The representation of the data of (29) is as shown in (30).

(30)

```
        * *                 *  *
[[ [zoba]  pe]     [  [ tutadidi ]   ] ]

[[ [       ]w  H]C  H[  [        H]w ]C]ϕ
```

As was the case in the previous example with the object clitic *ma*, the clitic *pe* here is H. If H-Attraction applies across the clitic group boundaries, the floating H of *pe* would surface on the verb. Here too, the resulting forms are not correct.

(31) a. * zoba pe tutádidi

b.

```
[[[zoba] pe]    [tu[tadidi] ] ]

[[[      ] H]C  [  [     H] ]C]ϕ          UR

   *  *          *   *
[[[zoba] pe]    [tu[tadidi] ] ]

[[[      ] H]C  [  [     H]]C]ϕ          Accents

   *  *            *   *
[[[zoba] pe]    [tu[tadidi] ] ]

[[[      ] H]C H[  [     H]]C]ϕ          H-Insertion

   *  *            *   *
[[[zoba] pe]    [tu[tadidi] ]  ]

[[[      ] H]C  H[  [     H] ]C]ϕ         H-Attraction

---                                      Plateauing

   *  *          *   *
[zoba  pe     tutadidi ]
                 |
[                H   ]ϕ                  H-Deletion

   *  *          *   *
[zoba  pe     tutadidi ]
  |  |  |      | | | |
[ L  L  L      L H L L]ϕ                 Default L
```

```
 * *        *  *
zoba  pe   tutádidi          H-raising
*zoba  pe   tutádidi         Output
```

These incorrect forms are derived under the wrong assumption that H-Attraction is bounded by the p-phrase. Under this assumption, the floating H of *pe* is attracted by the initial accent on the verb. The rest of the rules apply appropriately.

To ensure the correct results we need a H tone on both *pe* and *tu-*. Once again, these two syllables could get a H by leftward spreading. But such a rule is not independently motivated anywhere else in the grammar of KiYaka. In addition, we will have to find a way of limiting this leftward H spread to these two syllables only. If we confine H-donation (H-Attraction and H-Shift) within the clitic group, then we have a chance to get the underlying H of *pe* realised on the word itself. However, for the particular case of (31), we need the rule of Clitic-Final H association repeated below for convenience.

(32) CLITIC-FINAL H ASSOCIATION:

Attach a floating H to the last syllable of a branching clitic group if no H is previously linked within the domain.

```
...]      V]
          :
...]w     H]C      where ... contains no linked elements;
```

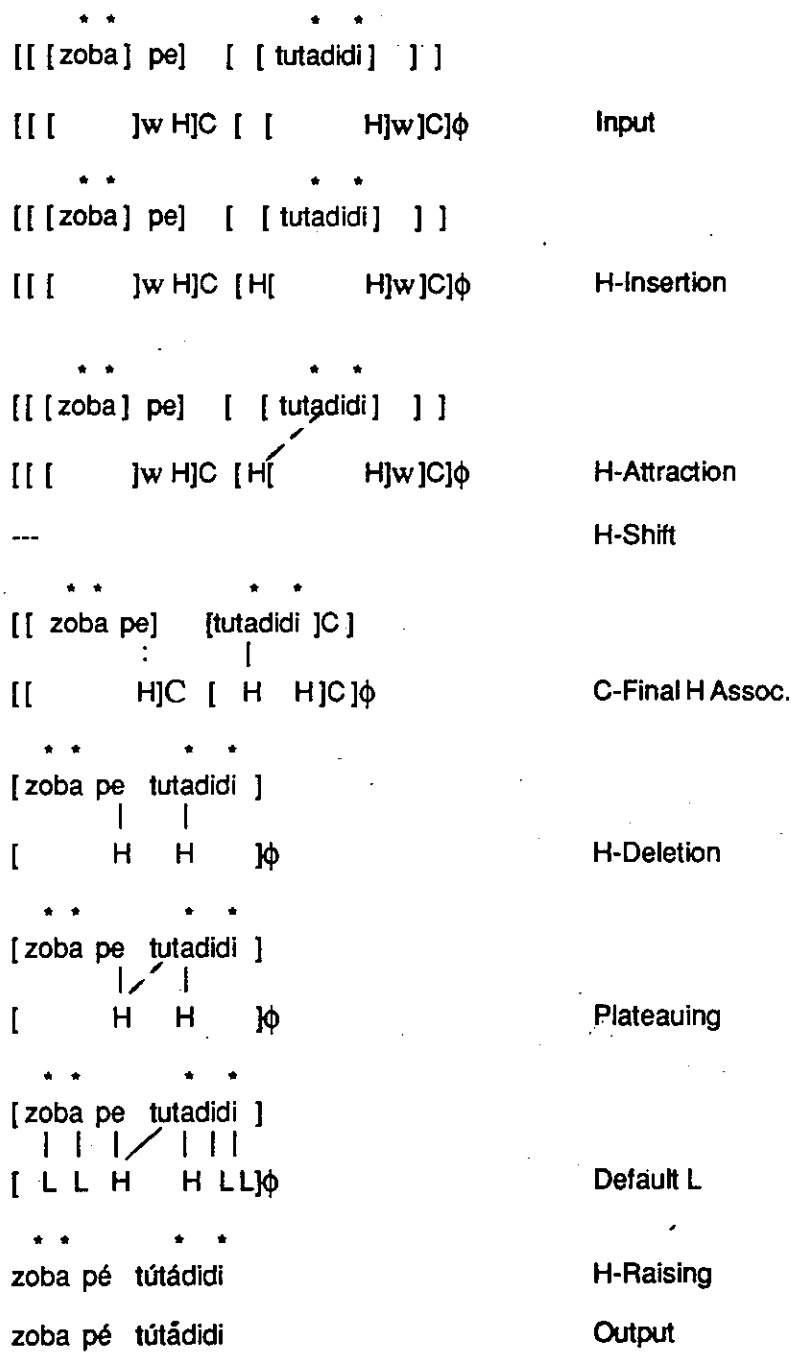
Clitic-Final H association is illustrated in (33).

(33)

```
      * *                 *  *
[[[ zoba]  pe]      [[ tutadidi ]  ] ]
            :
[[ [      ]w  H]C  H[[        H]w]C]ϕ        Clitic-Final H Association
```

Here a derivation of the correct tones of these forms.

(34) b. zoba pé tútãdidi, (lãdidi)
5idiot too we-look at-ip (disappear-ip)
the idiot that we looked at too (disappeared)



The derivations in this section have provided the appropriate support for the points argued for. First, the Clitic Group is justified as a postlexical prosodic domain smaller

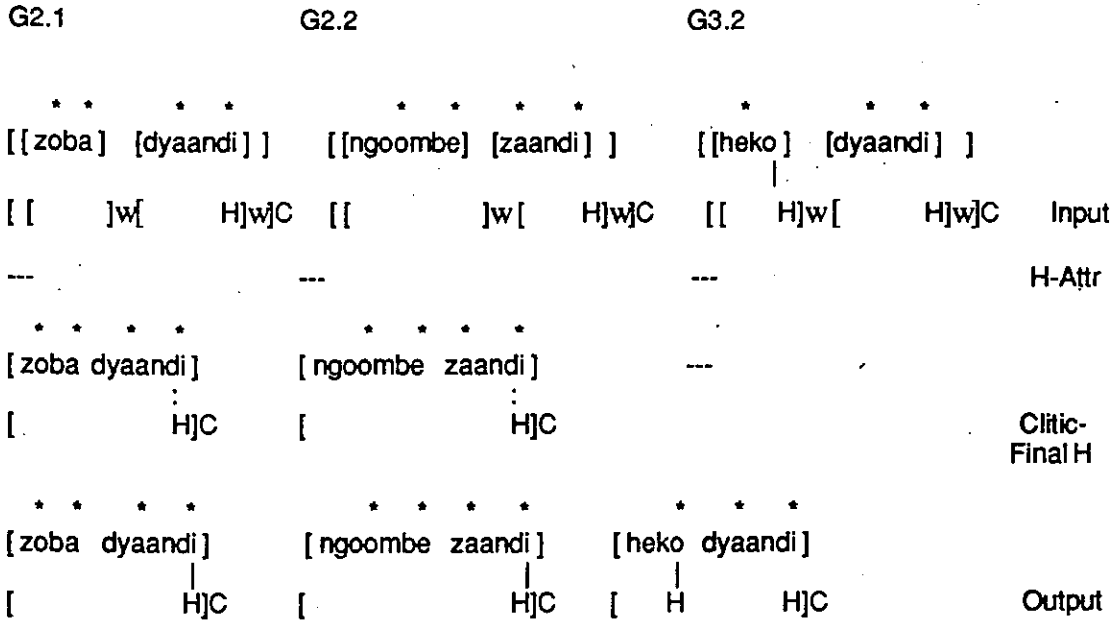
than the phonological phrase. It is the appropriate domain for tone donation (H-Attraction and H-Shift) and C-Final H association. Second, the rule of H-Insertion is necessary to account for facts such as those observed in the neutralisation of tonal alternation between donor and non-donor noun stems. This rule takes place before H-Attraction and inserts a H tone within a non-phrase-initial Clitic Group which shares the p-phrase with a preceding clitic group.

Clitic-Final H Association is also the rule responsible for the tonal shape in forms such as the following.

(35)	G2.1	zoba	dyaandí	'his idiot'
	G2.2	ngoombe	zaandí	'his cattle'
	G3.2	hekó	dyaandi	'his tsetse'

These constructions are made of non-donor noun stems followed by a possessive, which comes with its floating tone. (36) illustrates the application of Clitic-Final H association for the G2.1 and G2.2 nouns and its failure for the G3.2 noun.

(36)



We see that the floating H links to the last syllable of the possessive after G2 nouns because no H is linked yet within the domain. The H of the possessive does not associate with TBUs after *hekó* because the structural description is not met: G3.2 nouns have a prelinked H; the floating H will eventually delete. Default L tones will be inserted and the H tones that co-occur with accent will be raised to R.

I have shown in the foregoing discussion that KiYaka has a prosodic domain smaller than the p-phrase. It is the domain for several tone rules. Let us conclude this discussion of the clitic group with a look at the revised inventory of tone rules as they are distributed among the lexicon, the clitic group and the phonological phrase.

(37) Inventory of Tone Rules

Lexical Rules:

1. H-Attraction (in compounds and verbs)

Postlexical Rules

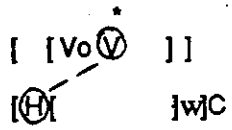
Rules between Clitic Groups

1. H Insertion Rule

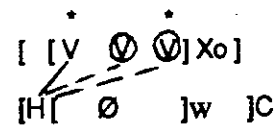
Ø ---> H/ [... [ ]C __ [ ]C...]ϕ

Rules exclusively within the Clitic Group

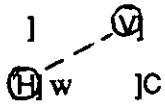
2. H-Attraction: tone donation to accented mora to right of the domain of the tone; affects only free tones; not iterative.



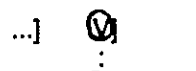
3. H-Support (by left-to-right spreading within W)



4. H-Shift: Tone Shift = tone donation to unaccented syllable of immediately following morpheme (no accent to right of domain of tone); postlexical rule; donated tone must be free.



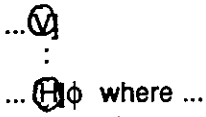
5. Clitic-Final H association



where ... contains no linked elements;

Rules exclusively within the P-phrase

6. Phrase-Final H

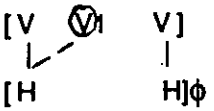


where ... contains no linked elements;

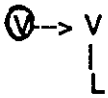
7. Floating H Deletion

Ⓗ--> Ø

8. Plateauing



9. Default



10. H-Raising

$$H \longrightarrow R \,/\, \overset{*}{\underset{|}{V}}\ \underline{\quad}$$

4.3 The Phonological Phrase

4.3.0 Introduction

In the theory of Prosodic Hierarchy, an individual level is justified by the existence of rules that apply exclusively in that domain. The p-phrase in KiYaka is the domain of application of tone rules that belong to the three types of rules that refer to phrasal juncture identified by Selkirk (1980). In fact, we have seen in chapters 2 and 3 that the p-phrase is the domain of a) domain span rules (Plateauing), b) domain limit rules (Phrase-Final H Association) , as well as c) a domain juncture rule (H-Insertion).

In this section I examine the formation of the p-phrase through the syntax. I will argue that KiYaka requires an algorithm that reveals a compromise between the two major trends of the Prosodic Hierarchy. The algorithm at work in KiYaka combines elements from both the end-based and the relational approaches to the syntax-phonology mapping. Such an algorithm is necessary because none of these approaches can account for the data successfully alone.

The data of KiYaka fall into two groups in terms of phrasing. This division is justified by the fact that verbs and nouns phrase differently. So depending on whether the construction contains a verb or not, one or the other aspect of the algorithm will be referred to. Specifically, verbless NPs exploit the relational part and the others refer to the end-based section of the algorithm.

Although the phonology will not be discussed in this section, it will be possible to read the phrasings off the tonal forms. One way of telling is the absence of Plateauing between contiguous content words. It will be remembered that because there is no lexical L in KiYaka and that the default L is inserted after Plateauing, low tones usually occur at the periphery of p-phrases. Consequently, the presence of low tones will generally signal the boundaries of p-phrases.

For ease of exposition, I first describe the major facts of word order and phrasing. Then I present the algorithm and discuss the phrasing data representative of the structures covered in the description. Various additional constructions are examined. The syntax and the algorithm are shown to account for the phrasing as well as free word order.

4.3.1 Description

4.3.1.1 Basic Word Order

One of the major characteristics of KiYaka syntax is the remarkable free word order it exhibits in most constructions. As a result, it is not easy to establish the basic word of KiYaka clauses using the traditional test of neutral meanings. As was shown in Kidima (1987), there are in KiYaka constructions where all three elements (subject, verb, and object) can be rearranged in six different ways without changing the basic meaning of the clause. This can be seen in the following example.

(38) a. SVO baaná ba-ba-sûumbidi bakhokô
children they-bought-them chickens
The children DID buy the chickens

b. SOV baaná bakhokô ba-ba-sûumbidi

c. VSO ba-ba-sûumbidi baaná bakhokô

d. VOS ba-ba-sûumbidi bakhokô baaná

e. OSV bakhokô baaná ba-ba-sûumbidi

f. OVS bakhokô ba-ba-sûumbidi baaná

It should be pointed out that this kind of scrambling is possible only under certain circumstances. The subject in KiYaka is usually topical and this is the case in (38). When the subject is topical, it can occur as a fronted or postposed argument. In addition, if the object precedes a subject that is not focused, there must be agreement

between the verb and its object (marked by the presence of the second *ba-*). In the absence of object agreement, the object must be postverbal.

(39) a. SVO [baaná] [ba-suúmbidí] [bakhokó]
children they-bought chickens
The children bought chickens

b. SOV *[baaná] [bakhokó] [ba-suúmbidí]

c. OSV *[bakhokó] [baaná] [ba-suúmbidí]

The ungrammaticality of (39)b has to do with the basic word order. We can assume then, that the object in KiYaka is basically postverbal.

In the same way we can show that in KiYaka the subject is basically preverbal. To establish this, we can use a construction that makes use of word order to solve the problem raised by ambiguity. We just saw in the example above that sometimes the object agrees with its verb and that the agreement marker is a prefix. When both the subject and the object are class 1, the object marker can refer to any of the arguments of the verb, as in (40) below.

(40) n'-têlele Watâ Nkawâ
him-called Watâ Nkawâ
Wata called Nkawa
Nkawa called Wata

The construction in (40) is ambiguous because it can be understood either as *Wata called Nkawa* or as *Nkawa called Wata*. To disambiguate the clause, the strategy to use is to put one of the arguments before the verb, and the other after the verb.

(41) a. Nkawâ n'-têlele Watâ
Nkawâ him-called Watâ
Nkawa called Wata

b. Watá n'-tẽlele Nkawá
Watá him-called Nkawá
Wata called Nkawa

As can be observed here, the argument before the verb is interpreted as the subject. This in turn suggests that the subject is basically preverbal in KiYaka. Note however that ambiguity is possible even with the order OSV (38)e. The point is that in (38)e the semantics makes it impossible for the object *bakhoko* (chickens) to be interpreted as subject (i.e. it cannot be the subject of the verb 'buy'). In the same way, (40) would not be ambiguous if one of the arguments required a different object marker. In other words then, word order is crucial for disambiguation when both the semantics and the morphology fail to disambiguate. In conclusion, KiYaka is basically SVO. But we will see that there are many different discourse conditions that may require that this order be altered.

4.3.1.2 Phrasing in IP

In addition to the fact that NPs and IPs phrase differently in KiYaka, phrasing in KiYaka verb phrases is very different from what has been observed in most of the languages covered in the literature concerning the prosodic hierarchy. In fact, it is common to find statements like the following: " In language X, the verb phrases with its object" or " In language Y, the subject phrases with its verb". In general, such statements make two claims: 1) alternative phrasings in those languages fail to provide the necessary environment for the application of certain phonological rules; 2) alternative phrasings do not entail different meanings of the construction. While the first claim can be supported in the case of KiYaka, we cannot say the same concerning the second claim.

Perhaps the most peculiar aspect of phrasing in KiYaka verb phrases is the fact that any possible phrasing between the verb and its arguments is allowed and that each of these corresponds to a different meaning of the sentence. So the question for KiYaka is not whether the verb phrases with an argument; rather, the question becomes what does a verb phrase with and what does the construction mean? In this section, I describe similar constructions with different phrasings and their corresponding meanings. The description begins with simplex clauses and will be later extended to more complex constructions.

