THE KIRUNDI VERB

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I. INTRODUCTION

In this paper, we will present an analysis of the tonal rules and some of the morphology involved in the Kirundi verb. (fn. 1) Kirundi is a Bantu language, classified by Guthrie as being in the D group, and reclassified as J by the Tervuren Bantuists, a group of languages in the region generally south of Lake Victoria. It is the major language of Burundi, and is closely related to Kinyarwanda. There are between four and five million speakers of Kirundi.

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1. Our primary source of data is our (Sabimana) own judgments. We are grateful to Jae Ohk Cho and Wayne Smith for their contribution to this paper in its early stages, and to G.N. Clements and Larry M. Hyman for careful criticisms of an earlier version of this paper. Meeussen's analysis (1959) has been of use to us, as we note below. Nonetheless, this work of Meeussen's, unlike much of his later work, appears to make an effort in many places to eschew generalizations. It is a descriptive tour de force, and yet fails to produce general principles. Coupez (1980), on the closely related Kinyarwanda, follows in the tradition of Meeussen in several respects, including the crucial characterization of tonal melodies of the various tenses in terms of independent "tiroirs", rather than general rules where possible. Kimenyi (1979), also describing Kinyarwanda, uses a generative framework, but with somewhat different aims than ours, and our results are in many respects difficult to compare. Sibomana (1974), also dealing with Kinyarwanda, presents an extremely organized description of the various verbal tenses, but he neither presents the tonal patterns found when object markers appear, crucial data in our opinion, nor attempts any general formulation of rules.

We use the following abbreviations :

SM	Subject marker
TM	Tense marker
FOC	Focus marker
OM	Object marker
FV	Final vowel
LOC-OM	Locative object marker
Inf	Infinitive marker

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The tonal system of the Kirundi verb differs considerably from the tonal systems of related languages within the Group J area. Thus, in addition to the inherent interest of seeing the internal workings of a complex tonal system, the study of the Kirundi systems is especially interesting in that its tonal rules have a number of properties that distinguish them from the types of rules found in such languages as Luganda, Shi, Hunde, Haya, or the more distant Kikuyu, Tonga, Shona or Zulu. Of special interest are the several tone rules that make reference to syllable or segmental structure, as well as the tone rules that are sensitive to highly grammatical, rather than purely phonological and tonological conditions. In more familiar tonal systems, tone rules typically modify tonal segments on the basis of the tones in the immediate environment, or add or delete association lines in the immediate environment of a tone. Kirundi has reanalyzed its Bantu tonal inheritance in ways that are in certain respects quite radical, and has arrived at an elegant set of tonal rules that are quite different from its neighbors'. For example, where neighboring languages, and no doubt Kirundi's ancestor, possessed object markers which were in most cases inherently high-toned but which were subject to various lowering rules, Kirundi has opted for a system in which the object markers are underlyingly low but subject to synchronically odd lowering rules.

More significantly, there is considerable evidence that the restructuring of the tonal system in Kirundi is highly influenced by a metrical, or rhythmic, structure that is imposed on the word. Certain of the tone shift rules appear to be sensitive to whether the number of mores preceding the site of the shift is odd or even. This kind of global quantity sensitivity is highly unusual for a tone system, and has been found to date only in metrical stress systems (Mc Carthy 1979, Hayes 1981). We are convinced that only a synthesis of metrical and autosegmental analyses will allow us to arrive at a satisfactory account of the Kirundi system. If an account along these lines proves to be correct, it will suggest that metrical and autosegmental modes of analysis are not two specialized formalizations of the same thing, but are rather independent mechanisms that can be invoked in languages, and can be found together in certain languages, with the two systems acting autonomously but affecting each other.

Also of some theoretical interest is the layered morphology that is developed in the Kirundi verb. In section 6.7, we discuss this model explicity, and suggest a case where despite the appeal of a simple layered theory of morphology, it is necessary to have "loops" in the ordered rules of morphology, reminiscent of the Loop in Mohanan (1981); we investigate the way in which this should be incorporated in the formal model, and discuss the non-cyclicity of Dahl's Law.

II. — THE TENSES

The linear structure of the Kirundi verb is given in 1. We will refer to the radical with all the following extensions and the Final Vowel as stem, following traditional Bantu terminology.

1. The Kirundi verb.

1. The Kirundi verb.

subject marker	tense	focus marker	object marker	object marker	radical	extension	final vowel
ba	á	ra	ya	mú	rim	ir	a
they	far past		them cl.6	him cl.1	cultivate	for	

"they cultivated them for him/her"

Each of these positions deserves some discussion. The subject marker is of the form V or CV, or in the case of first person singular, a consonant, in the last case, the nasal n-. All these morphemes are endowed with tone at the underlying level, though we will suggest that word-initial moras are incapable of bearing tones themselves ("extratonal", in the sense proposed by Pulleyblank 1983). There is one subject marker for each noun class, in the traditional Bantu sense. This subject marker generally agrees with the subject NP, overt or implicite : this is by no means the whole story on "subject agreement", but will suffice for present purposes.

We shall concentrate on five morphemes that appear in the tense marker position in the first part of this paper : ku, the infinitive marker, which itself cannot be preceded by a subject marker : zóo, the future tense marker, which is syntactically quite special, as we shall see below in section 7.1; the present tense marker, phonologically null : a, the recent past marker, on a Low tone; and á, the far past marker, on a High tone. We shall discuss several others below in section 6.

The focus marker is somewhat unusual. While it is not uncommon for Bantu languages to distinguish in an overt morphological way whether the information focus, corresponding roughly to the intonation peak in an English sentence, is on the verb or the object, KiRundi has perhaps the most thorough-going system for such marking. Of the four tenses mentioned above, the three non-future tenses show an overt distinction of this sort. When the focus is on an object, direct or indirect, following the verb (and this is the normal case when an object does follow the verb), the focus marker is absent from the verb, and

in most cases High tones are lost from the verb due to a process that we will discuss in detail below. In other cases, the appropriate focus marker for the tense must be used in the verb. It follows as a special case that when the verb is final in its clause, it must bear the focus marker. The focus markers are given in 2, and examples are provided in 3.

3.

Tense	Tense Marker	Focus Marker
Future	zóo	--
Present	--	ra
Recent		
Past	a	a
Far		
Past	á	ra

4. a.	u	ø	ra	andik	a	ibitabo
	SM	TM	FOC	write	FV	books
	" you write books."					
b.	w	ø	andik	a	ibitabo	
	SM	TM	write	FV	books	
	"you write books."					

Object markers, specified as the subject markers are, for noun class, express the noun class of an argument of the verb which is either unspecified -- in which case the object marker is pronominal in function, as in 5a -- or which precedes the verb, as in 5d.

5. a.	u	ra	mú	boon	ye	
	SM	FOC	OM	see	FV	
	"you see him/her"					
b.	u	ra	bóon	ye	umuntu	
	SM	FOC	see	FV	person	
	"you see the person"					
c.	*u	ra	mu	bon	ye	umuntu
	unless there is a pause before the object.					
b.	umuntu	u	ra	mu	bon	a
	person	SM	FOC	OM	see	FV

The properties described above are independent of definiteness and animacy, unlike the situation found in many other Bantu languages, except insofar as topicalization (that is, preverbal placement of a noun phrase) presupposes that the NP is known and definite. This restriction holds equally for subject NPs as for non-subject NPs, and should thus be viewed as a restriction on surface word order.

There is no limit in principle to the number of surface object markers in a single verb, though in practice the limit appears to be three, with the third a reflexive. The reflexive object marker is the only one that is not marked for noun class, and is consistently of the form -ii-, with a High tone on the second vowel underlyingly; it must always

appear adjacent to the verb radical. All other object markers are underlyingly Low toned.

The radical is typically of the form CoVCo or CoVVCo, and extensions are of the form VCo. As in other Bantu languages, one frequently finds combinations of what appear to be radical and extension which are not synchronically decomposable, either because there is no independent radical of the appropriate form, or because the meaning of the combination is not that which would be derived productively from the component radical and extension.

There may be any number of extensions, from zero on up. The extensions contribute to the meaning of the verbal stem in generally predictable ways, but are themselves tonally inert, as they are throughout the Bantu languages. In this paper we shall make reference in several examples to the "applicative" extension, which increases the valence of the verb stem by one, permitting an otherwise transitive verb to take two objects, especially important for our purposes when we wish to investigate the tonal properties of verbs with two object markers.

The so-called "Final Vowel" is oddly misnamed, we admit, but is in keeping with Bantu terminology. There are three morphemes that can appear in this position : the Final Vowel -e, used in the subjunctive and in the imperative with an object other than the first person singular; the perfective -ye; and the neutral -a. In most tenses, either -ye or -a can be used, with a clear difference in aspect or realis marking. Thus 6a, with -ye, indicates that the action was completed, while 6b, with -a, indicates an action not necessarily completed.

6. a. ba a rim a
SM TM cultivate FV
"they were cultivating"

b. ba a rim ye
SM TM cultivate FV
"they cultivated"

The meaning of the ye/a contrast in the present tense is worthy of note. In a wide range of verbs, the -ye form is used in the present tense to indicate a single action, and the -a form to indicate a habitual action. This is rather the reverse of the parallel situation in English, where the aspectual marker used to indicate completion is also used to indicate habitual or "structural" properties, in the terminology of Goldsmith and Wolsetschlaeger (1982). See 7.

7. a. ba ra téek a
SM FOC cook FV
"they cook (e.g., for a living)"

b. ba ra téets e (from /ye/ underlyingly)
SM FOC cook FV

Certain tense forms, most notably the future, cannot appear with the perfective suffix -ye, though it would seem reasonable from a semantic point of view that such forms should exist. We shall consider this point in greater detail below in section 6.7.

III. — TONE

3.1 Introduction infinitives without object markers divide simply into two tonal classes, those composed with Low stems, as in 8a, with Low tone throughout, and those composed from High stems, as in 8b, with a single High tone on the first mora of the verb stem.