In general, a clause containing a subject , a verb, and an object on the surface can be phrased in five major different ways, each of which corresponds to a specific reading. For descriptive purposes, I will refer to these readings by the discourse contexts[1] in which they obtain. The description of each context will cover the following factors: the discourse frame, the word order of the constituents involved and their phrasing. In the discussion of each context, I will provide the appropriate reading contrasted with the four inappropriate contexts. In addition, each context judged inappropriate for the phrasing under consideration will be cross-referenced for its own appropriate context.

Context 1: Non-Focused New Information

There are in KiYaka constructions that can be interpreted only as part of a narrative. Such constructions introduce a new argument onto the scene but no special focus is placed on any of the individual words or phrases. For example, a story is being told about a family that went to the market. The narrator wants to mention one

[1] The labels used in this description do not constitute any theoretical claims. They serve a purely descriptive purpose. For an illustration of some of these discourse contexts, see Appendix C. A comprehensive discourse analysis of the language is necessary to explain these differences.

of the things that happened while they were there. They were walking, ... and then "The children bought chickens". Such a sentence is phrased as shown in (42)a.

(42) a. [baanâ] [ba-suûmbidî] [bakhokô]
children bought chickens
The children bought chickens

b. [ba-suûmbidî] [baanâ] [bakhokô]

c. [ba-suûmbidi] [bakhokô] [baanâ]

-Any of these constructions can answer the question "What happened, then?". However, this is not the "What happened?" that can be asked out of the blue. This question must also be part of a larger discourse context and would thus come out as "What happened then?".

The word order in (42)a is obviously SVO. But as we saw earlier, the subject does not have a strict position. Thus for example, the subject appears between the verb and the object in (42)b and after the object in (42)c. All these orders are well-formed for this context. The only ungrammatical orders are those where the object is preverbal, because the postverbal position of the object is crucial for this context. The object may not agree with the verb in this discourse context.

(43) a. *[baanâ] [bakhokô] [ba-suûmbidi]

b. *[bakhokô] [baanâ] [ba-suûmbidi]

c. *[bakhokô] [ba-suûmbidî] [baanâ]

In this discourse context, the constituents in the three grammatical word orders (42)a-c must phrase appropriately for the interpretation to result. Specifically, each constituent (subject, verb, and object) forms a separate phonological phrase. This is supported by the lack of plateauing.

(44) a. [baanâ] [ba-suúmbidi] [bakhokó]
children bought chickens
The children bought chickens

b. [ba-suúmbidi] [baanâ] [bakhokó]

c. [ba-suúmbidi] [bakhokó] [baanâ]

Any phrasing that would for instance group two or more constituents in the same phrase would be inappropriate for this context (45).

(45) a. *[baanâ] [ba-suúmbídí bákhóko] (See Context 2)

d. *[baânâ bá-súúmbídí bákhóko] (See Context 5)

In (45) we see that even with the correct word order, a construction may not be interpreted appropriately if the wrong phrasing is used. The reference in parentheses indicates that although this phrasing is not correct for the present context, there is another discourse context that it fits.

The data in (42) through (45) illustrate a postverbal object. But a subject can also occur postverbally in this context. For instance, the narrator wants to convey the sudden arrival of a friend while the family was eating: "We were eating and suddenly, Kimwata walked in". The KiYaka equivalent is given below.

(46) a. [Kótele] [Kimwatâ]
entered
Kimwata walked in

b. [Kimwatâ] [kótele]
entered
Kimwata walked in

Contrary to the object, which can occur only postverbally in this context, the subject can precede the verb as (46)b indicates. This is due to the fact that the subject in

KiYaka is topical and can thus appear either as a fronted or postposed. Nonetheless, the postverbal position of the subject is preferred in the present context.

In intransitive constructions the only two cases where both the subject and its verb can phrase together are not appropriate for Context 1. These are provided in (47).

(47) a. *[Kǒtélé Kímwâtâ] (See Context 2)
entered
Kimwata walked in

b. *[Kimwâtâ kǒtele] (See Context 3)
entered
Kimwata walked in

Here again, the two readings ruled out for Context 1 are the only ones to be appropriate for two other contexts. Namely, (47)a is the reading for Context 2, and (47)b for Context 3.

Context 2: Focused Old Information (Postverbal)

Here is an example of Focused Old Information. As in context 1, the family went to the market. When they got there, they saw both ducks and chickens for sale. But the children bought chickens. In this example, "chickens" is focused old information. The utterance can be part of a narrative or not. Constructions of this type generally express surprise, disappointment, or something unexpected for the postverbal argument.

(48) a. baaná ba-suǔmbídí bákhǒko
children bought chickens
The children bought chickens

b. ba-suǔmbídí bákhǒko baaná
bought chickens children
The children bought chickens

The word order here can be either SVO or VOS.

In this context, the object is the focused old information and must phrase with its verb. No other constituent may be inserted between them.

(49) a. [baaná] [ba-suúmbídí bákhóko]
children bought chickens
The children bought chickens

b. [ba-suúmbídí bákhóko] [baaná]
bought chickens children
The children bought chickens

Any phrasing that involves more than two constituents or exclusively separate constituents are not appropriate for Context 2.

(50) a. *[baaná] [basuúmbidi] [bakhokó] (See Context 1)

b. *[baáná básúúmbídí bákhóko] (See Context 5)

Once more, the phrasings ruled out here will be shown to be fully acceptable in other contexts.

The subject can also occur postverbally and form a phonological phrase with the verb. This would be the case if for example the parents and the children were competing for the purchase and the children finally won the contest: THE CHILDREN bought the chickens (and not the parents).

(51) a. ba-ba-súúmbídí bááná bakhokó
they-bought-them children chickens
THE CHILDREN bought the chickens

b. bakhokó ba-ba-súúmbídí bááná
chickens they-bought-them children
THE CHILDREN bought the chickens

It is crucial to note that this reading requires that the object be backgrounded and this is indicated by the obligatory object agreement (second *ba-*) in the verbal unit. (51)

indicates that a backgrounded object has the same freedom of occurrence as the subject, that is, it can precede or follow the verb. The word order is thus VSO in (51)a and OVS in (51)b. The crucial fact is the postverbal position of the subject.

As was the case with the postverbal object in (48) and (49), the postverbal subject must phrase with the verb. No other argument may be inserted between the verb and the subject.

(52) a. [ba-ba-sǘúmbídí̋ báā́ná] [bakhokó]
they-bought-them children chickens
THE CHILDREN bought the chickens

b. [bakhokó] [ba-ba-sǘúmbídí̋ báā́ná]
chickens they-bought-them children
THE CHILDREN bought the chickens

Postverbal focus is in no way limited to one argument after the verb. In fact, depending on the syntax and the appropriate discourse context, a verb can phrase with more than one argument after it. For instance, the data in (53) contain two postverbal objects.

(53) a. [taatá] [tǘmíní̋ báā́ná kú záā́ndu]
1father 1send-ip 2child 17to 5market
Father sent some children to the market

This sentence expresses surprise that the father sent children to the market. The speaker did not expect this action; it can also be understood that some people were supposed to be sent to the market but these were not supposed to be the children. The phrasing follows the pattern observed in the previous cases of postverbal focus. Namely, the verb phrases with its postverbal arguments; the subject phrases separately.

In summary then, the argument forming focused old information occurs postverbally and forms a single phonological phrase with the verb.

Context 3: Focused New Information(Preverbal)

Constructions in this context ask and answer information questions, using question words. Suppose we know that the children went shopping but we don't know what they bought and we want to enquire about what they bought. The direct question corresponding to "What did the children buy?" is given in (54) and the appropriate answer is provided in (55).

(54) a. baaná khí bá-súúmbidi
children cop-what they-bought
What did the children buy?

b. khí bá-súúmbidi baaná
cop-what they-bought children
What did the children buy?

(55) a. baaná bakhókó bá-súúmbidi
children cop-chickens they-bought
The children bought chickens

b. bakhókó bá-súúmbidi baaná
cop-chickens they-bought children
The children bought chickens

The variation between (a) and (b) of (54) and (55) just shows that the subject retains its mobility even in these constructions. The order is SOV in (a) and OVS in (b). The important factor is the preverbal position of the object. The verb may not agree with the verb.

As far as phrasing goes, notice that the object and its verb share a same phonological phrase in both the questions and the answers. Apparently, both the question and the answer have the same structure. The subject forms a separate phrase.

(56) a. [baaná] [khí́ básúúmbidi]
children cop-what they-bought
What did the children buy?

b. [khí́ básúúmbidi] [baaná]
cop-what they-bought children
What did the children buy?

(57) a. [baaná] [bakhókó básúúmbidi]
children cop-chickens they-bought
The children bought chickens

b. [bakhókó básúúmbidi] [baaná]
cop-chickens they-bought children
The children bought chickens

Since the object and the verb must form a phonological phrase, any grouping that would separate them is ill-formed for this context.

(58) a. *[baaná] [bakhokó] [ba-ba-súumbidi] (See Context 4)

In the same context, the subject can also occur in the preverbal position. The utterance in (50) answers the question 'who bought the chickens' (59). The order of the constituents is SVO in (a) and OSV in (b).

(59) a. [banání́ bá-bá-súumbidi] [bakhokó] ?
cop-who they-bought-them chickens
Who bought the chickens?

b. [bakhokó] [banání́ bá-bá-súumbidi] ?
chickens cop-who they-bought-them
Who bought the chickens?

(60) a. [baáná bá-bá-súumbidi] [bakhokó]
cop-children they-bought-them chickens
THE CHILDREN bought the chickens

b. [bakhokó] [baáná bábásúumbidi]
chickens children they-bought-them
THE CHILDREN bought the chickens

Although the sets (59) and (60) belong to the same context as (56) and (58), there is a difference to account for between these two sets. The focused argument is the object in (56) and (57) but it is the subject in (59) and (60). The focused argument always phrases with the verb. Note to this effect that object agreement is impossible when the object is focused and thus phrases with the verb; inversely, object agreement is obligatory when the subject is focused and thus phrases with the verb.

Finally, let us note what makes the tonology of focused arguments different from that of non-focused arguments. It will be remembered from Chapter 2 that pre-focused arguments receive a H tone from their left, within the same Clitic Group. We have suggested that this is the copula made of only a floating H tone. This copula H is present in all constructions with a pre-focused argument and it is usually realised on the stem initial syllable as a Raised H. The copula is noted in the glosses as "cop".

Context 4: Non-Focused Old Information

Constructions of this type confirm or disconfirm the action of the verb. The sentence is thus the answer to a Yes/No question: "Did the children buy the chickens". Typically in these constructions all the arguments represent background information and not a single argument is focused. The object obligatorily agrees with the verb and this is shown by the presence of a second *ba-* in the verbal unit. In (61)a, the order is SVO. But it will be remembered that the subject does not have a strict position; in addition, an object that agrees with the verb can be equally fronted or postposed. In other words, the meaning of (61)a can be expressed through all the six possible orders of the three elements involved.

(61) a. SVO baanâ ba-ba-sûumbidi bakhokô
children they-bought-them chickens
The children DID buy the chickens
(lit. As for the children, they did buy the chickens)

b. SOV baanâ bakhokô ba-ba-sûumbidi

c. VSO ba-ba-sûumbidi baanâ bakhokô

d. VOS ba-ba-sûumbidi bakhokô baanâ

e. OSV bakhokô baanâ ba-ba-sûumbidi

f. OVS bakhokô ba-ba-sûumbidi baanâ

As we saw earlier, fronted or postposed arguments always phrase separately from the verb. In the particular case at hand, each of the three elements makes a separate phonological phrase and this phrasing remains the same for any word order.

(62) a. [baanâ] [ba-ba-sûumbidi] [bakhokô]
children they-bought-them chickens
The children DID buy the chickens

b. [baanâ] [bakhokô] [ba-ba-sûumbidi]

c. [ba-ba-sûumbidi] [baanâ] [bakhokô]

d. [ba-ba-sûumbidi] [bakhokô] [baanâ]

e. [bakhokô] [baanâ] [ba-ba-sûumbidi]

f. [bakhokô] [ba-ba-sûumbidi] [baanâ]

Before turning to the phrasings that are not appropriate for this context, let us observe first that there is only a slight difference between (61) and (42) above. That is, the verb in (61) contains the object agreement marker, which is not the case for (42). Although this might seem a minor difference, it nevertheless plays an important role in distinguishing these two sets of constructions. From the point of view of the discourse, Context 4 requires that all arguments be backgrounded so that the emphasis is put on confirming or disconfirming the action expressed by the verb. The data of

(42) do not submit to this requirement. From the point of view of the syntax, an object that agrees with its verb indicates that this object is not in the immediate scope of the verb. Instead, we will argue below that such an object is adjoined to IP.

Given the phrasing illustrated above, any grouping that would put together the verb and an argument is not appropriate for this context.

(63) a. *[baaná] [ba-ba-suúmbídí bákhóko] (See Context 2)

c. *[baaná] [bakhóko básúúmbidi] (See Context 3)

d. *[baáná básúúmbídí bákhóko] (See Context 5)

Context 5: Multifocused New Information

Multifocused utterances are so termed because both the subject and the object are focused at the same time. They answer the general question 'what happened?' Imagine you are at a party and suddenly you hear what sounds like a dish falling on the floor and breaking. A friend asks you "What's that?" You might answer "Someone broke a dish". In KiYaka, this comes out in the with the same word order as in English: SVO. This word order is required.

(64) [Mútú búdídí dílóngá]
cop-person he-broke dish
Someone broke a dish

The whole utterance is one single phonological phrase. In the same way, we may have the utterance 'Some children bought chickens' in one single phonological phrase.

(65) [baáná básúúmbídí bákhóko]
cop-children they-bought chickens
Some children bought chickens

Multifocused constructions appear to always appear to have the structure SVO and all three constituents make a single phonological phrase. Therefore, any phrasing of fewer than the three constituents, even in the correct order, fails to convey the meaning of Context 5.

(66) a. *[baaná] [basuúmbidi] [bakhokó] (See Context 1)

b. *[baaná] [basuúmbídí bákhóko] (See Context 2)

d. *[baaná] [ba-ba-súumbidi] [bakhokó] (See Context 4)

One observation to make here is that focused arguments always phrase with the verb (actually they are the only ones that can phrase with the verb). In multifocused constructions, the subject is preverbal and the object postverbal. Such constructions are not common in KiYaka but they do exist and they express a special meaning too. When they are used, these constructions are subject to a semantic requirement.

Typically, a preverbally-focused subject in this context may not be inherently definite. It is not clear at this stage of the investigation why this is so. However, it appears that the effects of focusing differ depending on the semantics of the focused argument. For example, focusing certains nouns make them indefinite. But focusing a proper name or other nouns that are inherently definite never yields indefiniteness. Such a process always results in a contrastive focus, which seems to be limited to one argument per verb. An utterance with an inherently definite subject is ruled out if the object is also focused.

(67) a. [Maáfú ba-súumbidi] [bakhokó]
cop-Maafu she-them-bought chickens
It's Maafu who bought the chickens

b. *[Maáfú súúmbídí bákhóko]
cop-Maafu she-bought chickens
It's Maafu who bought chickens

In the examples above, the subject is focused in both (67)a and b. However, only (67)a can be interpreted appropriately because its object is not focused. The example of (60) in particular makes the point that although the use of multifocused constructions is marked, it is not limited to non-referential nouns like "mutu" (someone). The relation between definiteness and the contrastive reading of focused arguments will receive further support when we discuss the relative clauses, whose function is to make the head noun inherently definite through the structure. It will be shown that a relative clause whose head noun is focused may not convey an indefinite reading.

In the foregoing sections, I have presented a descriptive model of the different phrasing patterns in main clauses. The model, though based on main clauses, can be extended to more complex constructions. The description shows that there are five major phrasing patterns and that each of them can be associated with a particular discourse context.

Even though the contexts share characteristics, there is at least one that distinguishes them and thus makes each context unique. Thus for instance, Context 1 is the only one that exclusively evokes a narrative. Constructions in this context answer the question "What happened, then?" Both Context 1 and 2 have a postverbal object and no object agreement is possible. While the object must phrase with its verb in Context 2, it must phrase separately in Context 1. Context 3 reflects answers to WH-questions on specific arguments. In Context 4, all arguments must be old information to leave the emphasis on the action expressed by the verb. Finally, Context 5 requires that all arguments be new and focused. Constructions that fall in this Context answer the question "What happened?" asked out of the blue and cover a broader scope than questions that relate to specific arguments.

4.3.1.3 Phrasing in NP

The data examined in the preceding section clearly show that the verb usually phrases alone, unless one of its arguments is focused. But so far we have covered only simplex, non-modified arguments. Now we turn to phrasing in NPs, which can be modified by entire clauses such as relative clauses. It will be shown that notwithstanding their internal phrasing, modified NPs phrase like the simplex arguments in the data of the foregoing section. For clarity, we will first describe NPs whose modifier contains no verb (verbless NPs); then we will cover relative clauses.

KiYaka is a head-initial language. A head noun phrases with the string of modifiers to the right, no matter what its length.

(68) a. [bakhoko bâna]
chickens those
Those chickens

b. [bakhoko ba ngwaâsi]
chickens of uncle
Uncle's chickens

c. [bakhoko ba kabeêngа]
chickens of red
The red chickens

d. [bakhoko ba kabeêngâ bá ngwáâsí Málóóngi]
chickens of red of uncle Maloongi
Uncle Maloongi's red chickens

e. [tsala za kalêyâ zá bákhókó bá kábeêngâ bá ngwáâsí Málóóngi]
feathers of long of chickens of red of uncle Maloongi
Uncle Maloongi's red chickens' long feathers

It is important to note that focus has no visible effect on phrasing in these modified nouns, because everything already makes up a single phonological phrase. However, the effect of focus is clear once the modified noun is focused.

(69) a. [bakhoko ba kabeêngâ bá ngwâási Málóóngi] [badiîdi] [ngubâ]
chickens of red of uncle Maloongi they-ate peanuts
Uncle Maloongi's red chickens ate peanuts

b. [bakhôkô bá kábéêngâ bá ngwâási Málóóngî bádîîdi] [ngubâ]
cop-chickens of red of uncle Maloongi they-ate peanuts
It's uncle Maloongi's red chickens that ate peanuts

In the data above, we see that the subject NP and the verb phrase separately in (69)a, where there is no focus involved. But in (64)b, the subject NP is focused and consequently, the verb phrases with the focused subject NP. Let us finally point out that (69)a phrases as described in Context 1, and (69)b as in Context 3.

The next set of data to be examined with regard to phrasing in NP concerns cases where the modifier contains an embedded verb, namely relative clauses. While the head plays a similar role as in the case of adjectival modifiers, not everything that is part of the relative clauses phrases with the head noun. Let us consider the data in (70) and (71) below. In non-focused relative clauses (a) constructions, the head noun, the relative marker (if it is overt), and the embedded verb form a single p-phrase. The embedded subject (if it is overt) forms a separate p-phrase. The main verb also constitutes a separate p-phrase. However, when the head noun is focused ((b) constructions), the main verb cliticises to the relative clause, if the embedded subject is not overt (70); otherwise, the embedded subject and the main verb form a single phrase.

(70) a. [bakhoko bâná básúúmbidi] [balâdidi]
chickens that they-bought they-disappeared
The chickens that they bought disappeared

b. [bakhôkô bâná básúúmbídî bálâdidi]
it's-chickens that they-bought they-disappeared
It's the chickens that they bought that disappeared

(71) a. [bakhoko bā́nā́ básúū́mbidi] [baanā́] [balā́didi]
chickens that they-bought children they-disappeared
The chickens that the children bought disappeared

b. [bakhṓkṓ bā́nā́ básúū́mbidi] [baana balā́didi]
cop-chickens that they-bought children they-disappeared
It's the chickens that the children bought that disappeared

In (70) and (71), the head noun is the object of the embedded verb but the subject of the main verb. The phrasing pattern is that of Context 1 for (a) constructions and Context 3 for (b) constructions. The same type of phrasing obtains when we focus a head noun that is the object of the embedded verb and also the object of the main verb: the embedded subject phrases with the main verb.

(72) a. [bakhoko bā́nā́ básúū́mbidi] [baanā́] [ba-ba-yíbidi] [beefí]
chickens that they-bought children they-stole-them thieves
The thieves stole the chickens that the children bought

b. [bakhṓkṓ bā́nā́ básúū́mbidi] [baana bayíbidi] [beefí]
cop-chickens that they-bought children they-stole thieves
It's the chickens that the children bought that the thieves stole

(73) c. [bakhoko bā́nā́ básúū́mbidi] [ba-ba-yíbidi] [beefí]
chickens that they-bought they-stole-them thieves
The thieves stole the chickens that they bought

d. [bakhṓkṓ bā́nā́ básúū́mbídí báyíbidi] [beefí]
cop-chickens that they-bought they-stole thieves
It's the chickens that they bought that the thieves stole

Here we see that the non-focused head noun phrase together with its modifier but apart from the verb, which reflects Context 1. However, when the head noun is focused, we get the pattern of Context 3. In clear words, the diffference between non-focused and focused constructions parallels that between Context 1 and Context 3.

Let us now examine the case of a head noun that is the subject of the embedded verb, and the subject of the main verb. Here too the number of phrases of

the non-focused constructions is reduced when focus intervenes, because the embedded object phrases with the main verb.

(74) a. [bakhoko bā́nā́ bádíī́di] [ngubā́] [bafuū́di]
chickens that they-ate peanuts they-died
The chickens that ate the peanuts died

b. [bakhṓkṓ bā́nā́ bádíī́di] [nguba bafuū́di]
cop-chickens that they-ate peanuts they-died
It's the chickens that ate the peanuts that died

The same type of phrasing results when the head noun is the subject of the embedded verb, but the object of the main verb: the embedded object phrases with the main verb in the presence of a focused head noun. In this particular example, note Plateauing between the embedded object *makatika* and the main verb *baladidi* (75)b.

(75) a. [Baana bā́nā́ básúū́mbídī́] [makatíka] [balā́didi]
2child that they-buy-ip 6liver 2disappear-ip
The children that bought the livers disappeared

b. [Baā́nā́ bā́nā́ básúū́mbídī́] [makatíká bálā́didi]
cop-2child that they-buy-ip 6liver 2disappear-ip
It's the children that bought the livers that disappeared

Before concluding this discussion on phrasing in NPs, a word should be said about the embedded subject and object. We have observed that the embedded argument consistently phrases with the main verb when the head noun is focused (cf. (70) a and b). This extreme disagreement in bracketing supports the claim that there is no direct relation between the syntax and the prosodic domains. The few cases where such isomorphism obtains between syntactic constituents and the prosodic domains are just a non-representative subset of the data.

The foregoing description reveals some complex phrasing patterns in a variety of constructions. We have observed that phrasing varies depending on whether a

construction involves a verb or not. The analysis, which includes structures that were not specifically discussed in the description, reflects this phrasing difference between verbless NPs and constructions containing verbs.

4.3.2 Analysis

In order to account for the phrasing patterns described above, I propose the following algorithm for the formation of the phonological phrase in KiYaka.

(76) P-phrase formation : KiYaka

1. Place a p-phrase break at the left edge of every IP if it is lexically non-empty.
2. Place a p-phrase break at the right edge of maximal p-strings.

   Let a "p-string" be a head and everything it i-commands.

   If X'i dominates Xo
   any category dominated by X'i which dominates X is also X'
   Xi dominates Y
   Then Xo i-commands Y

   A p-string is maximal if it is not a proper subset of another p-string.

3. Place a p-phrase break between conjuncts (conjunction cliticises rightward)

Before examining how the algorithm works in different structures, some important observations are in order. To begin with, let us observe that this algorithm is partially end-based (clause 1) and partially relational (clause 2). This double aspect captures the difference observed in the description in the phrasing of verbs and nouns. Specifically, the double nature of the algorithm is necessary because on the one hand, the relational approach fails to predict the consistent break before the IP. On the other

hand, the end-based theory cannot account for the lack of internal break in verbless NPs, regardless of their length.

4.3.2.1 Phrasing in NP

To illustrate how the algorithm in (76) accounts for the data presented in the description, we will first consider NP constructions which do not contain a verb or verbless NPs. Of these, let us begin with structures involving a single branching X', because these are straightforward in terms of the interpretation of the algorithm.

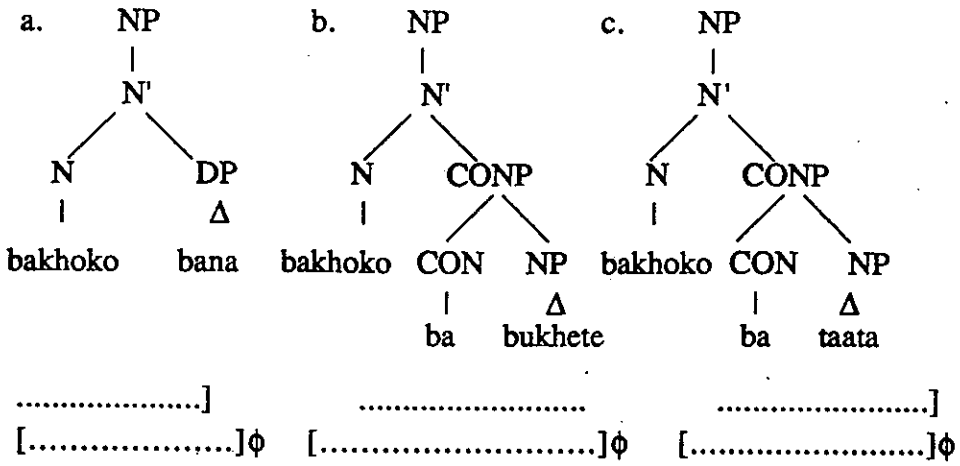
(77) a. bakhoko bâna
2chicken those
Those chickens

b. bakhoko ba bukhête
2chicken of beauty
The beautiful chickens

c. bakhoko ba taâta
2chicken of father
Father's chickens

These constructions have the following respective structures where CON stands for connective (i.e. associative morpheme), and CONP for connective phrase. Each structure is followed by two rows of brackets. The first row shows the brackets as they are set by the algorithm; the rest is given by exhaustive parsing. The second row indicates the actual phrasing.

(78)

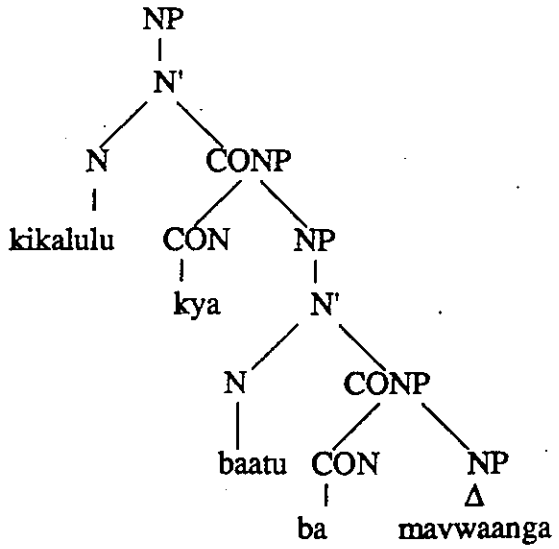


To begin with, let us observe that because the constructions under consideration in this section do not contain a verb, there will be no IP; hence clause 1) of the algorithm (76) will not be relevant. In (78), the first thing to consider for each structure is the head. The head is *bakhoko* in (78)a-c. Next, we locate the immediate projection (X') of each of them. This is the only branching N' in each of the structures. The right edge of the material that falls within this projection is after *bana* (a), *bukhete* (b), and *taata* (c), respectively. So we place a bracket after each of these words. The algorithm (76.2) thus ensures that each of the structures in (78) is a single p-phrase.

Let us now turn to constructions involving more than one branching X'. The structure of (79)a is as given in (79)b.

(79) a. [kikalulu kya baátú bá mávwáanga]
7habit of 2person 2of 6trouble
The habit of troublemakers

b.



.....]

[.....] ϕ

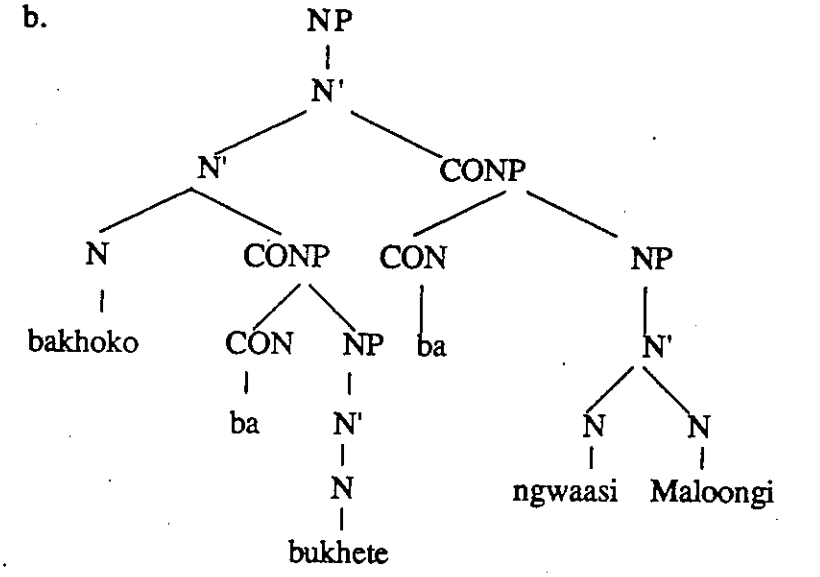
Although the minimal p-string is headed by *baatu* and the maximal p-string by *kikalulu*, they both have the same eight edge (after *mavwaanga*). Clause 2) of (76) requires that we place the bracket after *mavwaanga*. The result is one single p-phrase.

Note that in these cases both the end-based and the relational approach make the right predictions. The end-based approach yields the correct results because both Xmax edges (NPs) coincide. The relational analysis is accommodated because in (79)b every word on the non-recursive side except the last is a head. Such a structure ensures that a c-command relation is maintained between consecutive constituents. We will see later that other structures involving more than one branching X' raise serious problems for the end-based solution. In the same way, a relational algorithm based on the c-command relation cannot handle the most complex cases.

The next construction to be examined involves also more than one X' but it is different from (79) in that we have one single head instead of different heads. Consider (80).

(80) a. bakhoko ba bukhêtê bá ngwáási Málóóngi
chickens of beauty of uncle Maloongi
Uncle Maloongi's beautiful chickens

b.



.....]
[.....]ϕ

The lowest and leftmost head of a branching X' in (80) is *bakhoko*. The minimal p-string thus ends with *bukhete*. In other words, *bakhoko ba bukhete* is a p-string but not a maximal p-string. In fact, the immediate projection of the head *bakhoko* involves an adjunction. Therefore we must consider its maximal scope, which is also the highest N' in the structure. Following the algorithm (76.2), we place a bracket after *Maloongi*; the whole construction thus forms a single p-phrase since everything falls within a maximal p-string. Constructions such as (80) present a special challenge for Selkirk's end-based approach because the latter predicts two p-phrases. Specifically, a first bracket is required after *bukhete* because this is an Xmax; a second bracket will be needed after *Maloongi*, which is clearly wrong.

A relational analysis based on c-command and consecutiveness runs into trouble as well. Namely, though *bukhete* is adjacent to the following associative morpheme *ba*, there is no c-command relation between these two constituents. We would therefore expect the p-string to be broken; but it does not since the whole NP constitutes a single p-phrase.

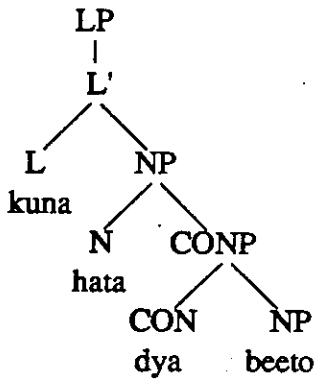
Locative constructions are ultimately headed by locatives like *ha* (on), *ku* (to) and *mu* (in) or any of their variants. Except for the head, constructions headed by a locative phrase exactly like those headed by nouns. The length of the phrase is irrelevant. To illustrate, let us consider the following examples.

(81) a. kuna hâtâ dyá béêto
17to 5village 5of us
To our village

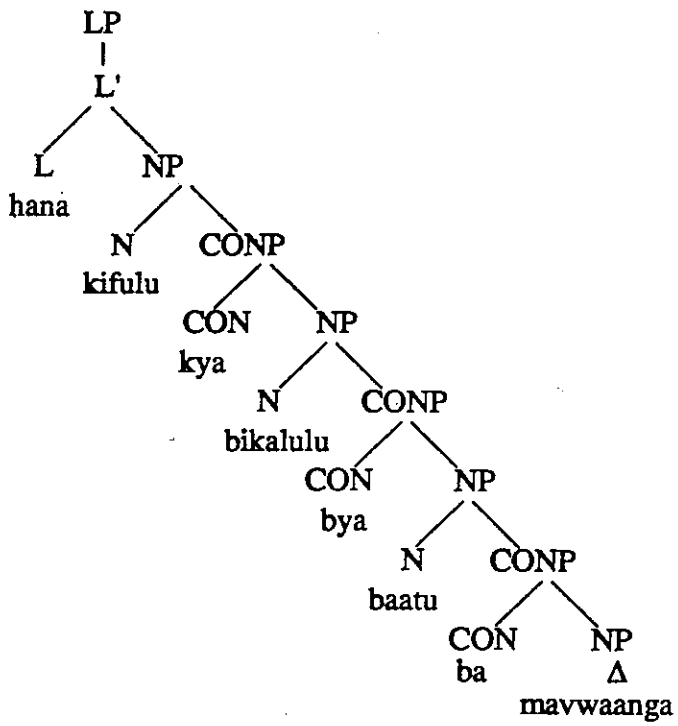
b. [hana kifûlû kyá kíkâlúlû kyá baâtû bá mávwâanga]
16on 7place 7of 7habit of 2person of trouble
Instead of the habit of troublemakers
(lit. On the place of habits of people of trouble)

These locative phrases have the following respective structures.

(82) a.



b.



.....]
[.....]ϕ

.....]
[.....]ϕ

Each of these constructions has a structure similar to that of (79)b. That is, every element on the non-recursive side is a head. In such a situation, we know that any lower head is i-commanded by the highest head. We can thus consider the highest directly. It is the locative *kuna* in (82)a and *hana* in (82)b. In virtue of clause 2) of the algorithm (76), a right edge bracket is placed after *beeto*, and *mavwaanga* respectively.

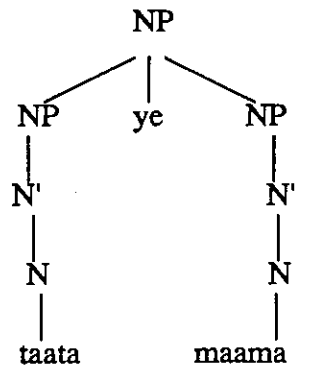
The last example we discuss concerning verbless NPs involves conjoined NPs. It has been observed that conjoined NPs phrase consistently separately. The two following examples illustrate this point.