8. a. Low stem infinitives

ku rim a	to cultivate
ku rer a	to raise (children)
ku rog a	to poison
ku rut a	to surpass
ku raab a	to look at

b. High stem infinitives

ku bón a	to see
ku búr a	to lack
ku bík a	to crow
ku báag a	to butcher
ku béer a	to suit

The basic tone of the verb radical is thus realized on the first mora, the usual situation found in Bantu languages.

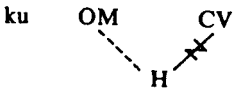
This basic tone is realized on the preceding object marker, if there is one, in the infinitive, as illustrated in the example in 9a, formed from a High stem. An otherwise parallel example is given in 9b, formed with a Low stem, where no High tone appears; we conclude that the High tone in 9a is truly the realization of the stem High tone, displaced leftward.

9. a.	ku	gí	tem	a
	inf.	OM	cut	FV
	"to cut it (cl. 7)"			
b.	ku	ki	rim	a
	inf.	OM	cultivate	FV
	"to cultivate it (cl. 7)"			

We shall provisionally account for this "pullback" of High tone by means of a rule whose formulation we give in 10; we shall call this rule the "Pullback Rule". We will return briefly to the nature of the morphemes other than -ku- that trigger the Pullback rule, all of them

containing a single mora, and we will reformulate the Pullback rule within a rhythmic framework in the next section.

10. Pullback rule



Here, as elsewhere, we use the familiar convention that an association line with an "x" through it is deleted by the rule, while a dotted association line is added by the rule.

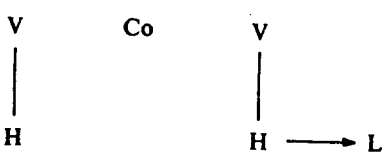
All the object markers except the reflexive -ii- behave like the object marker in 9 above. -ii-, however, has an underlying High tone, as we see in 11i. (2)

11. a High tone stem : ku ii bon a "to see oneself"

b. Low tone stem : ku ii raab a "to look at oneself"

Recognizing -ii-'s underlying High tone, we must posit a rule to account for the lack of High tone on the stem in 11a, a rule given in 12, lowering a High tone immediately following a High tone. This rule is important in the tonology of Bantu languages, and has been called "Meeussen's Rule" in the literature (see especially Goldsmith 1982,1983,1984). The tone of the reflexive marker is considerably more complicated than these initial observations suggest, however. We will discuss this matter in detail in section 4.2 below.

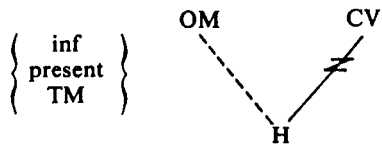
12. Meeusen's Rule



2. We will not discuss in detail the interesting and important question of the treatement of vowel sequences. We may note that as with all Eastern Bantu languages, within the word sequences of two or more vowels reduce to two more sequences, with the last vowel determining the vowel quality of the resultant long vowel. Both Clements 1984 [1979] and Wall 1984 contain analyses of this phenomenon that we find useful. As has been noted eisewhere (for example, in the discussion of Makua in Kenstowicz and Kisseberth 1979), when several tones are associated with an underlying sequence of more than two moras, destined to become a two-mora syllable, the principle that states the surface realization of tone is this : if there are any High tones on the third or later mora, these are realized on the second mora of the resulting long vowel.

The Pullback rule formulated in 10 applies in the Present Tense as well, but not in the Recent or Far Past tenses. In 13, we give representative examples of verbs in the present tense with no and with one object marker. In all cases, the focus marker must be present, since, as we shall see below, verbs out of focus display greatly reduced tonal patterns. We reformulate 10, the Pullback rule, to apply in the present tense as well. The -ra- focus marker which is said to trigger the Pullback from stem to object marker in 10' must be said to be distinct from the -ra- focus marker of the Far Past, where no pullback occurs (this is illustrated in 15 below).

10' Pullback rule



Consider the following data, given for 1st, 2nd, and 3rd person (singular and plural) subjects, here as throughout this paper.

13. Present tense (focus form)

a. High tone verb -bón- "see"

Without object marker	
n da bón a	tu ra bón a
u ra bón a	mu ra bón a
a ra bón a	ba ra bón a
With one object marker (-mu- "him/her")	
n da mú bon a	tu ra mú bon a
u ra mú bon a	mu ra mú bon a
a ra mú bon a	ba ra mú bon a

b. Low tone verb -rim- "cultivate"

Without object marker	
n da rim a	tu ra rim a
u ra rim a	mu ra rim a
a ra rim a	ba ra rim a
With one object marker (-ki- "it", class 7)	
n da ki rim a	tu ra ki rim a
u ra ki rim a	mu ra ki rim a
a ra ki rim a	ba ra ki rim a

c. High tone verb -téek- "cook"

Without object marker	
n da téek a	tu ra téek a
u ra téek a	mu ra téek a
a ra téek a	ba ra téek a

With one object marker

n da gí teek a	tu ra gí teek a
u ra gí teek a	mu ra gí teek a
a ra gí teek a	ba ra gí teek a

d. Low tone verb -raab- "look at"

Without object marker

n da raab a	tu ra raab a
u ra raab a	mu ra raab a
a ra raab a	ba ra raab a

With one object marker

n da mu raab a	tu ra mu raab a
u ra mu raab a	mu ra mu raab a
a ra mu raab a	ba ra mu raab a

The Pullback Rule also fails to apply in the Future, Recent Past, and Far Past tenses, but the tone of the affirmative main clause Future verb is complicated by two tense-specific rules which we will discuss below. For present purposes, we may summarize these facts by saying that the Pullback Rule applies when the Tense plus Focus Marker is of the form CV, but not in other cases, such as when the Tense plus Focus are of the form CVV (future), VV (recent past), or VCV (far past). This is partially illustrated in 14, with the recent past forms; the Far Past is illustrated in 15 below. For the reader's convenience, in all but the first paradigm we give near-surface forms; in all cases, [u] before a vowel becomes a glide, and sequences of three vowels simplify to two (as in ba a a rim a becoming baarima).

14. Recent Past (focus forms)

a. High tone verb -bon- "see" : short vowel

after morphological rules		surface forms	
n a a bón a	tu a a bón a	naabóna	twaabóna
u a a bón a	mu a a bón a	waabóna	mwaabóna
y a a bón a	ba a a bón a	yaabóna	baabóna

with one object marker

n a a mu bón a	tu a a mu bón a
u a a mu bón a	mu a a mu bón a
y a a mu bón a	ba a a mu bón a

b. Low tone verb -rim- "cultivate : short vowel

n a a rim a	tu a a rim a
u a a rim a	mu a a rim a
y a a rim a	ba a a rim a

With one object marker

n a a ki rim a	tu a a ki rim a
u a a ki rim a	mu a a ki rim a
y a a ki rim a	ba a a ki rim a

c. High tone verb -teek- "cook" : long vowel

	without object marker
n a a téek a	tu a a téek a
u a a téek a	mu a a téek a
y a a téek a	ba a a téek a
	with one object marker
n a a gi téek a	tu a a gi téek a
u a a gi téek a	mu a a gi téek a
y a a gi téek a	ba a a gi téek a

d. Low tone verb -raab- "look at" : long vowel

	without object marker
n a a raab a	tu a a raab a
u a a raab a	mu a a raab a
y a a raab a	ba a a raab a
	with one object marker
n a a mu raab a	tu a a mu raab a
u a a mu raab a	mu a a mu raab a
y a a mu raab a	ba a a mu raab a

III.1 TONE IN FAR PAST

The tonal pattern found in the Far Past differs in certain respects from what we would expect on the basis of the forms discussed up to this point. As the data in 15 below illustrates, there is no contrast between inherently High and Low toned stems; both are assigned a High tone in this tense, although this High tone may be lost by Meeussen's Rule. Furthermore, the tense marker -á- has a High tone in this tense, though it may be displaced if it falls on the first syllable of the word. Spacing in the surface forms given is purely for orthographic convenience.

15. Far Past (focus forms)

a. High tone verb -bon- "see" : short vowel

after morphological rules		surface form	
n á ra bón a	tu á ra bón a	narά bona	twaára bóna
u á ra bón a	mu á ra bón a	warά bona	mwaára bóna
y á ra bón a	ba á ra bón a	yarά bona	baára bóna
	With one object marker		
n á ra mu bón a	tu á ra mu bón a	narámu bóna	twaáramu bóna
u á ra mu bón a	mu á ra mu bón a	warámu bóna	mwaáramu bóna
y á ra mu bón a	ba á ra mu bón a	yarámu bóna	baáramu bóna

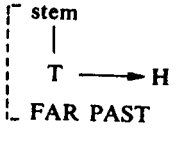
b. Low tone verb -rim- "cultivate" : short vowel

n á ra rím a	tu á ra rím a	narά rima	twaára ríma
u á ra rím a	mu á ra rím a	warά rim a	mwaára ríma
y á ra rím a	ba á ra rím a	yarά rim a	baára ríma

	With one object marker		
n á ra ki rím a	tu á ra ki rím a	naráki ríma	twaáraki ríma
u á ra ki rím a	mu á ra ki rím a	waráki ríma	mwaáraki ríma
y á ra ki rím a	ba á ra ki rím a	yaráki ríma	baáraki rím a
c. High tone verb -téek- "cook" : long vowel			
	Without object marker		
n á ra téek a	tu á ra téek a	nará teeka	twaára téeka
u á ra téek a	mu á ra téek a	wará teeka	mwaára téeka
y á ra téek a	ba á ra téek a	yará teeka	baára téeka
	With one object marker		
n á ra gi téek a	tu á ra gi téek a	narági téek a	twaáragi téeka
u á ra gi téek a	mu á ra gi téek a	warági téek a	mwaáragi téeka
y á ra gi téek a	ba á ra gi téek a	yarági téek a	baáragi téeka
d. Low tone verb -raab- : long vowel			
	Without object marker		
n á ra ráab a	tu á ra ráab a	nará raaba	twaára ráaba
u á ra ráab a	mu á ra ráab a	wará raaba	mwaára ráaba
y á ra ráab a	ba á ra ráab a	yará raaba	baára ráaba
	Wth one object marker		
n á ra mu ráab a	tu á ra mu ráab a	narámu ráaba	twaáramu ráaba
u á ra mu ráab a	mu á ra mu ráab a	warámu ráaba	mwaáramu ráaba
y á ra mu ráab a	ba á ra mu ráab a	yarámu ráaba	baáramu ráaba

In all cases in 15, the stem carries a High tone, except when a High tone immediately precedes on the focus marker -ra-, which is the case when there is no object marker and the subject marker is singular (although the correct generalization depends ultimately on the phonological shape, not the grammatical number, of the first morpheme). The loss of the stem High tone in these cases is clearly the result of Meeussen's Rule 12, lowering a High after a High. The High tone on the stem is placed by a rule that we shall formulate as in 16.