(83) a. [taâta] [ye maâma]
1mother and 1father
Mother and Father

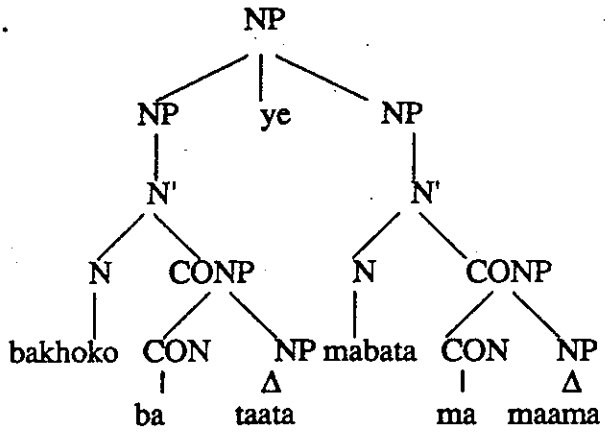
b. [bakhoko ba taâta] [ye mabâtâ má máâma]
2chicken of 1father and 6duck of 1mother
Father's chickens and mother's ducks

If (83)a and (83)b have the respective structures below, the algorithm correctly yields two separate phrases.

(84) a.



b.



.....].....] .....].....]
[.....]ϕ [.....]ϕ [.....]ϕ [.....]ϕ

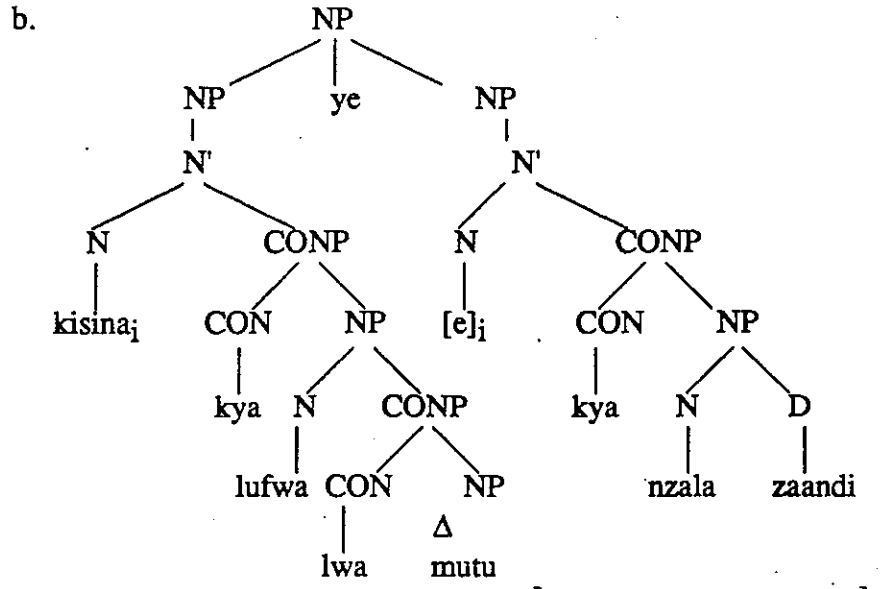
In (84)a, we have two independent heads and N's. Each of them forms a separate p-phrase due to clause 3) of the algorithm (76). Clause (3) also assigns one bracket after *taata* and another after *maama* in (84)b. Since each of the conjoined NP has some internal structure, we need to check if we have a single maximal p-string. In (84)b we have two independent heads and N's as well but each N' is branching because each head is modified. By clause 2) of (76) we also know that each member of the conjoined NPs constitutes a maximal p-string. The resulting phrasing is just what we expected: two separate p-phrases.

So far we do not need an extra rule for conjoined structures. The phrasing of (84) shows that clause 2) of the algorithm, which has already been established independently for the phrasing of non-conjoined NPs, can also take care of conjoined NPs. However, there are structures that clause 2) cannot account for. Support for clause 3) will be provided below when I discuss a structure where the conjoined NPs are part of a bigger maximal p-string (90).

We do not need to have different heads for the correct phrasing patterns to obtain in conjoined constructions. In fact, the head of the second member of the conjunction may be identical to that of the first, but when this happens, the second head can be deleted under identity. The phrasing pattern remains unchanged, as predicted by the algorithm.

(85) a. Kisina kya lúfwâ lwá mũtũ ye kya nzâlâ zaandi
7origin 7of 11death 11of 1person and 7of 10hunger 10his
The origin of the death of man and that of his hungers

b.



.....].....]

[.....]ϕ [.....]ϕ

The example in (86) is the title of a story (see Appendix C). The structure posited in (86) is justified by the fact that the second *kya* agrees with the head noun *kisina* , which is class 7.

The algorithm (76:3) predicts two p-phrases for (86). A right-edge break is placed after *mutu*. To ensure that each member of the conjunction is a maximal p-string, we begin by locating the head and its immediate projection. The only branching X's are headed by *kisina*. The latter is overt in the first member of the conjunction, but it is not in the second member. In any case, two breaks are assigned: one after *mutu*, and the other after *zaandi*. Once more, the algorithm gives the expected phrasing. We will see later that the phrasing of this conjoined structure remains the same when the structure is dominated by a higher head.

In summary, a verbless NP generally forms a single p-phrase. The length of the phrase is theoretically unlimited, provided the i-command relation holds between the head and its complement. But a break inside a verbless NP is possible in the case

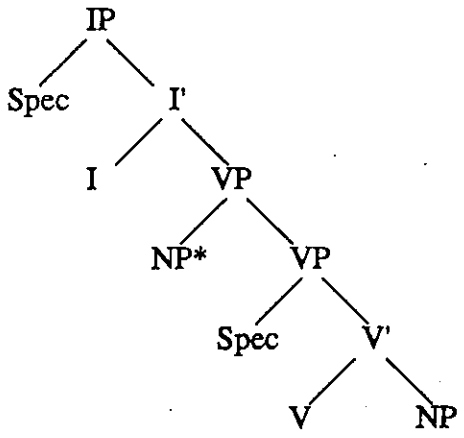
of conjoined NPs. In any case, it is interesting to observe that phrasing in NPs that do not contain a verb uses exclusively clauses 2) and 3). That is, where a verb is not involved, the relational approach is favoured.

4.3.2.2 Phrasing in IP

In this section I examine how the algorithm accounts for the five phrasing patterns described earlier in this chapter. In clearer terms, I will show how the syntactic structures are mapped into phonological structures. In order to do this, I need to address the syntax of constructions that contain a verb first. I will assume the theory of syntax commonly known as Government and Binding (GB).

For all constructions containing a tensed verb, I will assume the following underlying clause structure, adapted from Kinyalolo (1991).

(86)



The starred NP (NP*), which is the external argument, is the subject of the sentence. In KiYaka the subject generally does not remain in situ at S-structure. This is probably because this position is Caseless. Accordingly, the subject raises to [Spec, IP] so that it can receive Case from INFL through the Spec-head agreement rule. In addition, KiYaka must have a requirement that prohibits definite arguments from surfacing within IP. This explains why the subject NP, which is generally definite

unless focused, is adjoined to IP. The result is that the IP will contain at most the verb and its postverbal argument(s).

Following Koopman (1984) and Kinyalolo (1987, 1991), I posit that the verb moves into INFL in constructions which do not involve wh-movement to satisfy agreement requirements. This way, the verb assigns nominative case to the subject NP while the verb receives subject agreement through the rule of Spec-head agreement. In cases involving WH- movement, the verb is assumed to move into C.

Even though this section aims primarily at relating the syntactic structures I propose to the phrasing necessary for phonological rules, the syntactic structures should also be related to their respective semantics as discussed earlier in the descriptive sections. The discussion of these structures is cross-referenced with the appropriate semantics by the mention of the discourse context of each of the structures.

The discussion starts with the analysis of what was described as focused patterns. To this effect, I suggest that syntactically focus means two things. Specifically, post-verbal focus or post-focus reflects the occurrence of an argument within the immediate projection of the verb or I', whereas pre-verbal focus or pre-focus signals the presence of a copula before an argument preceding its own verb. Neutral sentences correspond to those structures where only the verb occurs within IP, all the arguments having been adjoined to IP. Finally, when neither the arguments nor the verb moves out of IP, the output is the highly marked construction that was referred to as Multifocus or Context 5.

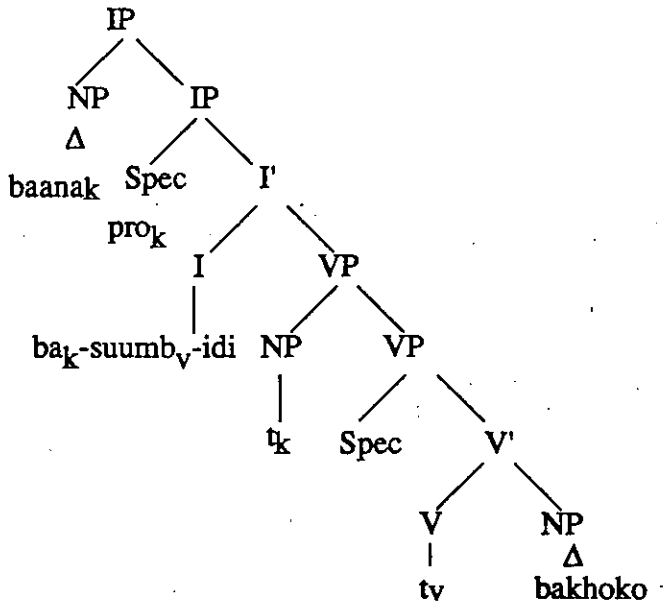
4.3.2.2.1 Postverbal Focus

In the example below, the subject forms a separate p-phrase; the verb and its object form another p-phrase. In the descriptive section, this phrasing was labeled Context 2 or Postverbal Focus.

(87) [baanâ] [basuúmbídí bákhóko]
2child they-buy-ip 2chicken
The children bought CHICKENS

As mentioned above, the subject in KiYaka is usually adjoined to IP. The object NP remains in situ and thus within the projection headed by the verb. The sentence in (87) has the following structure.

(88)



[.....[.....]
[.....]ϕ [.....]ϕ

According to clause 1) of the algorithm (76), we assign two left-edge brackets, one before *baana*, and the other before [Spec, IP]. Inside the lower IP, the verb and its

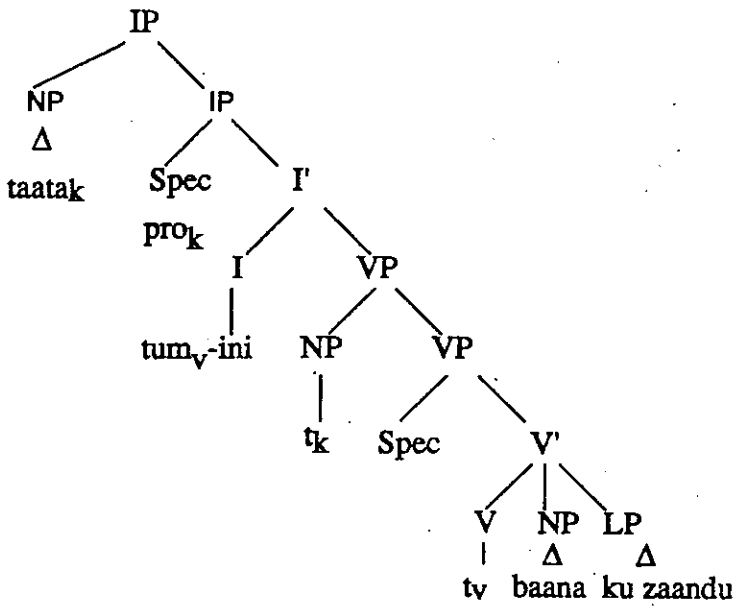
object phrase together since they are part of the maximal p-string headed by the verb (clause 2). The result is two p-phrases, one made up of the subject, and the other containing the verb and its object.

The structure in (88) indicates that either clause 1) or 2) would give us the correct phrasing. In other words, the phrasing of (88) could be obtained with the same rule used for nouns (i.e., clause 2), which would render clause 1) unnecessary since the subject and the rest of the sentence do not share the same immediate projection. However, there are cases that clause 2) cannot handle and thus require clause 1) of the algorithm (76). Sentence (98) below is one such example.

Postverbal focus is not limited to one argument after the verb. In fact, depending on the syntax and the appropriate discourse context, a verb can phrase with more than one argument after it. For instance, the data in (89) contain two postverbal objects.

(89) a. [taatâ] [tûmíní' bâânâ kú zâându]
1father 1send-ip 2child 17to 5market
Father sent some children to the market

b.



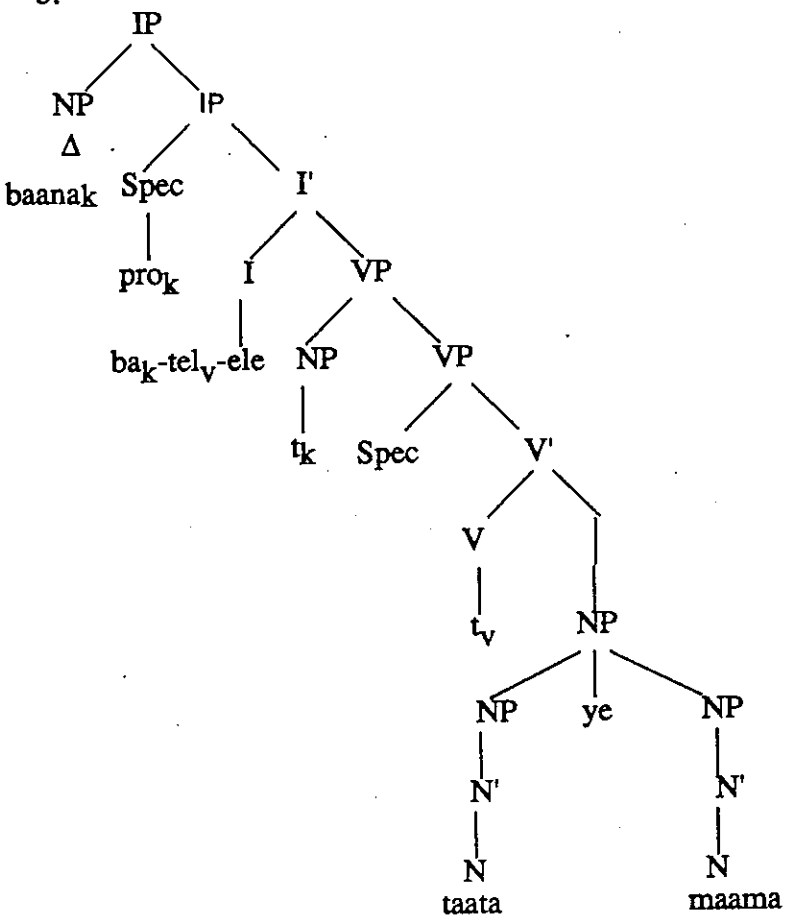
[.....[.....]
[.....]ϕ [.....]ϕ

Here again, the two IP nodes will be initially marked at their left edge in virtue of clause 1) of the algorithm (76). As a corollary of this clause 1), *taata* forms a p-phrase. Within the lower IP, *tumini* will phrase with both arguments *baana* and *ku zaandu* since these fall within the I' headed by the verb. The two p-phrases are correctly derived.

There are cases when a postverbal object does not phrase with its verb even though it is within the projection of the latter. This is the case of the second member of a conjoined NP object.

(90) a. [baaná] [batélélé tááta] [ye maáma]
2child 2call-ip 1father and 1 mother
The children called father and mother

b.



[.....[.....].....]
[.....]ϕ [.....]ϕ [.....]ϕ

As required by clause 1) of (76), we place the left-edge brackets before the two IP nodes . At this stage, we have two p-phrases: one composed of the subject *baana*, and the other made up of the rest of the construction: the verb and its object. However, the object is a set of conjoined NPs. Following the algorithm (76) and specifically clause (3), a right-edge bracket is placed after *taata*, which separates the two members of the conjoined NPs. Again, the result is what the algorithm predicts: three p-phrases.

The structure in (90)b is crucial for clause 3) of the algorithm. In fact the phrasing of all the preceding examples of conjoined NPs could be derived by clause 2)

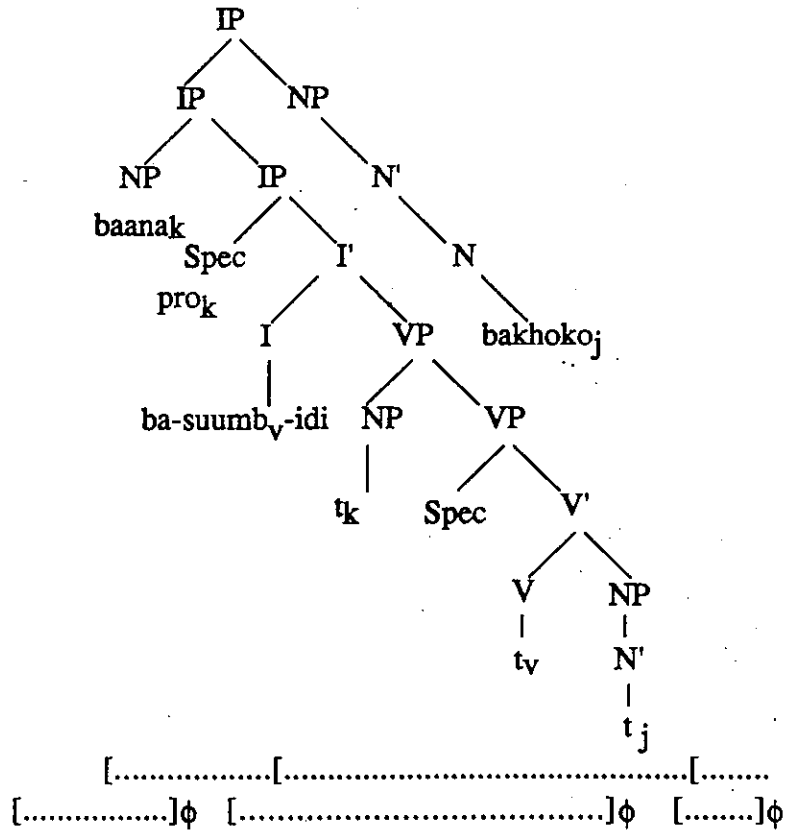
or the rule of maximal p-string. However, clause 2) (i.e. the rule of maimal p-string) would not give us the correct phrasing since both conjoined NPs are part of the maximal p-string headed by the verb *batelele*, which means that the only bracket assigned by clause 2) falls after *maama*. We therefore need clause 3) of the algorithm because only it can guarantee the bracket inside the conjoined NPs.