16. Far Past Stem-tone Placement

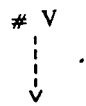


We must look a bit further to see what mechanism is responsible for shifting the High tone from the Tense Marker to the Focus Marker in forms like narátema. Meeussen (p.26) notes that "un morphotonème haut appartenant à une voyelle initiale, ou même à une nasale initiale, est représentée sur la voyelle suivante." This general principle is illustrated by the shift of tone, for example, in the demonstrative series (Meussen's series III) in 17.

17. Noun class	Form
1	u + nó
2	bá + no
3	u + nó
4	i + nó
5	rí + no
6	a + nó
7	kí + no
8	bí + no, etc.

We suggest that all tones -- both High and Low -- are in effect shifted off the first vowel of the word in Kirundi, and this not due to an explicit rule to that effect, but rather to the specification that a word-initial tone-bearing unit is "extratonal", in the sense proposed by Pulleyblank (1983). A unit which would potentially be tone-bearing in an autosegmental framework may be marked as extratonal and is thus disregarded by tone assignment rules of the language. This is effected by rule 18. Note that it applies to strictly word-initial vowel-positions, not merely to the first vowel-position of a word (footnote 3). We will return to the question of extratonality in more detail in section 6.5, where we contrast extratonality at the phrase-level with extratonality, as here, at the word-level.

18. Initial Extratonality

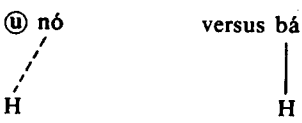


[+ extratonal]

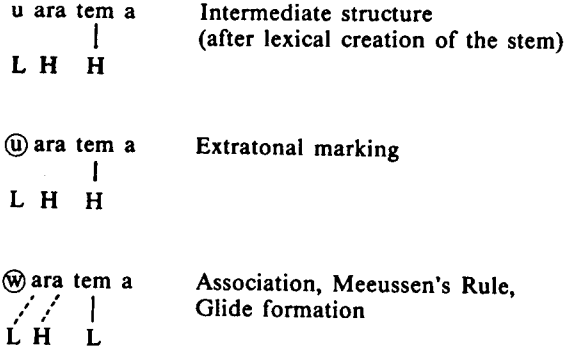
We shall represent extratonality henceforth by a circle drawn round the extratonal segment (recalling a floating tone, which is an "extratonal" tone, in the sense that it exempted from association principles). The association of the Class 1 demonstrative takes place as in 19a; the shift of the High tone in a form such as w-ará-tem-a is illustrated in 19b. When the superficially parallel bá-tem-a occurs with a High tone on the first vowel (in the participial form, discussed below), no shift of the High tone occurs, because there the crucial assignment of extratonality does not take place.

3. We are grateful to Larry Hyman for suggestions leading to an improvement in the formulation of this rule.

19.a.



b.



In the derivation in 19b, we anticipate our discussion below of the cyclic formation of the verb from the verbal stem -tema. We assume that tone has already been assigned to the stem at the time when tone is assigned to the Subject Marker and Tense Marker, for reasons that we will consider in more detail below. We assume, with most recent work in the autosegmental framework, that floating tones automatically associate with the lefmost accessible unassociated vowel, if, in particular, they become free during the derivation.

3.3. Verbs With Two Object Markers. When we turn to verbs with two object markers, we might expect to find no High tones present when the stem is underlyingly Low in tone. This expectation is not met, and throughout the tense system, in fact, the underlying tonal contrast on the verb stem is lost when the verb stem is preceded by two object markers. If we look first at a tense such as the Recent Past, a tense in which the Pullback Rule 10 does not apply, we find tonal patterns as in 20. The Far Past is illustrated in 21. For ease of exposition we have placed a High tone in each case on the left hand column on the tense-marker -á-, even though its actual first association is with the following vowel, as we have just suggested. We present the examples broken down morphologically with the tone assignments, according to our analysis, found after the morphologically-sensitive rules have applied; these are followed by the true surface forms.

20. Recent Past : Two object markers (focus on verb)

a. High tone stem -tem- "cut" short vowel

n a a ki mú tém er a	"I cut it for him"	[n a a ki mú tem er a]
ba a a ki mú tém er a	"they cut it for him"	[ba a ki mú tem er a]

b. Low tone stem -rim- "cultivate" : short vowel

n a a ki mú rim ir a	[n a a ki mú rim ir a]
ba a a ki mú rim ir a	[ba a ki mú rim ir a]

c. High tone stem -téek- "cook" : long vowel

y a a ki mú téek er a	[y a a ki mú teek er a]
ba a ki mú téek er a	[ba a ki mú teek er a]

d. Low tone stem -raab- "look at" : long vowel

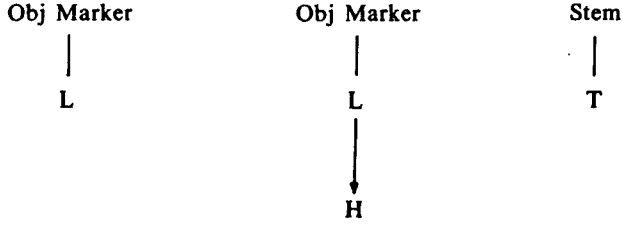
y a a ki mú raab ir a	[y a a ki mú raab ir a]
ba a ki mú raab ir a	[ba a ki mú raab ir a]

21. Far Past : Two object markers (focus on verb)

After morphological rules	surface
a. High tone stem : short vowel	
y á ra ki mú tém er a	y a rá ki mú tem era
ba á ra ki mú tém er a	ba á ra ki mú tem er a
b. Low tone stem : short vowel	
y á ra ki mú rím er a	y a rá ki mú rim ir a
ba á ra ki mú rím ir a	ba á ra ki mú rim ir a
c. High tone stem : long vowel	
y á ra ki mú téek er a	y a rá ki mú teek er a
ba á ra ki mú téek er a	ba á ra ki mú teek er a
d. Low tone stem : long vowel	
y á ra ki mú ráab ir a	y a rá ki mú raab ir a
ba á ra ki mú ráab ir a	ba á ra ki mú raab ir a

We see that in each case in 20, a High tone appears on the second object marker, and we can infer that the rule that accomplishes this applies before Meeussen's Rule, changing the underlying High tone on the stem to Low. This rule is provisionally given in 22. Much the same pattern is found on verbs with two objects markers in the Far Past, with a High tone on the second object marker, and a Low tone on the verb itself, illustrated in 21.

22. Two Object Marker Rule



If we look now at infinitives and Present tense verbs, forms in which the Pullback rule 10' applies, we find a curious result : the High tone on the second object marker that has been placed by the Two Object Marker rule 22 is indeed pulled back to the first object marker, as we would expect; but furthermore, a High tone appears on the verb stem whether its basic tone is High or Low.

23. Infinitives with two object markers

a. High tone :

ku	há	mu	kór	er	a
Inf	LOC-OM	OM	work	appl	FV

"to work there for him"

b. Low tone :

ku	há	mu	rím	ir	a
Inf	there	OM	cultivate	apple	FV

"to cultivate there for him/her"

24. Present tense with two object markers

a. High tone :

a	ra	há	mu	kór	er	a
SM	FOC	LOC-OM	OM	work	appl	FV

"He works there for him"

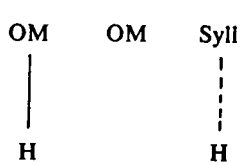
b. Low tone :

a	ra	há	mu	rím	ir	a
SM	FOC	LOC-OM	OM	cultivate	appl	FV

"He cultivates there for him"

We propose that there is a rule, which we shall call the Rhythm Rule, whose function is to place a second High tone two syllables to the right of the High tone that is created by the Two Object Marker rule when that position is on the first stem syllabe (or on an object marker). This rule is formulated in 25.

25. Rhythm Rule



(the dotted line on the second H indicates that the structural change of the rule inserts the H).

3.4. Non-focus Tone. We will provisionally formulate one more tonal rule in this section. We noted above that in non-focus main clause verb, where the principal focus of the sentence is on a phrase following

the verb, High tones which would otherwise be expected on the verb are lost. If we indicate non-focus status by -F, we may formulate this generalization as in 26, which takes account of the fact that only tones to the Right of the tense marker are lost in the -F contexts. The High tone of the tense marker in the Far Past is not lost, in particular, in the non-focus forms; however, tones on the verb stem, the reflexive object marker, and the tones created by the Two Object Marker rule are all lost in the non-focus context.

26. Non-focus Rules Main clause

$$H \rightarrow L \;/\; \text{Tense } X\text{--}\#$$
$$-F$$
$$\text{verb}$$
$$\text{main clause}$$

We give representative examples in 27 (third person, singular and plural) of non-focus main clause verb forms. Forms with long vowels are entirely parallel.

27. Non-focus main clause verbs : Present Tense

a. High tone verb, short vowel

Subj	No OM	One O'l	Reflex OM	Two OM
sg.	a bon a	a mu bon a	y ii bon a	a ki mu bon er a
pl.	ba bon a	ba mu bon a	b ii bon a	ba ki mu bon er a

b. Low tone verb, short vowel

sg.	a gur a	a mu gur ir a	y ii gur ir a	a ki mu ir a
pl.	ba gur a	ba mu gur ir a	b ii gur ir a	ba ki mu gur ir a

28. Non-focus main clause verbs : Recent Past

a. High tone verb, short vowel

sg.	y a bon a	y a mu bon a	y ii bon a	y a ki mu bon er a
pl.	ba a bon a	ba a mu bon a	b ii bon a	ba a ki mu bon er a

b. Low tone verb, short vowel

sg.	y a gur a	y a mu gur ir a	y ii gur ir a	y a ki mu gur ir a
pl.	ba a gur a	ba a mu gur ir a	b ii gur ir a	ba a ki mu gur ir a

29. Non-focus main clause verbs : Far Past

a. High tone verb : short vowel

sg.	y a bón a	y a mú bon a	y íi bon a	y a kí mu bon er a
pl.	ba á bon a	ba á mu bon a	b íi bon a	ba á ki mu bon er a

b. Low tone verb : short vowel

sg.	y a gúr a	y a mú gur ir a	y íi gur ir a	y a kí mu gur ir a
pl.	ba á gur a	ba á mu gur ir a	b íi gur ir a	ba á ki mu gur ir a

IV. — A RHYTHMIC APPROACH

4.1 INTRODUCTION

We have observed so far that there are two tenses in which the Pullback Rule applies, the Infinitive (a nominalization) and the Present tense, formed with ku- and -ra-, respectively. In addition, there is another tense, whose tense marker is also of the form CV, in which the Pullback rule applies, the consecutive -ka- tense. As we noted above, neither the Recent Past -aa- nor the Far Past -ara- trigger Pullback, nor does the Future marker.

We propose that the Pullback phenomenon sketched in 10' is actually motivated by a rhythmical, or metrical, structure that is constructed on the word beginnning with the first Object Marker. Whether the Object Markers plus the following stem forms a constituent is an important and still outstanding problem in the study of Bantu morphology, but in the Kirundi verb there is evidence that this unit, which we shall call the suprastem, for want of a better term, serves as the basis for the imposition of metrical structure from left-to-right.

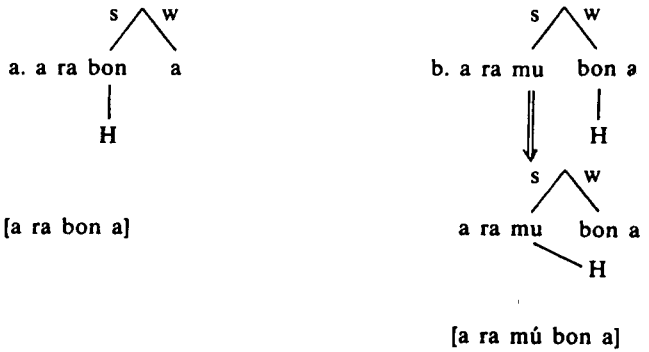
We shall see below (section 5.2) that this metrical structure is motivated in the treatment of subordinate, subjunctive, and negative verb forms, and that the necessary metrical structure is again that erected on the suprastem. We propose, therefore, that binary-branching trochaic feet (Strong-Weak) be erected on the suprastem (the stem plus any preceding Object Markers). As we shall show in a moment, this metrical structure serves as the basis for the Pullback rule in main clauses. We must therefore address the question of how to deal with the contrast between those tenses which do trigger pullback and those which do not.

It appears that in the synchronic grammar of Kirundi, it is not possible to predict phonologically which tenses trigger the Pullback rule. The historical origins of this development are discussed in Goldsmith (1984).

Consider some examples from the Present Tense. With no object marker, as in 31a, the lexical tone of the verb stem falls on a Strong syllabe. In 31b, with a single object marker in a Strong position, the

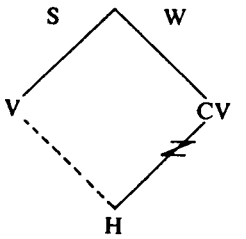
tone is shifted onto the Strong position, by the Pullback rule, now reformulated in 32. (4)

31. Present Tense



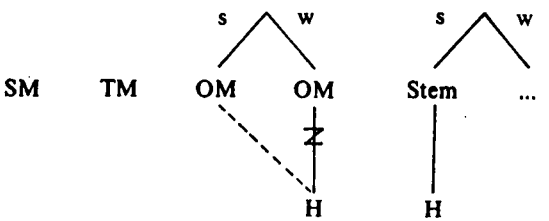
4. It is appealing to predict on a metrical basis which tenses will trigger the Pullback rule. One attractive hypothesis that we have explored, and which appeared in an earlier draft of the present paper, involved constructing metrical structure starting from the subject marker, and dropping the "CV" condition in the Pullback rule. Thus when the Tense + Focus marker contained an even number of moras, as with the Near and Far Past and the Future, we would find that the first object marker would always be in a metrically Weak position. It would thus never attract the tone through the Pullback rule. When the Tense + Focus contained and odd number of moras -- like 1, as in the Present -ra- -- then the first object marker would fall in a metrically strong position, and attract the next High tone via the Pullback rule. This position is so aesthetically appealing that it is hard to resist, but as a synchronic analysis it has several problems. The first is that the -racáa- tense has an odd number of moras in its Tense-Focus marker (three, to be precise), but it does not trigger Pullback. Second, the infinitive has only one mora, and functions in the same way as the other odd-moraed markers (like -ra-, etc.), but metrical structure cannot be consistently erected to put ku in a metrically weak position, like the other markers of the form CV; this problem arises simply because the other CV markers appear in finite clauses and are thus preceded by the monomoraic subject marker. Thirdly, the pattern of metrical structure beginning with the subject marker is difficult to reconcile with the metrical structure that is erected on the base, which we will suggest below is necessary for the treatement of tone in subordinate, subjunctive, and negative verb forms. Fourthly, and finally, the alternative mentioned in this footnote requires a more specific formulation of the Strong Pullback rule 32, in that it must be stipulated that the High must be pulled back onto an Object Marker, and never onto a Focus Marker; if this stipulation is not added, and metrical structure is erected starting with the subject marker, then the stem High tone will be wrongly pulled back in a Recent Past form such as y a a bón a, producing *tu á rá bon a, which would then lower by Meeussen's Rule to *tu á ra bon a. This matter is discussed at lenght from a historical point of view in Goldsmith (in press c).

32. Strong Pullback Rule



The rule formulated in 32 will replace the Pullback rule in 10' formulated initially. As originally formulated, it applied equally to verb forms with two object markers, as in 23 and 24. It should be clear that the reformulation in 32 applies equally correctly to these forms with the Two Object Marker rule formulated above, assigning a High tone to the second object marker when two object markers are present. This is illustrated schematically in 33. The Rhythm Rule, in addition, always adds a High tone to a metrically Strong position, an aspect not explicitly shown in the formulation presented.

33.



4.2 Reflexive -ii-. We commented earlier on the complex behavior of the tone of the reflexive marker -ii-, and we have held the tonal patterns of the reflexive forms aside until now, when we can make reference to metrical structure. In 34 we present the relevant forms from the Infinitive, the present tense, the recent past, the far past, and the -ka- consecutive tense. In each case, we present forms with just the reflexive marker, as well as forms with one non-reflexive object marker followed by the reflexive. We give only cases with the Class 1 subject marker, except in the Far Past, where the choice of subject marker can directly affect where the High tone of the tense marker associates. In the infinitival form with just the reflexive marker, there

are two forms in free variation. When only a High tone verb form is given, there is no contrast on the surface between High and Low tone verbs. [Fn. 5]

34. Tone with Reflexive Marker

Reflexive Marker	OM + Reflexive
a. Infinitive	
kwiítemera or kwíitemera	ku mwíi témera
b. Present	
a r íi temera	a ra mwíi témera
c. Recent Past	
y ii temera	y aa mwii temera
d.Far Past	
sg. y ar íi temera	y a rá mwii temera
pl. ba ár ii temera	ba á ra mwii temera

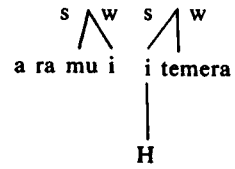
We suggest the following analysis of these forms. The underlying length of the reflexive marker is difficult to determine directly from the surface facts, and it shares this characteristic more generally with the vowel-initial radicals, where there is no contrast between short and long vowels. We will suggest below, in our account of tone in subordinate forms, that there is strong reason to take the reflexive to be basically long (as it is in other Lacustrine languages). The behavior of the High tone on the reflexive in the forms in the left-hand column of 34 suggests the same result. The High tone is pulled back from the second mora to the first mora in exactly the tenses where the Strong pullback rule applies (Present, Consecutive, and here optionally, the Infinitive). Since we know that the Strong Pullback rule does not pull back a High tone onto the -ra- Focus Marker, the existence of a form such as Present a r íi temera points in the direction we are suggesting.

However, the forms in the second column also show the effects of Strong Pullback in the relevant tenses, and if the Reflexive marker were treated as bimoraic (thus having on a Weak and a Strong mora in this case), Strong Pullback would not apply, as we illustrate in 35.

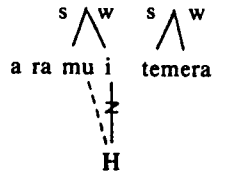
5. The far past plural also has a possible pronunciation [ba a rii temera].