The preceding examples illustrate postfocus or Context 2 because the postverbal argument is within the immediate projection of the verb. But sometimes, the object does not remain in situ; instead it is adjoined to IP. The result is of course that the object does not phrase with its verb since it is out of the I' headed by the verb. Such constructions were described as Narrative or Context 1.

(91) a. [baanā] [basuŭmbidi] [bakhokǒ]
2child they-buy-ip 2chicken
The children bought the chickens

Here is the structure of this sentence.

(91) b.



After assigning the brackets before each IP (76.1), we obtain three p-phrases. Each IP constitutes a separate p-phrase as a corollary of (76.1).

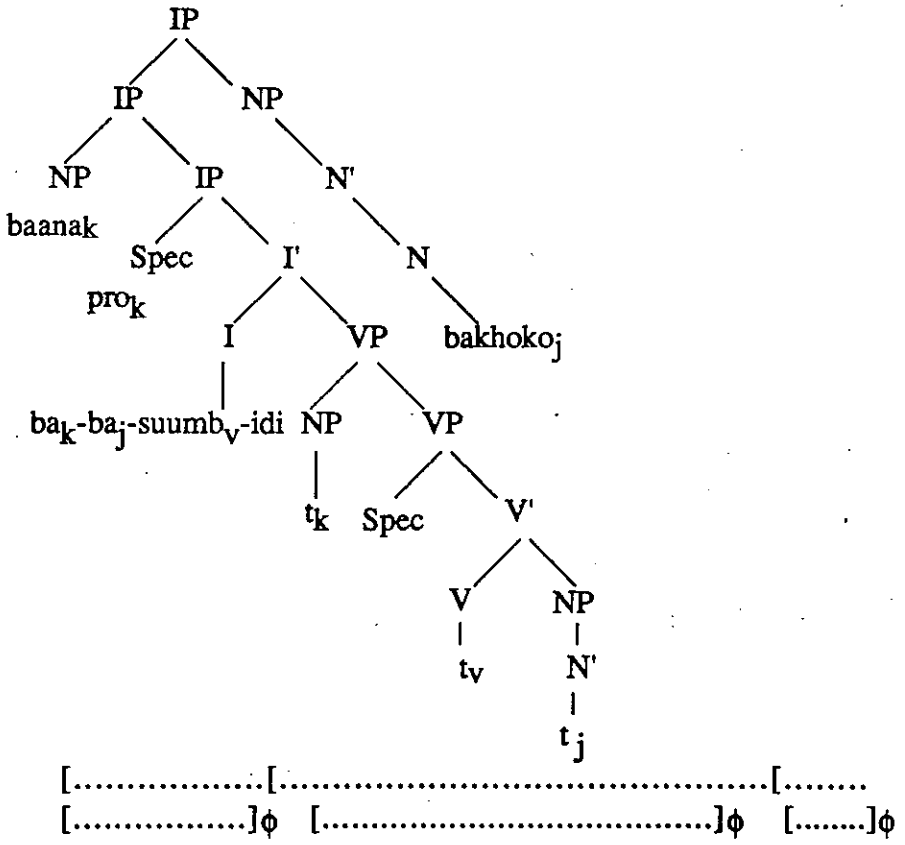
4.3.2.2.2 Non-Focused Old Information

We just saw above that the object NP can be right-dislocated so that it phrases independently from its verb. A phenomenon closely related to dislocation is object agreement. When an object is right-dislocated (after the verb), there is nothing special to mention. However, when an object is left-dislocated in front of the verb (i.e., to the left), the requirement is for the verb to register this movement of the object into a non-basic position. This is done in the form of object agreement. I assume that a left-dislocated object is adjoined to IP before the verb. Finally, the subject, which generally has no occurrence restrictions, can also be right-dislocated and adjoined to IP

after the verb. When all these possibilities of occurrence for the subject and object are exploited, the result is six different orders for a sentence composed of three elements: the subject, the verb, and the object. The structures given below (92)-(97) are all variations of the same sentence that illustrate free word order in KiYaka as described in Context 4 or Non-Focused Old Information.

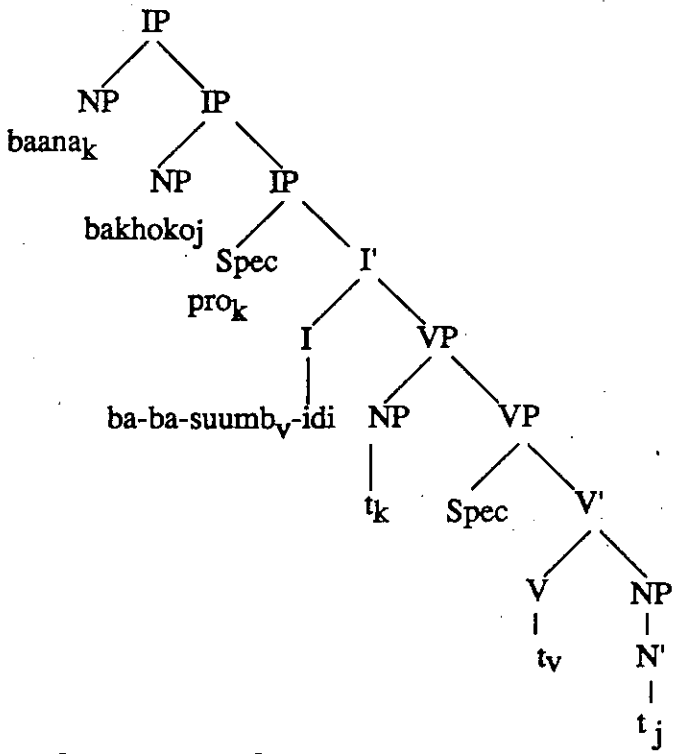
(92) a. [baanâ] [ba-ba-sûumbidi] [bakhokô]
2child they-them-buy-ip 2chicken
The children bought the chickens
(lit. As for the children, they bought the chickens)

b.



(93) a. [baaná] [bakhokô] [ba-ba-sûumbidi]
2child 2chicken they-them-buy-ip
The children bought the chickens

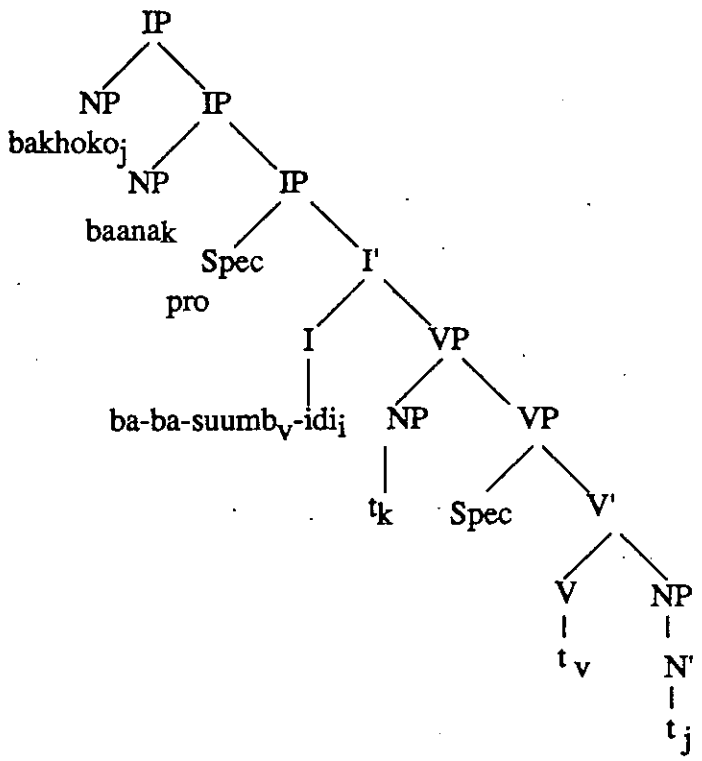
b.



[.....[.....[.....
[.....]ϕ [.....]ϕ [.....]ϕ

(94) a. [bakhokõ] [baanâ] [ba-ba-sûumbidi]
2chicken 2child they-them-buy-ip
The children bought the chickens

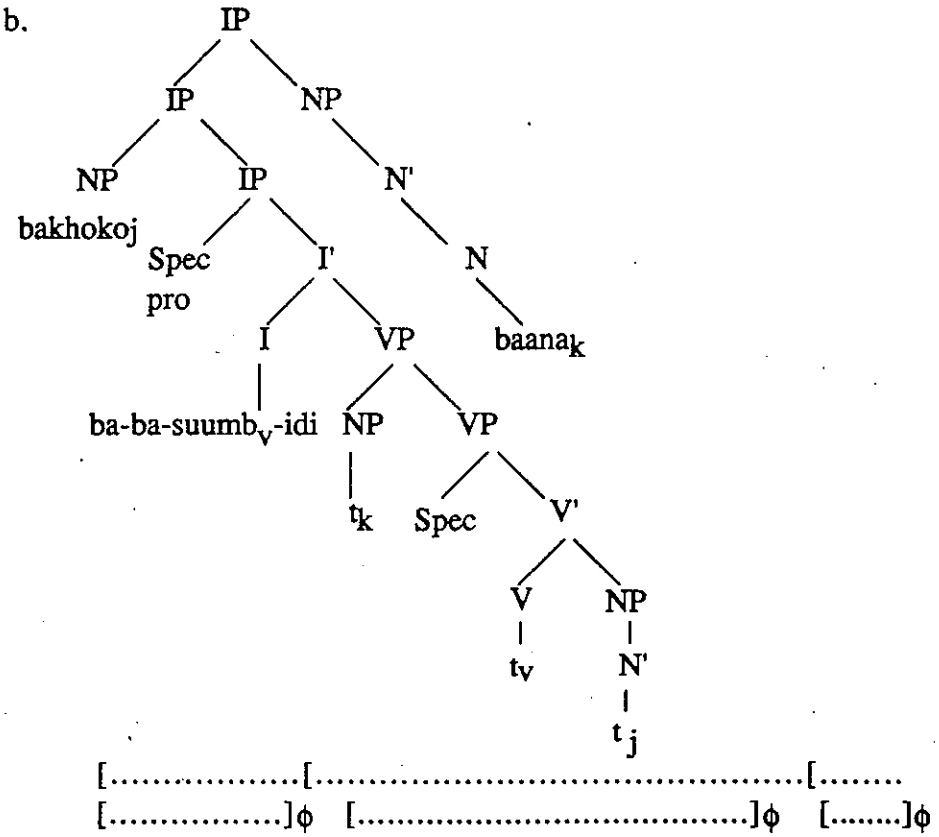
b.



[.....[.....[.....
[.....]ϕ [.....]ϕ [.....]ϕ

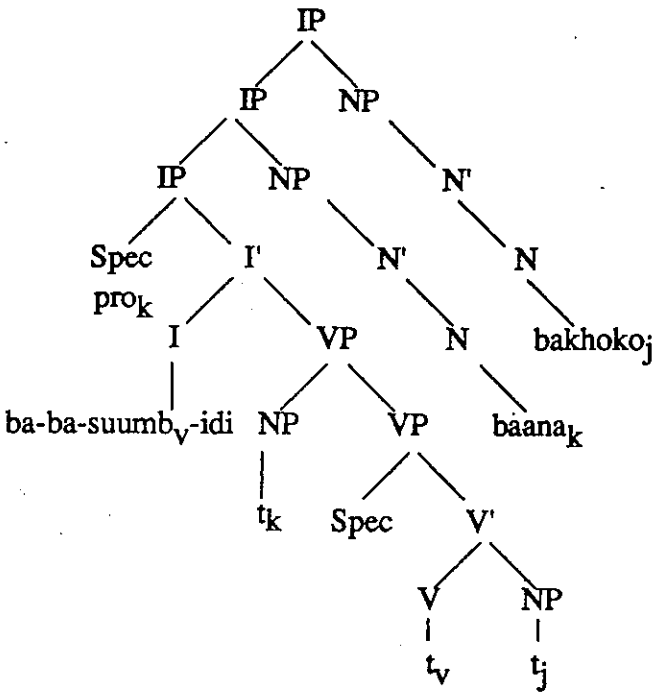
(95) a. [bakhokó] [ba-ba-sûumbidi] [baaná]
2chicken they-them-buy-ip 2child
The children bought the chickens
(lit. As for the chickens, the children bought them)

b.



(96) a. [ba-ba-sûumbidi] [baanâ] [bakhokô]
they-them-buy-ip 2child 2chicken
The children bought the chickens

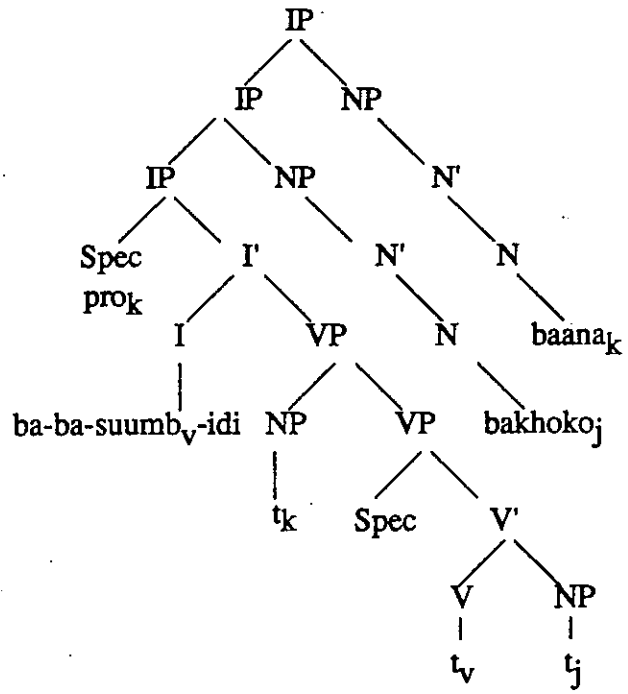
b.



[.....[.....[.....
[.....]ϕ [.....]ϕ [....]ϕ

(97) a. [ba-ba-súumbidi] [bakhokó] [baaná]
they-them-buy-ip 2chicken 2child
The children bought the chickens

b.



[.....[.....[.....
[.....]ϕ [.....]ϕ [.....]ϕ

The structure in the preceding six constructions is characterised by the lone presence of the verb within the lower IP. The two arguments are adjoined to IP. A left-edge break is called for before each IP because of (76.1). Given the corollary that an argument adjoined to IP constitutes a separate p-phrase, phrasing each of the structures (92)-(97) yields three separate p-phrases. This phrasing remains unchanged irrespective of the word order.

So far we have derived the correct phrasing patterns of three of the five patterns covered in the description above. These are the Narrative or Context 1, the Postverbal Focus or Context 2, and the Nonfocused Old Information or context 4. It remains to account for two patterns: the Preverbal Focus or Context 3, and the Multifocus or Context 5. Although both Contexts 3 and 5 involve pre-focusing, they will be examined separately because Multifocus represents a special case.

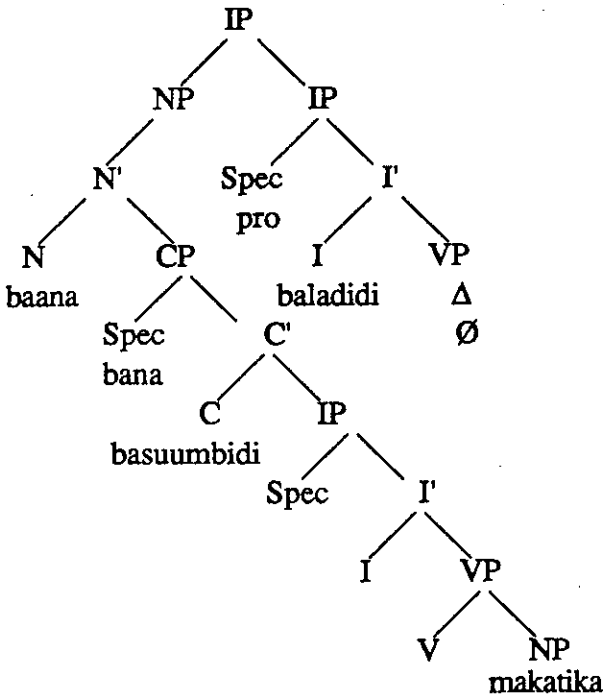
4.3.2.2.3 Preverbal Focus

This section covers all cases where a preposed argument is preceded by a copula. Specifically, pre-focusing includes cleft constructions, WH-questions and their corresponding answers, as well as citation forms. Because of the similarities between the relative clause and the cleft construction, a parallel discussion of both these constructions is offered below where the similarities and the differences are pointed out as they pertain to the differences in phrasing.

From the analytical point of view, pre-focusing simply means that an argument is preceded by a copula and followed by its own verb. In a cleft construction, the pre-focused argument is the head noun of a relative clause. In more specific terms, the difference between a relative clause and the corresponding cleft is the absence vs the presence of the copula in these constructions. This difference is reflected in the phrasing. Namely, the addition of a higher head (the copula) induces a change of relation between the constituents, which in turn causes a difference in phrasing.

(98) a. [Baana bâná básúúmbídí'] [makatíka] [balâdidi]
2child that they-buy-ip 6liver 2disappear-ip
The children that bought the livers disappeared

b.