35. Present Tense

a. Incorrect



b. Correct



We suggest, therefore, that there is an early rule -- in effect, of allomorphy -- that applies before metrical structure is assigned that shortens the reflexive marker when it follows an object marker (in main clause forms, the only ones we have considered so far). This rule is given in 36.

36. Reflexive shortening (focus forms)

Summarizing, then, we have the following rules applying in the main clause forms considered so far :

37. Summary (Main clause forms)

1. Assign High tone to radical in Far Past
2. Initial extratonality 18
3. Reflexive shortening 36
4. Assign trochaic metrical structure on
5. Two OM rule 22
6. Meeussen's rule 12
7. Strong Pullback rule 32
8. Rhythm rule 25
9. Non-focus rule

V. SUBORDINATE CLAUSES.

5.1 INITIAL GENERALIZATIONS : EXTENSION TONE

We will turn our attention now to the morphological and tonal behavior of verbs outside of the main clause indicative affirmative. The vast majority of the remaining forms share a great deal in common; in fact, the general picture that one gets of the Kirundi verbal system is that the main clause affirmative is, in a sense, the odd man out, in two primary ways : first, the focus/non-focus distinction is lost almost everywhere outside of the main clause affirmative indicative. It is, in fact, this characteristic that distinguishes them from the other forms; the other verb forms (all negatives, embedded or not, subordinate clause verbs, Imperatives), with one very marginal exception, nowhere express this contrast. Second, and consequently, we find another generalization emerging in all non-focus verb forms : there can be only one High tone per phonological word in non-focus verbs. In this second respect, the non-focus forms look more like an accentual language than a tone language, perhaps, and the incursion of rhythmic metrical structure that we suggest seems directly related to this observation. The development of rhythmic structure means that, unlike the situation in a true tone language, not all syllables are endowed equally with the potential to be tone-bearing; weakly-placed syllables will tend to lose their tones. This appears to lead, in turn, to the one-tone-per-word surface restriction, about which there will be considerably more to say below.

We will begin by presenting representative data on the subordinate clause forms. These verb forms are used in all subordinate clauses that are complements to verbs, complementizers, or are found in relative clauses; Meeussen misleadingly calls this pattern "relatif", overemphasizing one of its uses. All tonal contrast is lost between verb stems which are lexically High and those which are lexically Low, so we present only one High toned stem (-bon-); Low tone stems show the same pattern. Stems with long vowels behave somewhat diffently, for reasons that emerge from a metrical analysis; we will return to this in Section 5.2.

38. Subordinate : Present Tense

Subject	No OM	One OM	Two OMs
Singular	a bon ér a	a mu bon ér a	a ki mú bon er a
Plural	ba bon ér a	ba mu bon ér a	ba ki mú bon er a
		reflexive OM	
		y ii bón er a	
		b ii bón er a	

39. Subordinate : Recent Past

Singular	y a bon ér a	y a mu bon ér a	y a ki mú bon er a
Plural	ba a bon ér a	ba a mu bon ér a	ba a ki mú bon er a
		reflexive OM	
		y ii bón er a	
		b ii bón er a	

40. Subordinate : Far Past

Singular	y a bón er a	y a mú bon er a	y a kí mu bon er a
Plural	ba á bon er a	ba á mu bon er a	ba á ki mu bon er a
		reflexive OM	
		y ií bon er a	
		b ií bon er a	

Two striking generalizations emerge from this mass of data. The first is that in many forms an unexpected High tone appears on the second mora of the verb stem. The second, noted just above, is that there is, and can be, no more than one High tone per word. In the Far Past, this is the High tone on the Tense Marker, which may be in effect pushed to the second syllabe by rules which we have already established; in the others, it is a High tone on the second mora of the verb stem. The importance of both of these generalizations will emerge as we proceed. [Fn. 6].

Let us begin by formalizing these two observations. There is first a High tone suffix that is added to the tone of the verb of all verbs in subordinate verbs (and, as we have noted, this will be extended to negatives, subjunctives, and imperatives). This High tone will automatically associate with the first available mora, which will be the second mora, since the first is associated with the stem tone. The morphology thus has a suffix -H which is suffixed in all subordinate forms (as well as negatives and subjunctives). There is, in addition, a rule 41 which lowers an immediately preceding tone before a High in the stem. This rule does not need to mention "Stem" explicitly, because it is a Level One rule, in the sense described below (Section 6.7); the Stem comprises a layer in the sense of lexical phonology, as we shall see below.

---

6. In virtually all of the closely related group J languages of the Lake Victoria region, and more generally in northeastern Bantu, tense and other grammatical information is conveyed by various patterns of High tones distributed over the verbal extension and the Final Vowel. Kirundi has lost virtually all of this tonal activity. For other systems, see Hyman and Byarushengo 1984 on Haya, Stevick 1969 on Luganda, Massammba 1984 on CiRuri, Goldsmith 1984 on Tonga, Goldsmith (in press b) on KiHunde, Clements 1984 on KiKuyu, Polack-Bynon 1975 on Shi, and Stappers 1973 on Mituku.

41.

$$T \rightarrow L \,/\, [\underset{\text{stem}}{\_\_} H$$

Next we need a rule of tone lowering in the subordinate forms, and more generally for the forms that cannot contain a focus-marker (subordinate, negative, subjunctive). As we briefly noted above, in subordinate clauses the principle can be maintained that the first High tone "wins"; that is, although at a deeper level High tones may be distributed by principles whose independent functioning we can isolate, on the surface only the left-most of these High tones surfaces, and all others are lowered to Low. This is expressed in 42.

42. Non-focus forms : First High Wins

$$H \rightarrow L \,/\, [\underset{\text{subordinate}}{\ } H \ x \ \text{--}$$

These two principles together account for almost all of the data in 38-40. In 40, the Far Past, the Tense Marker is underlyingly High, and being the leftmost High, always wins out. In 38 and 39, when there are two object markers present, the Two Object Marker rule puts a High tone an the second of them, and this High tone is the leftmost and wins out. The Pullback rule never applies in the subordinate forms; we return to the metrical structure of these forms in the next section. In any event, we must stipulate that the Pullback rule is limited to the focus constructions. The reflexive is inherently High toned and, except in the Far Past, wins out, although for a reason that we will turn to directly in section 5.2 where we discuss long vowels, it is frequently realized on the following syllable, the verb radical. Only if none of these other conditions is met does the High tone assigned by 41 actually surface.

5.2 Moras and syllables, and more rhythmic structure. We have just noted that the reflexive object marker presents unusual tonal properties, in that its High tone appears on the following (stem) syllabe in the examples in 38-39. This added complexity derives from the fact that the reflexive marker is a long vowel. This can be determined by comparing the relatively simple subordinate pattern found in short-vowel radicals with the pattern found in long-vowel radicals. In the short-vowel radicals, the High tone characteristic of the subordinate (assigned by the suffix in 41) consistently falls on the second syllabe of the stem, which is the same as the second mora. When the verb radical contains a long vowel, however, we find that this High tone falls sometimes on the second syllabe (i.e., the third mora of the stem), and sometimes on the second mora of the first syllabe. The conditioning is straightforward : the High tone falls on the second syllable when there are no object markers present and on the second mora of

the first syllable when there is one (Low toned) object marker present. When there are two object markers present, of course, the Two Object Marker rule assigns a High tone to the second, and this is the High tone which prevails on the surface.

43. Subordinate : Present tense : long vowel

No OM	One OM	Two OM
a teek ér a	a mu teék er a	a ki mú teek er a
ba teek ér a	ba mu teék er a	ba ki mú teek er a

Reflexive	Non-reflex + reflex
y ii téek er a	a c ií teek er a
b ii téek er a	ba c ií teek er a

44. Subordinate : Recent Past : long vowel

No OM	One OM	Two OM
y a teek ér a	y a mu teék er a	y a ki mú teek er a
ba a teek ér a	ba a mu teék er a	ba a ki mú teek er a

Reflexive	Non-reflex + reflex
y ii téek er a	y a c ií teek er a
b ii téek er a	ba a c i í teek er a

45. Subordinate : Far Past : long vowel

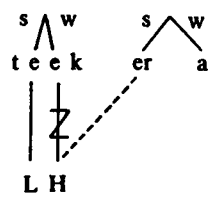
No OM	One OM	Two OM
y a téek er a	y a mú teek er a	y a kí mu teek er a
ba á teek er a	ba á mu teek er a	ba á ki mu teek er a

Reflexive	Non-reflex + reflex
y ií teek er a	y a c íi teek er a
b ií teek er a	ba á c ii teek er a

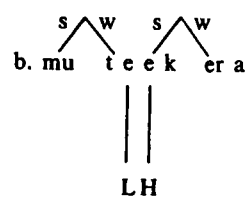
Since Kirundi appears everywhere else to be essentially a mora-counting language in its tone assignments, we will take the pattern in a mu teék er a to be closer to the underlying form. That is, we assume that the High tone suffix to attach the second mora. In general, and when there are no object markers present, this High tone will be shifted from the second half of a longvowel to the following syllable. We submit that this shift is parallel in certain respects to the Strong Pullback rule, shifting a High tone from a Weak position to a Strong, as is illustrated in 46.

46.

a. No object marker

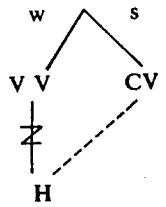


One object marker :



The second mora High of the subordinate shifts in case 46a, but not in 46b; we express this as in 47, with the Long Vowel Shift rule.

47. Long Vowel Shift
([-focusable tense])



The other case where a long vowel occurs, as we have already noted, is with the reflexive object marker -ii-, which also has a High tone on its second mora. As we have observed in 43 and 44, the reflexive marker's High tone appears on the following syllable (the first mora of the radical) when it is the only object marker in the verb. This is illustrated, with the associated rhythmic structure, in 48a; when another marker precedes ii as in 48b, the High tone does not shift. These properties follow directly from the general rule formulation given in 47. (The Reflex i shortening rule 37 does not apply in subordinate forms.)

48.

It is perhaps worth emphasizing that the metrical structure that we have postulated for use with the Pullback rule in focused forms and for use in subordinate clauses is the same -- it is erected on the suprastem of the verb, the sequence of morphemes beginning with object markers and containing the stem.

VI. ADDITIONAL FORMS

6.1 Main clause negative forms (indicative). Most features of the negative main clause verb are easily analyzed along the lines of the negative forms appearing with the focus marker.[7] Superficially, however, the negative forms are somewhat puzzling. All main clause negative verbs begin with the negative marker nti-, a morpheme which has two special characteristics that must be noted from the outset.

The tone of the negative marker nti- is what Meeussen aptly calls an "unstable High". Like the copula ni, the tone of the nti- is High if it is preceded by another word in the phrase; otherwise, it is Low in tone. The evidence suggests that both ni- and nti- have a High tone underlyingly as well as at the level of the word phonology. Neither morpheme can ever, of course, be phrase-final; when phrase-initial, they are Low in tone. Applying the notion of "extrapositionality" (of which extratonality is a special case) once again, we may wish to explore the possibility that these "unstable High" morphemes are extratonal at the phrase level (recall that the earlier use of extratonality involved an extratonal vowel at the word level (cf. rule 18 above). When the lexical High tone of this morpheme does not associate with this morpheme by virtue of this extrapositionality, a low toned vowel is the result. There is, to be sure, a striking contrast here with what occurs within the word-level phonology when the word-initial moras are rendered extratonal. As we noted above in the case of the demonstratives (17 above; see also 6.6 below for parallel cases with High toned subject markers in the participial form), the tone of the vowel that has been rendered extratonal is attached by the automatic conventions to the following vowel. Nothing of the sort occurs with the High tone of the "unstable Highs". We will suggest why this difference should be found in a moment.

Investigations into extratonality (primarily in Pulleyblank 1983) and extrametricality (Hayes 1980, Harris 1983, Archangeli 1983) continue to provide support for the proposal that extrapositionality is withdrawn from an element once it is no longer peripheral, i.e. when it is not at the extreme left or right of the domain in question. However, the symmetry that we must assume exists between tonal and

7. This contrasts strikingly with the situation in Haya, a closely related languages described by Hyman and Byarushengo 198 , where negative forms are inherently +F, in a related sense; Hyman (personal communication) suggests that the similarity is somewhat deceptive, and that the two types of focus marking found in the two languages represent typologically distinct categories of focus-marking.

non-tonal segments leaves open the possibility that in the case of the "unstable High toned elements", it is not the vowel (or, correspondingly, the skeletal position) which is extrapositional but rather the High tone. We will see strong evidence below (section 6.5) that this latter is indeed correct; for now, we will use this result, and analyze the unstable High as a specially marked extrapositional High tone, a marking which renders it unassociable if it is peripherical at the phrase level. At the phrase level, where both nti- and its unstable High tone may be preceded by material, the High is no longer extrapositional, and it is free to (and must) associate. Thus we find pairs as in 49.

49. a. Yohaáni ntáboná. "John does not see"
    b. ntaboná. "He does not see"

The other characteristic of nti- that must be considered is the nature of the boundary separating it from the following verb. It can be clearly shown that in the Present and the Far Past negatives, it is separated from the stem by the equivalent of a word boundary, while in the Recent Past the nature of the boundary cannot be determined directly. As we shall see in a moment, there are reasons to believe that the nti- forms a phonological word with the following verb -- as if, so to speak, only a simple morpheme boundary separated the two in the Recent Past.

The evidence concerning the boundary between the nti- and what follows comes from vowel coalescence, in the case of the Present tense, and from tone in the case of the Far Past. We will consider these in turn.

A sequence of vowels in contact across true word-boundaries is realized as a single short vowel, always the second of the two adjacent vowels, although a high tone that might have occurred on the first vowel is preserved on the remaining short vowel. When vowels about inside a word (but outside the stem, for strictly within the stem we find a different pattern, discussed below), the resulting vowel is always long. As we have seen, the tone of the resulting long vowel is falling if the first mora of the input had a High tone; it is rising if any later mora had a High tone.

The sequence of nti- plus the subject marker a- in the present tense negative results in a short vowel, clear evidence that a word boundary is present (see 50). Similarly, the High tone on the Far Past tense marker has shifted to the right in the singular forms in 52, exactly parallel to the affirmative main clause and subordinate Far Past forms. This results, as we have already determined, from the extratonality of the initial mora (via rule 18, Initial Extratonality); thus the subject marker must perceive a word-boundary to its left as well. Only in the Recent Past is there no segmental evidence regarding the nature of the boundary between the negative nti- and the following subject marker.

Consider the relevant data in 50-52. We give forms for High tone verbs only (both short and long stems) since the tone on Low tone verbs is identical.

50. Present Negative, Main Clause

a. Short vowel stem		
No object marker		
	si m bon ér a	nti tu bon ér a
	nt u bon ér a	nti mu bon ér a
	nt a bon ér a	nti ba bon ér a
One object marker		
	si n ki bon ér a	nti tu ki bon ér a
	nti u ki bon ér a	nti mu ki bon ér a
	nt a ki bon ér a	nti ba ki bon ér a
Two object markers : 3rd person		
	nt a ki mú bon er a	nti ba ki mú bon er a
Reflexive object marker : 3rd person		
	nti y ii bón er a	nti b ii bón er a
b. Long vowel stem (all 3rd person forms) :		
No OM :	nt a teek ér a	nti ba teek ér a
One OM :	nt a mu teék er a	nti ba mu teék er a
Two OMs :	nt a ki mú teek er a	nti ba ki mú teek er a
Reflex :	nti y ii téek er a	nti b ii téek er a

51. Recent Past Negative, Main Clause (3rd Person only)

a. Short vowel stem		
No OM :	nti y a bon er a	nti ba a bon er a
One OM :	nti y a mu bon er a	nti ba a mu bon er a
Two OMs :	nti y a ki mu bon er a	nti ba a ki mu bon er a
Reflex :	nti y ii bon er a	nti b ii bon er a
b. Long vowel stem		
No OM :	nti y a teek er a	nti ba a teek er a
One OM :	nti y a mu teek er a	nti ba a mu teek er a
Two OMs :	nti y a ki mu teek er a	nti ba a ki mu teek er a
Reflex OM :	nti y ii teek er a	nti b ii teek er a

52. Far Past Negative, Main Clause (3rd Person only)

a. Short vowel stem		
No OM :	nti y a bón er a	nti ba á bon er a
One OM :	nti y a mú bon er a	nti ba á mu bon er a
Two OM :	nti y a kí mu bon er a	nti ba á ki mu bon er a
Reflex :	nti y ii bon er a	nti b ii bon er a
b. Long vowel stem		
No OM :	nti y a teek er a	nti ba á teek er a
One OM :	nti y a mu teek er a	nti ba á mu teek er a
Two OMs :	nti y a ki mu teek er a	nti ba á ki mu teek er a
Reflex :	nti y ii teek er a	nti b ii teek er a

The tonal structures following the negative prefix nti- in each case look like the subordinate forms of the affirmative. In analyzing those subordinate forms, we appealed to the principle that the leftmost High tone wins (42). The fact that there is independent segmental reason to analyze the negative verbs with a word boundary as in (53) makes it clear that we can continue to maintain this principle within the word-level domain. Thus the High tone on the negative prefix in the Present and Far Past, being separated from the following word by a word boundary, does not cause lowering of a following High tone on the verb.

53. a. Present : nti × SM + OM + Stem
    b. Far Past : nti × SM + a + OM + Stem

In the Recent Past negative, however, we find no High tones at all on the verb itself. As we shall see when we look at the subordinate negative form, it is necessary to posit a special, morphologically conditioned rule that lowers all High tones in negative Recent past forms, a rule given in 54.[8]

54.

$$H \rightarrow L / \left[\begin{array}{l} - \\ \text{Recent Past} \\ \text{Negative} \end{array}\right]$$

Thus it does appear that the First High wins principle is acting across the entire word in the Negative Recent Past, but independent evidence, as we shall see, suggests that 54 rather than that principle is responsible for the lowering of tone throughout the Recent Past Negative paradigm.

The suggestion has been made that the negative prefix nti- is in some sense a syntactic clitic, i.e., a syntactically independent formative undergoing a post-lexical attachment to the following verb. We prefer the (in certain respects) more straightforward morphological analysis in which nti- is a prefix in much the same sense that the subject marker is a prefix, differing however in the type of boundary that separates it (or, in the terminology of lexical phonology that we will use below in Section 6.8, differing in the layer on which it is attached). There are, after all, only two things that make the negative prefix nti- odd : first, the phological boundary that separates it from the following subject marker, and second, the fact that it is used to mark the negative only in main clauses and not in subordinate clauses. The first

8. This rule is generalized in Kinyarwanda to all Recent Past forms; cf. Furere and Rialland 1984, for example.

characteristic certainly does not prima facie provide an argument for syntactic autonomy for nti-. Regarding the second, we shall see that in Kirundi (as in many Bantu languages) the negative marker follows the subject marker in subordinate clauses; but there is no compelling, or even plausible, basis for a syntactic analysis of these differing negative forms. The two morphemes are phonologically quite different (nti versus ta), and the negative marker in the subordinate verb is clearly a simple morphological prefix (see below), not a possible target for a syntactic rule of permutation with the subject marker in the matrix clause (as one conceivable analysis might have it).

6.2 What do the non-focusing forms have in common ? Let us address briefly the question of what it may be that the main clause negative forms have in common with the subordinate affirmative forms. Whatever the answer turns out to be, it is something shared as well, as we shall see in a moment, with subjunctives and imperatives.