[.....[.....[.....
[.....]ϕ [.....]ϕ [.....]ϕ

As far as phrasing goes, the head noun and the embedded verb make up a p-phrase. The object (*makatika*) forms a separate p-phrase and so does the main verb. This is justified as follows.

Clause 1) of the algorithm (76) calls for three left edge brackets: one to the left of each IP. The lowest or embedded IP contains only one word (*makatika*). The same is true for the IP which contains only the main verb (*baladidi*). Finally, the head noun *baana* phrases with its verb because they belong to the same maximal p-string broken by the embedded IP. The resulting phrasing is what we expected: three different p-

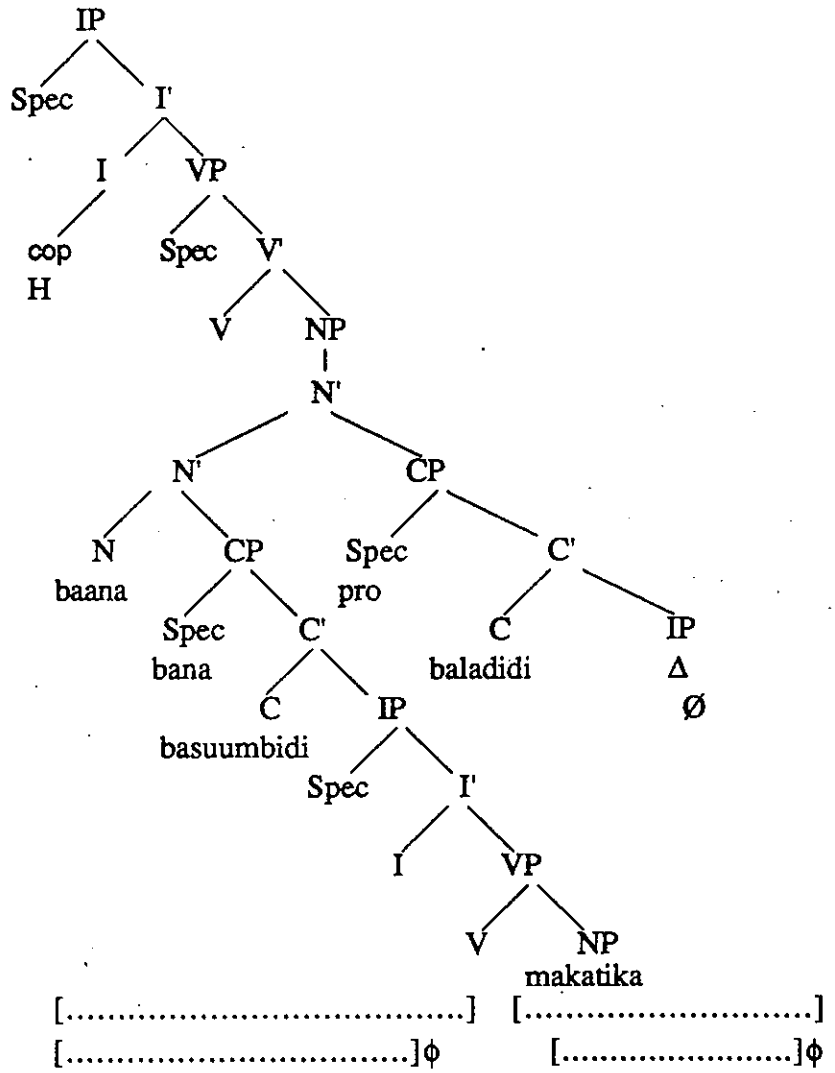
phrases. These are respectively the head noun and the embedded verb, the embedded subject, and the main verb.

The structure in (98) provides the crucial evidence that clause 1) of the algorithm is necessary at all. In the examples covered so far, the separate phrasing of the subject and the rest of the sentence could be accounted for by clause 2) of the algorithm since they do not share a same maximal p-string. In (98) however, we see for example that both the subject *baana* and the object *makatika* are part of the same maximal p-string headed by *baana*. We need Clause 1) since it is the only rule that guarantees a break inside a maximal p-string.

A major effect of clefting the relative clause in (93) is the reduction of the number of its p-phrases from 3 to 2. This is the reflection of a difference in the syntax of (98) and (99), because structurally, clefting means subjecting the relative clause to a higher head. This head is a copula verb composed only of a floating H tone. Let us examine (99).

(99) a. [Baáná báná básúúmbídí'] [makatíká báládidi]
cop-2child that they-buy-ip 6liver 2disappear-ip
It's the children that bought the livers that disappeared

b.



As usual, clause 1) of the algorithm marks the left edge of each IP. In the present case, a bracket is inserted after the embedded verb *basuumbidi* and another before the highest IP. The rightmost IP is empty and no bracket is needed here. Next, we scan inside each IP beginning with the leftmost and lowest X'. We have a head I that i-commands the object NP *makatika*. Since this head is itself i-commanded by a higher head (copula), the right edge mark falls after the verb *baladidi*. So there are two p-phrases: the focused head noun and the embedded verb on one hand, and the

embedded object and the main verb on the other, as can be seen by the plateauing between *makatika* and *baladidi*.

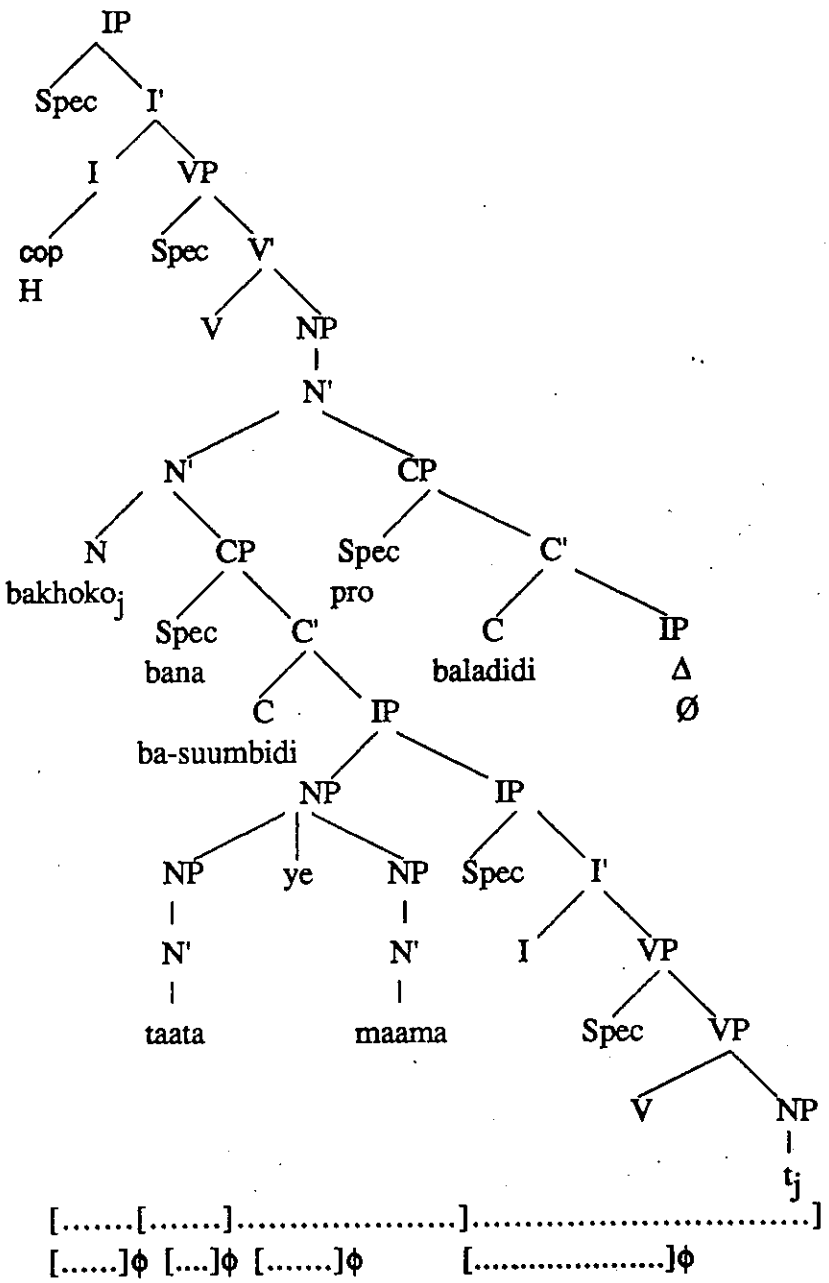
Obviously, if the embedded argument is a set of conjoined NPs, only the second member of the conjoined NPs will phrase with the main verb.

(100) a. [bakhoko bǎnǎ bá-súúmbidi] [taatǎ] [ye maǎma] [ba-ládidi]
2chicken 2that 2buy-ip 1father and 1mother 2disappear-ip
The chickens that father and mother bought disappeared

b. [bakhôkô bǎnǎ básúúmbidi] [taatǎ] [ye maǎmá bálǎdidi]
cop-2chicken 2that 2buy-ip 1father and 1mother 2disappear-ip
It's the chickens that father and mother bought that disappeared

(101) below is the structure of (100)b.

(101)



The structure in (101) is important because its correct phrasing requires all the clauses of the algorithm. First, the break before the conjoined subject NPs is possible only through clause 1) or the IP rule; clause 2) makes it possible for the second member of the conjoined NPs (*ye maama*) to phrase with the main verb (*baladidi*) because they share a maximal p-string (headed by 'cop'); finally, the break inside the conjoined NPs

requires clause 3) since they belong to a larger maximal p-string. Note in addition that the lowest IP should note receive a left edge bracket since it is lexically empty. Failure to comply with this proviso of clause 1) will lead to incorrect phrasing by separating the second member of the embedded subject (*ye maama*) and the main verb (*baladidi*).

In view of (98)-(101), it can be said for KiYaka that cleft constructions provide the ultimate support for the claim that prosodic domains are not isomorphic to syntactic constituents. This can be seen in (99) when the embedded object phrases with the main verb (*makatika* and *baladidi* do not share a common syntactic constituent). The phrasing of *makatika* and *baladidi* also constitutes the ultimate test in favour of the relational but against a purely end-based theory of p-phrase formation for KiYaka. Specifically, since the addition of a higher head does not alter the number of Xmax scanned bottom-up in (99), the end-based approach predicts the same number of p-phrases in both a relative clause and its clefted counterpart. However, the data in (98) and (99) as well as (100) clearly indicate that this is not the case. Under the relational approach, the addition of a higher head has the potential to modify the relation between constituents. This explains the fact that in KiYaka the relative clause always counts one fewer p-phrase than its clefted counterpart.

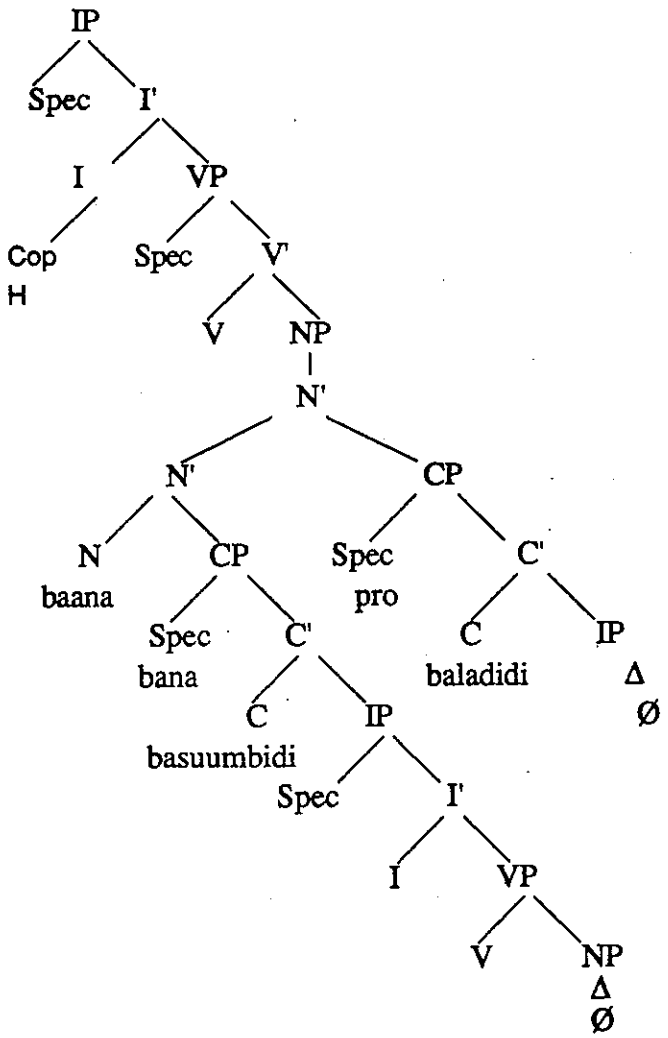
Finally, we need to justify the restriction in clause 2) of the algorithm (76). This clause requires that respective IPs be lexically non-empty for the left edge bracket to be assigned. In support of this condition, let us examine a relative clause whose embedded argument is not overt, and its clefted version.

(102) a. [Baana bǎnǎ bá-súúmbidi] [ba-lǎdidi]
2child that they-buy-ip 2disappear-ip
The children that bought (something) disappeared

b. [Baáná báná básúúmbídí báládidi]
cop-2child that they-buy-ip 6liver 2disappear-ip
It's the children that bought (something) that disappeared

(103) following is thus the structure of (102)b.

(103)



[.....
[.....]ϕ

To begin with, let us note that there are three IP nodes in this structure. An unrestricted clause 1) gives us three left edge brackets and thus more than one p-phrase, which does not match the real phrasing. But with the restriction in (76.1), the

only left-edge bracket allowed goes before the highest IP. Both lower IPs nodes are empty and should not be marked. Within the only IP marked for a break, the lowest and leftmost branching X' is headed by *basuumbidi*. This head is itself i-commanded by a higher head (the copula H), whose immediate projection I' ends with the rightmost IP (after *baladidi*). This i-command relation between the heads ensures an unbroken maximal p-string. The result is one single p-phrase. This result is possible only because we did not mark the left edge before the empty IP which follows *basuumbidi*. If such a bracket were placed by clause 1), it would wrongly separate the main verb *baladidi* from the relative clause. This problem can be avoided by simply specifying that IPs which are lexically empty do not allow the left edge bracket.

The next pre-focused set of constructions we will examine are the WH-questions and their respective answers. I assume these constructions have similar structures in that they contain an argument preceded by a copula H tone. This argument is the WH word in the question and the argument that is the appropriate answer to the question.

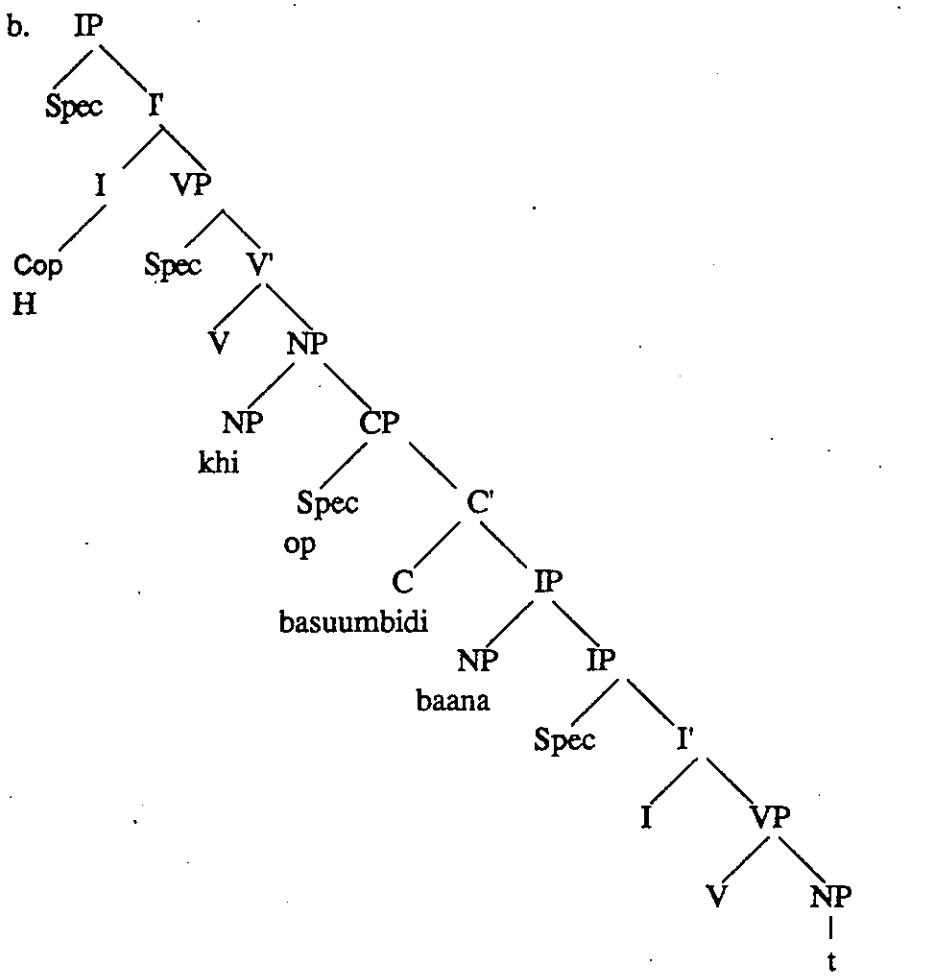
(104) a. [Khǐ bá-súúmbidi] [baaná?]
cop-what they-buy-ip 2child
What did the the children buy?

b. [Khǒkó bá-súúmbidi] [baaná]
cop-chicken they-buy-ip 2child
The children bought a chicken

Note that in these examples the phrasing is the same: the pre-focused word makes a p-phrase with the verb; the postposed subject phrases separately. It seems that a simple substitution of the preposed word is all that is needed to change from a question to the answer. This signals that we have the same structure here.