The main clause affirmative stands alone against the negative, the subordinate, the subjunctive, and the imperative in three ways : only in the main clause affirmative is the focus marker possible (i.e., a segmental focus/non-focus contrast is found) ; only in the main clause affirmative are two High tones possible in a single verb (elsewhere the First High Wins principle reigns); and in the negative, the subordinate, the subjunctive, and the imperative, a High tone is assigned to the second mora, obliterating the lexical tone of the verb radical. Furthermore, for reasons that may be viewed either synchronically or diachronically, the Pullback of the radical tone onto an Object Marker is found only in the main clause affirmative, a fact that has in certain respects been accounted for in our formulation of the rule. Of all of these observations, which is the most fundamental ?

We would suggest that the most important contrast involves focus. Even in the main clause affirmative, we note, it is true that only one High tone may appear in the verb is in a non-focus form. Compare rule 26, which lowers all High tones in a non-focus main clause, except a possible High tone on the Far Past tense marker. Again, as we shall observe later, in those special tenses where no focus contrast is possible, the first High Wins principle quite generally holds in each phonological word. We suggest, therefore, that the crucial contrast is between the class of [+Focusable] and [-Focusable] tenses. It is this feature which primarily distinguishes the Present, Recent Past, and Far Past main clause affirmative tenses from the other tenses.

6.3 Subordinate Negative (indicative)

The negative indicative forms found in subordinate clauses present several interesting characteristics. As is commonly found in Bantu languages, the negative marker in subordinate forms follows the subject marker, rather than preceding it as we found in main clauses.

This subordinate negative marker shows no sign of coming with strong "word-boundaries" around it. Consider the forms below. As we would expect, the lexical contrast between Low and High tone radicals is lost in these tenses.

55. Negative Subordinate : Present Tense

a. Short stem -rim- "cultivate"

n ta rim á	tu ta rim á
u ta rim á	mu ta rim á
a ta rim á	ba ta rim á

b. Short stem -tem- "to cut" (begins with voiceless consonant; shows effects of Dahl's Law)

n ta tem á	tu da tem á
u da tem á	mu da tem á
a da tem á	ba da tem á
One object marker	
n ta gi tem á	tu ta gi tem á
u ta gi tem á	mu ta gi tem á
a ta gi tem á	ba ta gi tem á
Two object markers	
n ta ki mú tem er a	tu ta ki mú tem er a, etc.
Reflexive OM	
n t ii tém er a	tu t ii tém er a

b. Long stem -raab- "look at"

n ta raab á	tu ta raab á
u ta raab á	mu ta raab á
a ta raab á	ba ta raab á
One Object Marker	
n ta ki raáb a	tu ta ki raáb a, etc.
Two Object Markers	
n ta ki mú raab ir a	tu ta ki mú raab ir a

We see in 55 that the negative marker -ta- (called by Meeussen a "post-initial") has no High tone, and that the tone pattern of the entire word follows from the principles we have established so far. The voicing of -ta- to -da- is the result of Dahl's Law, which voices a voiceless obstruent in a morpheme immediately preceding a verb stem that begins with a voiceless obstruent. In Kirundi, unlike a number of other Northeastern Bantu languages, only a stem-initial voiceless consonant triggers the effect of Dahl's Law. We will return below to the theoretical significance of the failure of the rule to apply when a nasal (1st sg. subject marker) precedes.

The Recent Past negative is everywhere Low in tone, as can be seen in 56. This clearly motivates the general Lowering rule given above in 54, the rule that lowers all High tones in Recent Past negative verbs.

56. Recent Past negative, subordinate

a. Short stem

n ta a tem a	tu ta a tem a
u ta a a tem a	mu ta a tem a
a ta a tem a	ba ta a tem a
One object marker	
n ta a gi tem a	tu ta a gi tem a, etc.
Two object markers	
n ta a ki mu tem er a	tu ta a ki mu tem er a, etc.
Reflexive	
n t i i tem er a	tu t ii tem er a

In the Far Past, one and only one High tone surfaces, that of the Far Past tense marker. Bear in mind that this is the source of the High tone in n t ii tem a (from n ta a ii tem a).

57. Far Past negative, subordinate

No object markers	
n ta á tem a	tu ta á tem a
One object marker	
n ta á gi tem a	tu ta á gi tem a
Two object markers	
n ta á ki mu tem er a	tu ta á ki mu tem er a
Reflexive	
n t ií tem a	tu t ii tem a

6.4 Subjunctive

6.4.1 Affirmative. The affirmative subjunctive form is simple and straightforward, and virtually identical to the subordinate form in its tonal pattern. The Final Vowel, as we have noted, is -e in the subjunctive, and there is an odd irregularity in the 1st person singular form of the verb when a consonant-initial object marker (i.e., any object marker other than the reflexive) follows. In all such cases, the marker -ra- (surfacing as -da- after a nasal) appears between the subject marker n- and the object marker. See 58.

58. Subjunctive

a. Short stem (-rim-)

n dim é	tu rim é
u rim é	mu rim é
a rim é	ba rim é
One object marker (-ha-, locative)	
n da ha rim é	tu ha rim é
u ha rim é	mu ha rim é
a ha rim é	ba ha rim é
Two object markers (-ha-mu-)	
n da ha mú rim ir e	tu ha mú rim ir e, etc.
Reflexive	
n ii rím ire	tw ii rím ir e

Object marker plus reflexive

n da h ii rim ir e	tu h ii rim ir e

6.4.2 Negative subjunctive . The Negative Subjunctive introduces a point of some interest concerning the nature of the tone-bearing unit in Kirundi. In the contrast between the forms si n dim e and si n ii rim ir e, for example, we see that the 1st singular marker n- is tone bearing in the first case but not the second, in each case appearing after the negative marker which places a High tone on the following mora or tone-bearing unit.

59. Negative Subjunctive (stem -rim-)

si 'n dim e	nti tú tim e
nt ú tim e	nti mú rim e
nt á rim e	nti bá rim e
One object marker	
si 'nda ha rim a	nti tú ha rim e
nt ú ha rim e	nti mú ha rim e
nt á ha rim e	nti bá ha rim e
Two object markers (ist person only)	
si nda ha ki rim e	nti tu ha ki rim e
Reflexive (1st person only)	
si n ii rim e	nti tw ii rim e

We see immediately that all of these forms begin with the melody LH (imposed, clearly, by the negative prefix), and this High tone created or the second mora eliminates all following High tones by the First High Wins rule. The contrast in the tone-bearing status of the marker n- in the examples si n dime and si n ii rim ir e shows that the rules of syllable structure assignment must apply before tone assignment. The difference in the syllabic status of the -n- cannot be due to tonal considerations, since tone is essentially kept fixed across the two examples; hence the difference in the syllabic structure of the material following the n- must be the cause of the difference in its syllabic status. When a consonant follows, the n- cannot be part of the following syllabe (recall that these conclusions are, strictly speaking, valid only during the lexical phonology; permissible syllable structure at the post-lexical, phrase level may be (must be) more liberal). It then forms either part of the rhyme of the preceding syllabe, if that is possible (as it is in si n dime) or is marked as a syllable nucleus itself. In either case it is positionally tone-bearing, and subsequent tone mapping will assign the High tone from the negative prefix to the n-prefix in the appropriate cases.

6.5 Imperatives and extratonality .The Imperative in Kirundi is simple in structure, looking like the unit we have called the suprastem; that is, it begins optionally with one or more object markers, followed by

a verb stem. If there are no object markers, the Final Vowel is the neutral aspect -a; otherwise, it takes the Final Vowel -e. This is illustrated in 60.

60. Imperative

a. kor a "work !"

b. mu kor er e "work for him !"

There is never a focus marker in the Imperative, and in general the tone pattern of the Imperative is that of a non-focused verb form. In the examples seen in 60, there are no High tones, apparently; however, the first vowel of the imperative is assigned by general rule, what Meeussen calls an "unstable High tone", discussed earlier in Section 6.1.

As noted earlier, this unstable High tone has the characteristic that it is pronounced only when it is not phrase-initial; thus phrase-initial imperatives are all Low, as in 60, but when another word precedes, as in 61, the first (or second, in the case of vowel-initial stems) syllable of the imperative verb is High.

61. a. umugoré múraabe ! "look at the woman !"

b. Yohaáni ráaba ! "John, look !"

c. Yohaáni andíka ! "John, write !"

d. Andika "write !"

We noted above that the imperative form provides us with evidence that the unstable High tone is an extrapositionally marked High tone. The evidence that we interpret in this way derives from the behavior of imperative forms of vowel-initial stems. We noted earlier that there is a word-level rule marking word-initial vowels as extratonal. We saw there that a High tone that would otherwise be assigned to the first vowel of a word will be assigned to the second vowel when that first vowel has been marked as extratonal. Indeed, a vowel-initial imperative that is phrase-medial will have its unstable High tone on the second vowel, as in 61c.

But if one of these vowel-initial imperatives should appear phrase-initially, as in 61d, the unstable High disappears, a result that would be inexplicable if it were a special property of the initial vowel or syllable that were playing the central role in the phenomenon. All of these facts are neatly accounted for, in sum, if we analyze the unstable High tone as one which is marked as being extrapositional at the phrase level, which means that when it is peripheral at the phrase level (i.e., phrase-initial), it cannot associate with any vowel. When it is not phrase-initial, it will associate with the leftmost

available vowel within its word, which will be either the first vowel, or, in the case of a vowel-initial word, the second vowel. [Fn.9]

6.6 ka, racaa, and participial forms. In this section we shall briefly sketch the relevant facts concerning three other forms. The -ka- consecutive tense behaves tonally quite like the Present focus forms, with the Strong Pullback rule applying (see 62). The racaa perstitive tense is straighforward, though the Strong Pullback rule does not apply here. The Tense Marker is presumably composed of -ra- plus -ki- plus either -a- or -aa-. See 63.