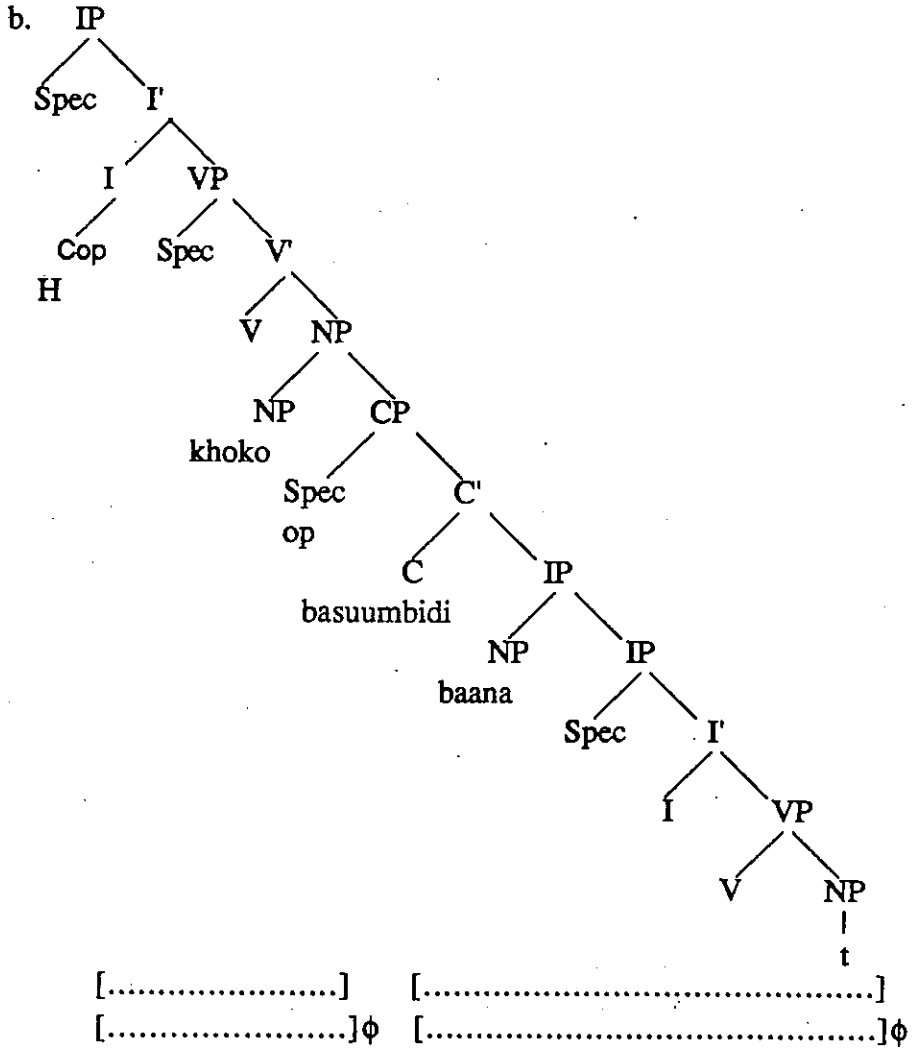
(105) a. [Khí bá-súúmbidi] [baaná?]
cop-what they-buy-ip 2child
What did the the children buy?

b.



(106) a. [Khókó bá-súúmbidi] [baaná]
cop-chicken they-buy-ip 2child
The children bought a chicken

b.



The algorithm (76.1) places two left-edge brackets: one before the highest IP and another before the lowest IP (left of *baana*) because they are not empty. These two brackets determine the phrasing since there is no internal structure to be considered. The result is of course that the focused NP and the verb form a p-phrase, and the embedded subject forms a separate p-phrase in both (105) and (106).

That the constructions above have similar phrasing patterns should not be surprising. After all, the theory of Prosodic Hierarchy claims that the syntax is mapped into phonological domains. If the same syntactic structures are subjected to the same rule that determines this mapping, there should be no indeterminacy and we would thus expect similar structures to phrase in the same way.

4.3.2.2.4 Citation Forms

Citation forms are not among the phrasing patterns described above because they do not involve a main verb. Nevertheless, I decided to treat them as if they were like all the other pre-focused constructions discused above. This is mainly because they can be considered as short answers to information or WH-questions.

Citation forms in KiYaka have some special characteristic that makes them different from all the other forms that can be said individually or in isolation. They all give the impression to be a complete statement or an utterance. If one were asked to provide the citation form for 'chicken', it can be only the form in (107)a. All the others are not appropriate.

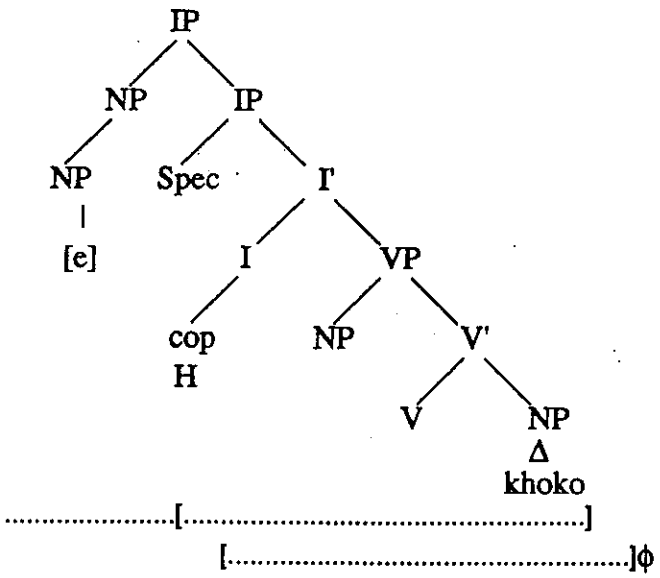
(107) a. khóko
cop-1chicken
Its a chicken

b. *khokó
c. *khoko
d. *khókó

What is special to this word as presented here is that it could also be the appropriate short answer to the question "What is this?" or "What did you buy?". In other words, citation forms are pre-focused constructions in the same manner as the answers to WH-questions. They are therefore constructions where an argument is preceded by a

copula but the main verb is either understood or missing. The subject of the clause is usually empty. I propose the following structure for citation forms.

(108)

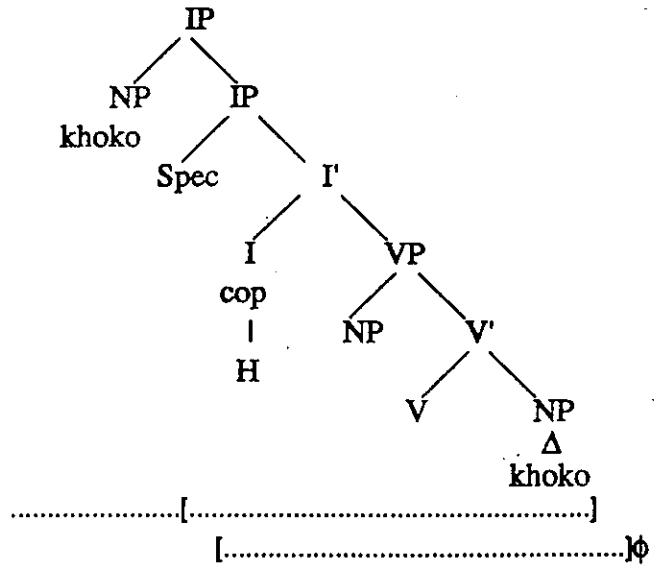


This structure makes the point that in KiYaka one does not say just 'chicken'. Instead, one says 'it is a chicken'. As for phrasing, the algorithm (76.1) predicts exactly what we get. The adjoined IP is empty, so no left bracket before this IP is necessary. The lower IP on the other hand, is not empty. A mark is inserted to its left. Inside IP, the immediate projection of I' ends with the object NP *khoko*. A right edge bracket is placed here. The result is one single p-phrase.

In these constructions, the subject does not have to be empty. For instance, the same noun as the pre-focused one could occur as the subject. This gives us the type of existential clauses that read "X is X". In the present case, we would have " A chicken is a chicken". Here is the KiYaka equivalent and its phrasing.

(109) a. [khokó] [khóko]
1chicken cop-1chicken
A chicken is a chicken

b.



The only difference between (108) and (109) is the presence of the subject in (109) and the lack of the latter in (108). The subject adjoined to IP phrases separately in virtue of a corollary to the algorithm (76.1). The lower IP constitutes a separate p-phrase since there is no internal structure to alter the phrasing of (108).

The forms presented in (110) are those of the nouns listed in the table (4) in Chapter 2. The respective tone patterns of 'chicken' are repeated here for convenience.

(110)	T1	T2	T3	T4
G1.1	khóko	khokó	khoko...	...khókó

It appears that although two patterns can occur as a single word p-phrase (T1 and T2), the citation form must be of the tone pattern T1 because the citation form must have the

structure given above in (108). As for T2, it can characterise an IP adjoined argument. This is the case for *khokó* in (109), as well as *baaná* and *bakhokó* in (97). But T2 can also be the tone pattern of an embedded object in a relative clause (98).

A typical context for a T2 form in isolation is the following. Suppose that a friend expected you to buy a few things among which chicken. However, you did not get everything you wanted. But you bought chicken. He does not remember that you bought chicken and comments: "So you bought nothing". You reply to point out that you did buy the chicken as in "What about the chicken?" This reply in KiYaka comes out as a T2 form preceded by the morpheme *a*, whose nature is still to be determined. The relevant construction in KiYaka is "*A khokó*?" It is crucial to note that this morpheme *a* is toneless and different from the vocative *a*, which has a floating H donated to a following morpheme (see Chapter 2:).

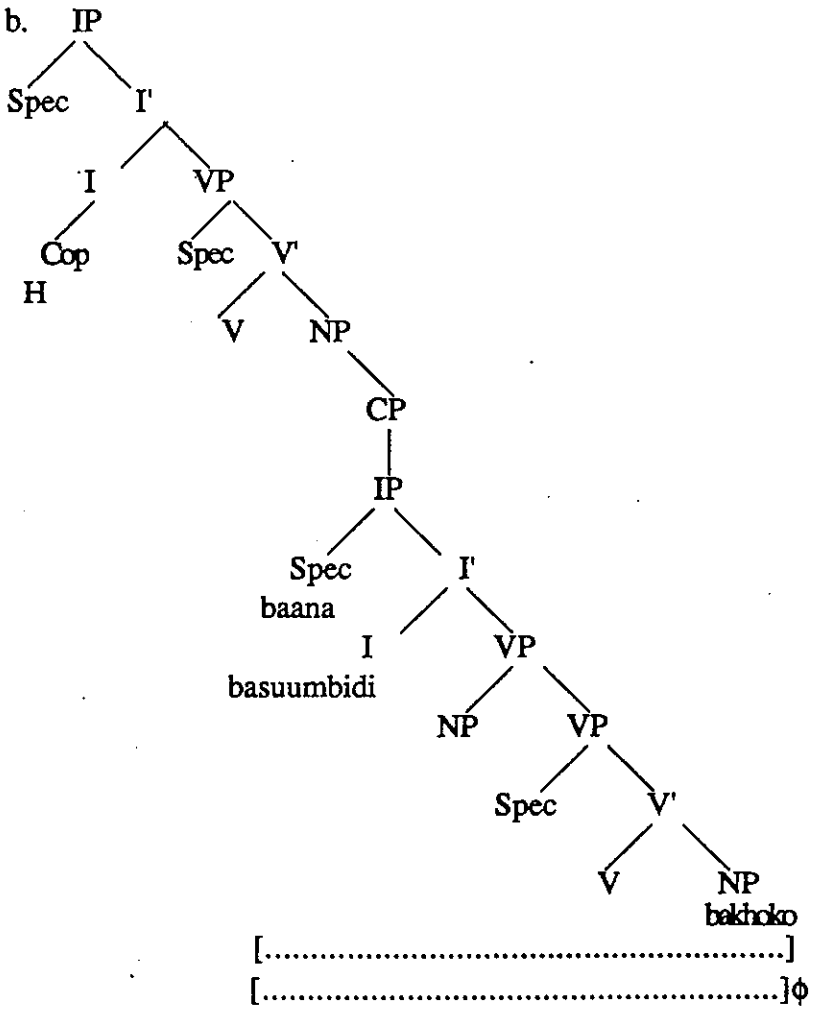
4.3.2.2.5 Multifocus

In the descriptive section multifocus was considered as a special construction for the following reasons. First of all, it is very rarely used, as can be judged by the contextual requirements. Second, the subject, which is the only prefocused argument, must be indefinite and non-contrastive. If the focused subject is definite, the reading is always contrastive. Third, the word order is necessarily SVO. And finally, all elements involved in multifocus constitute a single p-phrase. These characteristics are obviously present in (111).

(111) [baáná básúúmbídí bákhóko]
cop-2child they-buy-ip 2chicken
Some children bought chickens

To accomodate the facts relevant to multifocus, I propose the following structure.

(111) b.



This structure is obviously different from what was given for other constructions involving what was termed prefocus. In fact, this is the only structure where all the basic constituents (subject, verb, and object) can surface within the IP. Its highly marked syntax reflects the restricted discourse context in which it is used.

As far as phonology is concerned, the H tone cliticises rightward (even across an IP boundary) in virtue of exhaustive parsing. This tone will surface on the noun *baana*. The higher IP is lexically empty and no left-edge break is necessary here. The lower IP receives a left bracket before *baana* in virtue of clause 1) of (76). Although the subject *baana* is not i-commanded by the head (the verb), it nevertheless shares the

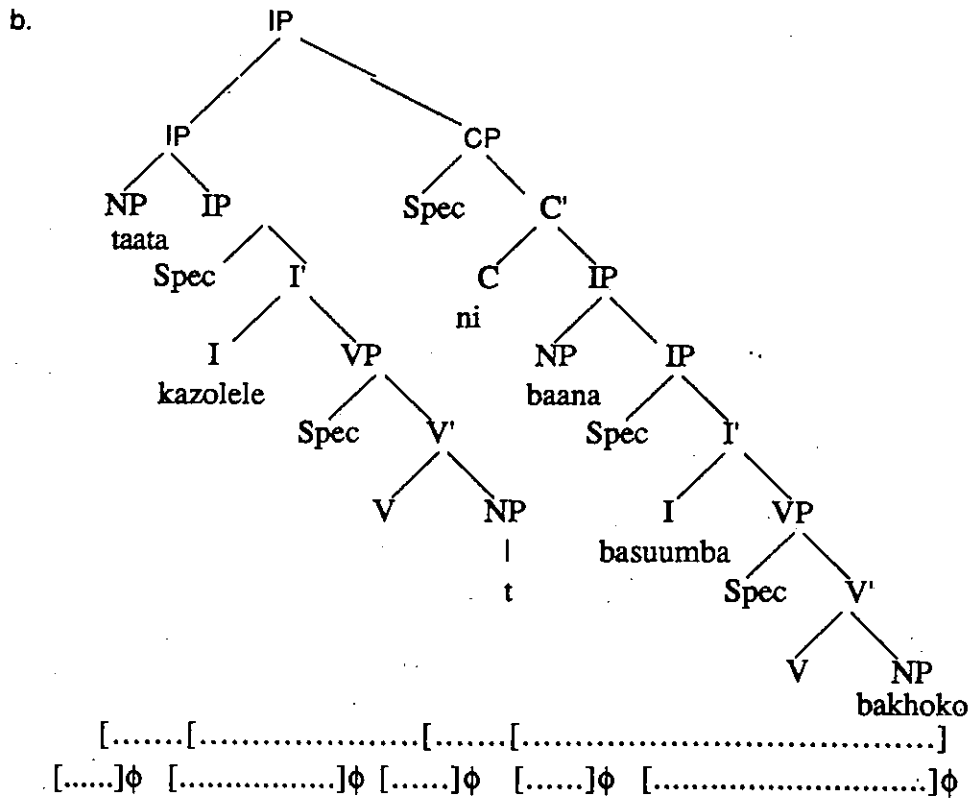
same p-phrase with the verb. This is possible because the algorithm does not assign a left edge bracket between the head (I) and its Spec, while it allows one before the subject. In any case, the phrasing here is consistent with what has been assumed so far for the constituent that occurs in [Spec, IP]: it phrases with everything else within the IP. With the left edge bracket before *baana* and the right edge bracket after *bakhoko*, the result is one single p-phrase.

4.3.2.2.6 Sentential Objects

Phrasing in constructions involving sentential objects takes place as predicted by the algorithm as in the other constructions examined so far. In the following example, we notice that the main verb is a separate p-phrase from both its arguments. The embedded subject is also an independent p-phrase; the embedded verb phrases with its object since this one remains in situ. Finally, let us note that the complimentizer *ni* makes another p-phrase.

(112) a. [taatâ] [kazôlele] [ní] [baanâ] [basuumba bakhôko]
1father he-want-ip that 2child 2buy-subj. 2chicken
Father wants that the children buy chickens

b.



It will have been observed that every postverbal argument that phrases with its verb is part of the IP containing the verb. In the same way, the structures where the verb and a postverbal argument phrase separately, the argument is usually out of the IP containing the verb. It is therefore assumed that the CP object is adjoined to IP in the preceding example. The phrasing of this construction follows from the general lines of the algorithm. Specifically, five left-edge brackets are called for by clause (1) of the algorithm (76). As a consequence, each of the following words constituents a separate p-phrase: *taata, kazolele, ni, baana.* And finally, the embedded verb *basuumba* makes a maximal string with its object *bakhoko*; they thus phrase together. The phrasing of the complimentizer *ni* is quite general for other complementizers as can be witnessed by the failure of the COMP to induce Plateauing to either its left or its right (113).

(113) a. [taatâ] [kahyuûdidi] [kaámba] [baanâ] [balâdidi]
1father he-ask-ip if 2child 2disappear-ip
Father asked if the children disappeared

b. [taatâ] [kahyuûdidi] [hó] [baanâ] [balâdidi]
1father he-ask-ip if 2child 2disappear-ip
Father asked if the children disappeared

It is informative to note that each of the complementizers discussed above (*ní*, *kaámba*, and *hó*) has a H tone. This H tone is prelinked. In addition, *kaamba* receives two low tones by default.

In closing the foregoing discussion of phrasing in IPs, it emerges that clause 1) of the algorithm (76), which assigns phonological break before every IP, is crucial. In addition, the structures posited above and more specifically adjunction to IP explain one of the most important characteristics of KiYaka: free word order.

4.4 Summary

In this chapter I have proposed a set of two postlexical prosodic domains, each of which is part of the Prosodic Hierarchy, as phonological contexts for the tone rules presented in chapters 2 and 3. It was argued in section 4.2 that these phrasal rules do not all operate within the phonological phrase. I have shown that there is in fact a smaller domain than the phonological phrase: the clitic group. It is the domain of all the tone rules referred to as tone donation (H-Attraction and H-Shift) as well as the clitic-level default tone association rule: C-Final H association.

The clitic group was also shown to play a role in a rule that inserts a floating H tone between two clitic groups that share the same p-phrase. This rule is instrumental in the tonology of KiYaka because it ensures that a non-phrase-initial stem gets tone even after a non-donor stem. The predictability of this tone on a non-phrase-initial stem lends this otherwise tone language its accentual nature.

Section 4.3 is an investigation of the principles responsible for phrasing. The descriptive part revealed several interesting facts. From the point of view of the syntax, it emerged that the language has free word order. Concerning phrasing, it was observed that constructions headed by nouns phrase differently from those headed by verbs. Finally, it was also observed that the embedded arguments of a clefted construction phrase with the main verb.

In my analysis of these facts, I have suggested an algorithm that reflects aspects of both the relational and the end-based approaches to phonology-syntax mapping. Such a compromise was shown to be necessary because neither the relational nor the end-based approach alone could account for the described facts completely. NPs that do not contain a verb favour the relational approach, whereas constructions containing a verb exploit the end-based approach. The necessary coexistence of aspects of both these theories of phonological mapping confirms each of them independently as well as establishing the fact that they need not be exclusive of each other.

The analysis also provides one of the strongest arguments against the direct approach to phonology-syntax mapping. Data relevant to phrasing in cleft constructions have indicated that the embedded arguments phrase consistently with the main verb, even though they do not share a same syntactic constituent. Such phrasing should not be expected if the syntax determined phonological phrasing. That such phrasing is possible at all simply means that it is not determined directly by the syntax.

Finally, free word order is the result of the structures and the syntactic rules discussed in this chapter. The key factor to free word order is the fact that non-focused arguments are usually adjoined to the IP - either to the right or to the left - and that each of the adjoined IPs constitutes a phonological phrase.

APPENDICES

Appendix A: Synoptic table of the four tone patterns and all possible syllable structures.

1.	Marked Final: 'It's N'		
a.	G1.1	G1.2	G2.1
CV	˚tho source of river	_	mŭ-tŭ person
CVCV	yéko separation	_	ma-zóbá idiots
CVVCV	ndóongo needle	ndoóngo palmwine	---
CVCVCV	ki-séngele ax	_	ba-yákálá males
CVVCVCV	ki-báanzala playground	---	---
CVCVCVCV	mi-fwálungusu strawlike plant	_	ki-léfókólo chin

b.	G2.2	G3.1	G3.2
CV	mŭ-tŭ person	_	_
CVCV	ma-zóbá idiots	_	ma-héko tsetses
CVVCV	ba-ngoómbé cows	ki-vúúvu hope	ba-khéétó women
CVCVCV	ba-yákálá males	ma-kátíka livers	_
CVVCVCV	ki-leémbólo rest site	ba-púúndúla name of bird	_
CVCVCVCV	ki-léfókólo chin	mi-bíndúkúlu latches	_

2.	Marked Nonfinal: 'It's not N'		
a.	G1.1	G1.2	G2.1
CV	ká thó kó	_	ka mŭ-tŭ ko
CVCV	ka yéko kó	_	ka ma-zóbá ko
CVVCV	ka ndóóngo kó	ka ndoóngo kó	---
CVCVCV	ka ki-séngélé kó	_	kaba-yákálá ko
CVVCVCV	ka ki-báánzálá kó	_	---
CVCVCVCV	ka mi-fwálúngúsú kó	_	ka ki-léfókólo ko

b.	G2.2	G3.1	G3.2
CV	---	_	_
CVCV	---	_	ka ma-hɛ̌kó ko
CVVCV	ngoɔ̌mbɛ̌ ko	ka ki-vůúvú kó	ka ba-khɛ̌ɛ́tó ko
CVCVCV	---	ka ma-kátíká kó	_
CVVCVCV	ka kileɛ̌mbóló ko	ka bapůúndúlá kó	_
CVCVCVCV	---	ka mibiñdúkúlú kó	_

3. Unmarked Final: 'As for N'

a.	G1.1	G1.2	G2.1
CV	thɔ̌	_	mu-tu
CVCV	ma-yekɔ̌	_	ma-zoba
CVVCV	ndoongɔ̌	ndoongɔ̌	--
CVCVCV	ki-sengelɛ̌	--	ba-yakala
CVVCVCV	ki-baanzalǎ	--	--
CVCVCVCV	mi-fwalungusů	--	--

b.	G2.2	G3.1	G3.2
CV	--	--	--
CVCV	--	--	ma-hekó
CVVCV	ba-ngoombe	ki-vuúvu	ba-kheetó
CVCVCV	--	ma-katíka	_
CVVCVCV	ki-leembolo	ba-puundúla	_
CVCVCVCV	ki-lefokolo	mi-bindukúlu	_

4. Unmarked Nonfinal: 'The N as well'

a.	G1.1	G1.2	G2.1
CV	tho pé	--	mu-tu pé
CVCV	ma-yeko pé	--	--
CVVCV	ndoongo pé	ndoongo pé	--
CVCVCV	ki-sengele pé	_	ba-yakala pé
CVVCVCV	ki-baanzala pé	_	--
CVCVCVCV	mi-fwalungusu pé	_	ki-lefokolo pé

b.	G2.2	G3.1	G3.2
CV	--	--	--
CVCV	--	--	ma-hekó pe
CVVCV	ba-ngoombepé	ki-vuúvú pé	ba-kheetó pe
CVCVCV	--	ma-katíka pé	--
CVVCVCV	ki-leembolo pé	ba-puundúlá pé	--
CVCVCVCV	--	mi-bindukúlú pé	--

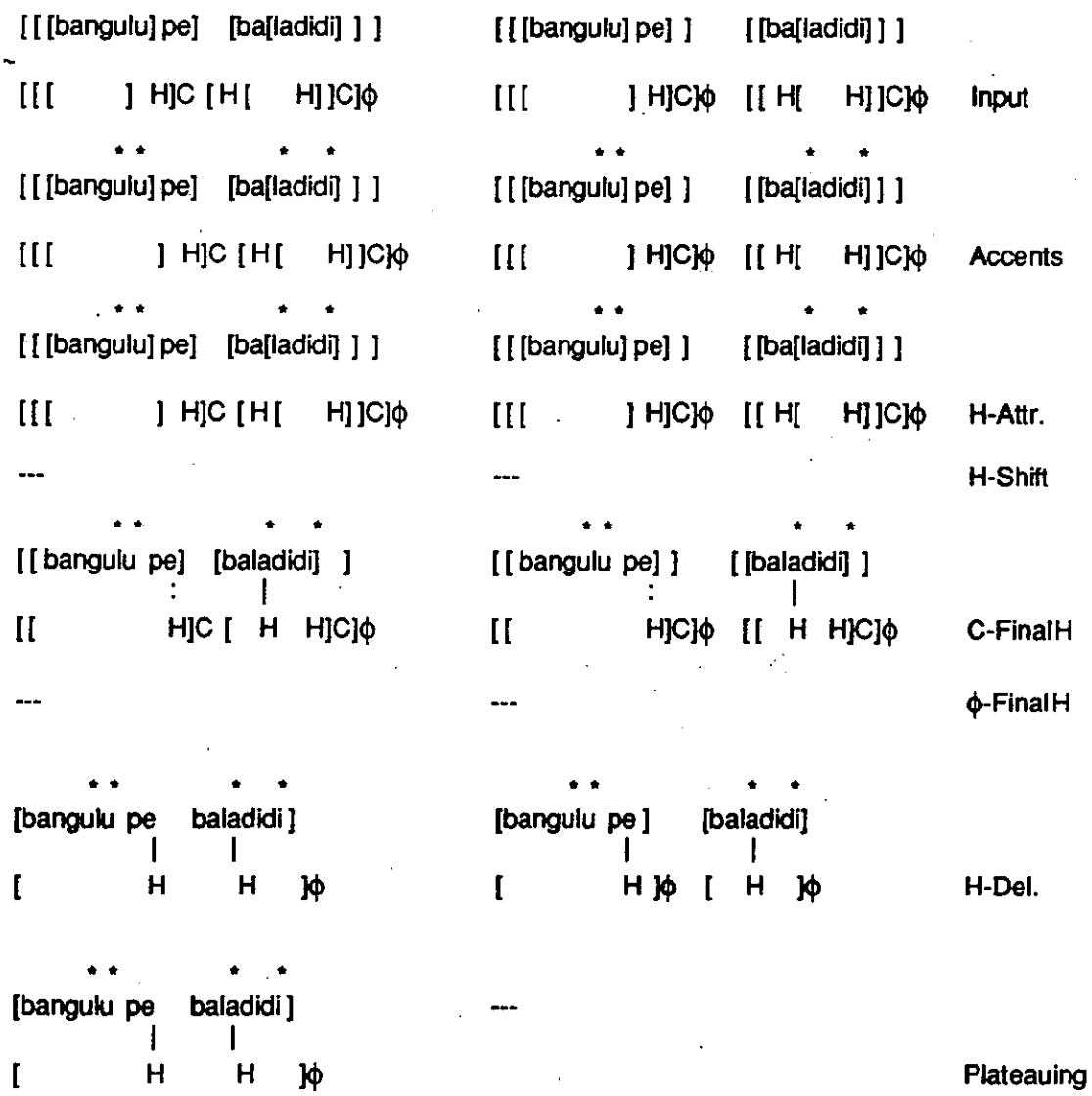
Appendix B: Illustration of C-Final H association

Target forms:

a. bangulu pé bálǎdidi...
2pigs too 2disappear-ip
The pigs, which also disappeared, ...

b. bangulu pé balǎdidi
2pigs too 2disappear-ip
The pigs too disappeared

Derivation



* * * * [bangulu pe baladidi] | || | ||| [L L L H H L L]ϕ	* * * * [bangulu pe] [baladidi] | || | ||| [L L L H]ϕ [L H L L]ϕ	Default L
* * * * bangulu pé báládidi	* * * * bangulu pé baládidi	H-Raising
bangulu pé bálǎdidi	bangulu pé baládidi	Output

Appendix C: A narrative and its phonological phrasing.

[Kisíñá kyá lúfwá lwá mútú] [ye kya nzálá zaandí]
origin of death of man and of hungers his
The origin of man's death and that of his hungers

[Maambá] [ye nzálá,] [baaboólé] [bakála] [banduku] [muna hátá dímósí]. [Maambá] [wakála
water and hunger both were friends in village one water was
Water and Hunger were both friends in a village. Water had two children; but

[ye baáná bóólé]; [kaanzí] [Nzala] [khátú báána]. [Yipalá] [kiíngí kákálákyá] [mu dyaambu
with children two but hunger not children Jealousy a lot was-with-it in-reason
Hunger did not have any children. He was very jealous of Water's children.

dya baáná bá Máámba]. [Kilumbu kimosí], [Nzala] [bákidí] [ngiindu za kuhoóndá] [baana
of children of water day one hunger had idea of kill children
One day, Hunger decided to kill Water's children.

ba Maámba]. [Mbala thetê,] [Nzala] [diíkídí] [mwaana tsómí wá Máámba]. [Mwaaná] [fuúdi].
of water time first hunger poisoned child eldest of water child died
The first time, Hunger poisoned Water's elder child. The child died.

[Banzíikidi]. [Maambá] [hyuúdidi] [kwa Nzálá]: ["Khí kíkúmá hóóndélélé] [mwaana mêné?]"
they-buried-him water asked to hunger what reason you-killed child me
They buried him. Water asked Hunger: " Why did you kill my child?"

[Yandí] [nzí]: ["Ka mêné kó ín'hóondele]. [Kimbéétó kínhóondele]."
he that not me I-killed-him disease it-killed-him
He said, "It's not me who killed him. A disease killed him."

[Mbala zoólé], [Maambá] [weéle] [ku masolé]. [Ku hata kasáala], [Nzala] [n'díikídí]
time two water went to fields at village he-remained hunger poisoned-him
The second time, Water went to the fields. At the village, in the meantime, Hunger

[mwaanâ] [nkwaawû]. [Mu phiipha] [mwaanâ] [fuûdi]. [Maambâ] [hyuûdídî dyááka] [kwa
child other at night child died water asked again to
poisoned the other child. At night the child died. Then Water asked again to

Nzâlâ khî kíkûmâ káhóôndéléléê] [mwaanâ]. [Yaandî] [kâbwésê] [mvutû] [nzí]:
hunger what reason he-killed child he returned answer that
Hunger why he killed the child. He answered,

"[Kimbééfó kínhóondele]." [Maambâ] [khabû] [zinkwéete]. [Wêlê] [hyúûlâ] [luhaangû][kwa
disease it-killed-him water anger it-caught-him he-went ask knowledge to God
" A disease killed him." Water was angry. He went to seek knowledge

Nzaâmbî Mpûungu]. [Maambâ] [hyuûdidi] [kwa Nzaâmbi]:"[Khî kiîmâ kíhóôndele]
God Creator water asked to God what thing it-killed
from God. Water asked God,"What killed my children?"

[baana ba mênê?]" [Nzaambî] [nzí: "[Nzâlâ wábáhóonda] [baanâ] [mu dyaambu dya
children of me God that hunger he-killed-them children for reason of God
answered:" It's Hunger who killed the children because he was jealous.

kiphâla]." [Maambâ] [khabû] [zim'vûdidi]. [Zôlele] [kahoonda Nzâlâ]. [Kaánzí] [Nzala]
jealousy water anger it-increased-him he-wanted he-kill hunger but hunger
Water became even angrier. He wanted to kill Hunger. But Hunger fled. Water followed

[tiînini]. [Maamba pé] [nlêende]. [Muna nzíla], [Nzala] [wêlê wáánâ] [mutu mosí]. [Bu
fled water too he-followed-him on road hunger went find man one when
him. On the road, Hunger found a man. When Hunger got where the man was,

katûula] [Nzala] [hana kakâla] [mutu], [mutu] [teêlê mwáâyí].
he-arrived hunger where he-was man man hit yawn
the man yawned.

[Nzala] [kôtele] [muna n'nwâ wá mûtû]. [Tûlukidi] [ye mûnâ lúkûtû lwá mûtû].
hunger entered in mouth of man descended till in stomach of man
Hunger jumped in the man's mouth. He descended in the man's stomach.

[Maambâ] [bu kamóna] [mutu] [n'hyûudidi] [kansôngílâ] [Nzala]. [Mutu] [bûsidi]
water as he-saw man asked-him he-show-him hunger man he-refused he-give-not
When Water saw the man, he asked him about Hunger. The man refused to answer.

[kahaâná kó mvûtu]. [Maambâ] [bu kamóna] [buúna] [n'nêete] [mutu] [kwa Nzaâmbi]
[give answer water as he-saw that he-took-him man to God
Then Water decided to take the man to God to learn the truth.

kanzâayísâ] [makyelekâ]. [Nzaambî] [hóyele] [thetê] [kwa Nzâlâ]: "[Ngê] [mu dyaâmbû
truth God he-spoke first to hunger you in reason you-failed-say truth must
God talked to Hunger first. Since you did not tell the truth, you will be man's slave.

khóôndáâ tâ] [makyelekâ], [fweeti kâlâ m'phîkâ mûtû]. [Kwoso kûnâ kákwéêndâ], be slave
of man every where he-goes you-go-with him
Wherever the man goes, you will follow him.

[úkwéẽndá yáãndi]."[Búna] [Nzaambí] [zaãyísí] [kwa mũtũ]: " [Ngẽ] [bũná swéẽkélẽ Nzãlã],
Then God he-told to man you as you-hid hunger you-must die every time
Then God said to the man," Since you hid Hunger, you must die every time that you go to

[ufweetí fwa] [koónzó thãángũ úkwéẽndá] [ku hata dya Maãmba].
you-go to village of water
Water's village.

[Mu dyaãmbũ dííñá túmõnáángã] [Nzala mutu] [isũkáãko] [kani bwẽ díídí lãwũ
in reason that we-see hunger of man it-ends-not even how you-eat a lot of
That's why we see man's Hunger is never satisfied no matter how much food you eat.

dyá mãdya]. [Mu dyaãmbũ dííñá túmõnáángã phe], [hó] [mutu] [buũdímú máãmba],
food cop-in reason that we-see too if man he-falls in water
That is also why we see that if a man cannot swim,

[fweẽne] [kafwã], [hó] [kazẽyẽkó kúsãyã].
he-can die if he-knows-not swim
~ he will die if he falls into water.

Adapted from M. Plancquaert. 1982. Soixante mythes sacrés Yaka. Musée Royal de l'Afrique Centrale, Tervuren.

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