62. -ka- tense.

a. Low tone verb

	No object markers
n ka som a	tu ka som a
	One object marker
n ka gi som a	tu ka gi som a
	Two object markers
n ka kí mu sóm er a	tu ka kí mu sóm er a
	Reflexive
n k íi som er a	tu k íi som er a
	Object Marker + Reflexive
n ka c í i som er a	tu ka c íi som er a

b. High tone verb

	No Object Markers
n ka tém a	tu ka tém a
	Two Object Markers
n ka gí tem a	tu ka gí tem a
	Two Object Markers
n ka kí mu tém er a	tu ka kí mu tém er a
	Reflexive Marker
n k íi tem er a	tu k íi tem er a
	Object Marker + Reflexive
n ki mw íi tém er a	tu ki mw íi tem er a

63. -racáa- tense.

	No Object Marker
n da cáa tém a	tu ra cáa tém a
	Two Object Markers
n da cáa ki mú tem er a	tu ra cáa ki mú tem er a
	Reflexive
n da c íi tem er a	tu ra c íi tem er a
	Object Marker + Reflexive
n da cáa c íi tem er a	tu ra cáa c íi tem er a

9. We may remark on the evident historical origin of the process that has been grammaticalized as word-initial extratonality : it is the process of vowel-fusion at word-boundary that put a High tone from the end of one word on the vowel of the following word. This process has now been, as we note, grammaticalized in the word-level phonology itself.

The participial form presents a few interesting characteristics. First, subject markers are assigned a High Tone, rather than a Low tone; thus, as we see in 64, a short Subject Marker such as a- will reject this High tone (by word-level extratonality), but a Subject Marker of the form CV will maintain it.

64. Participial : main clause

a sóm a	a mú som er a	a tém a	a mú tem er a
bá som a	bá mu som er a	bá tem a	bá mu tem er a

The participial forms are obligatorily marked [-Focus] in the Present Tense (thus not having the Focus Marker, and undergoing the Non-Focus rule); in the Recent and Far Past, the contrast is maintained between the [+Focus] and the [-Focus] forms.

65. Participial : Far Past (Focus)

y ara som a	y ara mu somer a
ba ara som a ba	ba ara mu som er a

6.7 Future tense and the organization of the morphology. The internal morphological structure of the Future tense is quite different from that of the Present or Past tenses. As we have seen, these tenses are formed from the suprastem by the prefixation of subject markers, tense and sometimes focus markers. This prefixation creates a unit which is a word, and contains no words internally, if we judge by the operation of the First High Wins rule. These are elementary observations, but important ones in the light of the behavior of the Future tense, where none of these holds.

We did note in the preceding section that the main clause negative prefix nti#- behaves like a prefix separated by a stronger word-boundary. What follows the nti-, we should emphasize, has the appearance of an entire word, and can, indeed, stand as a word; it has a subject marker, a tense marker, and a verbal.

We will see in this section that the future marker -zoo- is like nti- in attaching to a unit larger than the Base, even though this is not apparent in most cases. We can make Kirundi morphology clearer with a diagram like the following Table 1, a layered model of morphology reminiscent of lexical phonology. Level 1 creates the derivational base, consisting of the radical and the derivational extensions. Subsequently the Final Vowel, the Object Marker prefixes, the Tense/Focus markers, the negative marker, and the Subject Markers are added. Each of the two layers has distinct phonological rules. Layer 2, for example, contains Dahl's Law, which is triggered in Kirundi only by a radical-initial voiceless consonant (not, e.g., an Object Marker beginning with a voiceless consonant); see 66.

66. Dahl's Law $[c] \rightarrow [+\text{voice}] \;/\; -v+[c]$ (-voice; -voice)

The operation of this rule shows that Dahl's Law cannot apply cyclically with the addition of each prefix, since it is blocked from applying to the subordinate negative -ta- just in case a nasal Subject Marker prefix precedes it (cf. 55b above). This is a serious issue for the version of Lexical Phonology found, e.g., in Kiparsky 1982.

We assume that a stem is endowed with inflectional features, and that it can be viewed as passing through the rules of the inflectional morphology, realizing each of the specified inflectional features. The stem may be assigned the category Noun or Verb; if it is assigned the category Noun, it will undergo noun class prefixation (class 15) to become an infinitive; the fact that Dahl's Law affects noun class prefixes is one clue that noun class prefixes are indeed added in Layer 2 (and thus one cannot make a strict equation between Layer 2 and pure inflectional morphology). Many of the other prefixation processes (prefixation of Subject Marker, for example) are restricted to verbs.

In the third layer, a high-level word can be created by the attachment of an outer layer of prefixes, including nti- and, we will suggest, -zóo-, the future marker. This conclusion seems largely inescapable, though it leads to further questions that we will take up below concerning the mechanism by which Subject Markers can be attached to the left of zóo.

We shall now show why the future marker -zóo- must be treated in this special way. Since the lexical contrast between High and Low toned radicals is neutralized in this tense, we present only one example of each form. As above, we give 3rd person singular and plural forms.

67. Future tense, main clause affirmative.

No OM :	a zoo bon a	ba zoo bon a
1 OM :	a zoo mu bon a	ba zoo mu bon a
2 OM :	a zoo ki mu bon er a	ba zoo ki mu bon er a
Reflex :	a zoo kw ii bon a	ba zoo kw ii bon a

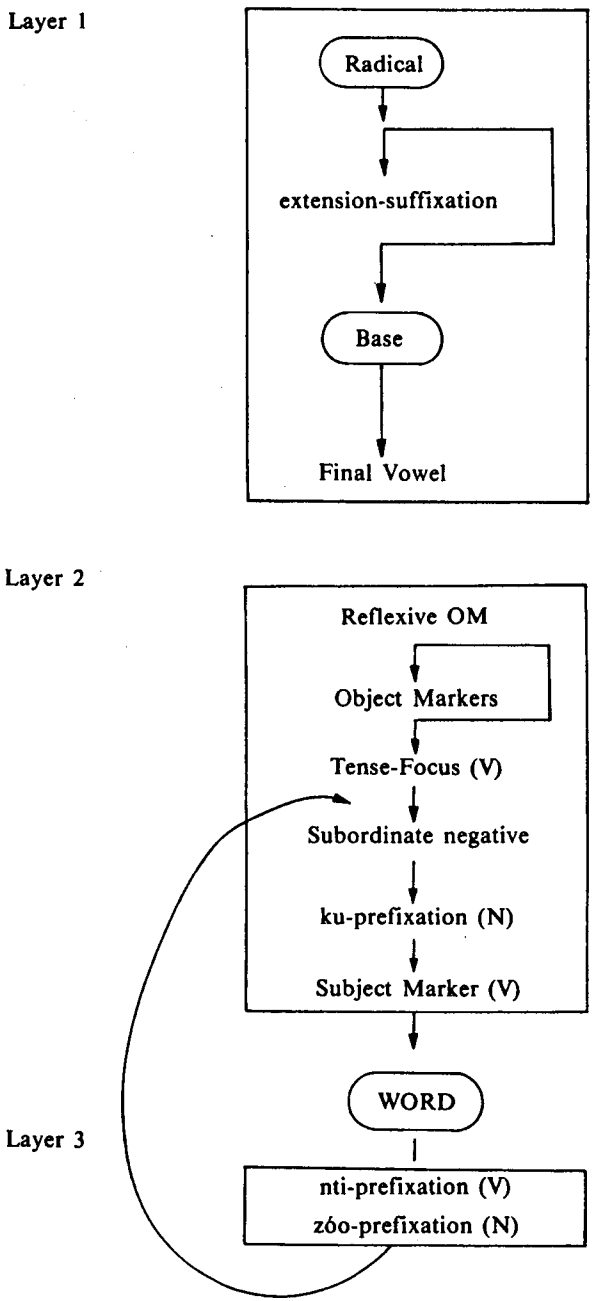
68. Future tense, main clause negative

No Om :	nt(i) a zóo bón a	nti ba zóo bón a
1 OM :	nt(i) a zóo mu bón a	nti ba zóo mu bón a
2 Om :	nt(i) a zóo ki mú bon er a	nti ba zóo ki mú bon er a
Reflex :	nt(i) a zóo kw ii bon a	nti ba zóo kw íi bon a

69. Future tense, subordinate affirmative

No OM :	a zóo bón a	ba zóo bón a
1 OM :	a zóo mu bón a	ba zóo mu bón a
2 OM :	a zóo ki mú bon er a	ba zóo ki mú bon er a
Reflex :	a zóo kw íí bon a	ba zóo kw íí bon a

A number of characteristics distinguish this tense from all the others we have looked at so far. We will discuss some of the tonal properties of these briefly and then return to the proposition that the future



marker -zóo- is a Layer 3 prefix, unlike the other tense markers. Notice, first, that in the subordinate form, there is a High tone on both the tense marker and on the stem; thus here the First High Wins principle is superficially violated. This is the result, as we have hinted, of the affixation of zóo at a level following the level at which the First High Wins principle applies. The High tone that appears on the first syllable of the stem is morphologically conditioned; both High and Low stems bear that High tone in the Future : We must therefore have a Layer 3 rule that assigns High tone to the stem in the Future, a rule that could be made part and parcel of the zóo prefixation procedure. It is worth noting that such a procedure would, however, violate the Bracket Erasure Convention of Kiparsky (1982) and others, since the rule would have to know where the stem begins.

70. [Co V — Condition Future tense
stem |
|
H ← Insert

In the main clause affirmative form, the High tones assigned by rule 70 and the underlying High tone of the marker -zóo- are lost, by another, later Level 3 rule, 71.

71. H → L / Main clause
Future

Let us return now to the placement of -zóo- in Layer 3. Our argument is, in essence, that the future is formed by attaching zóo not to the verbal, but to the infinitive; that this ipso facto distinguishes it from all other tense markers, which attach to verbals; and that it attaches, like the other Layer 3 prefix, to an existing word, both from a tonal and a lexical point of view.

If zóo attaches to infinitives, as we suggest, one would expect to find the infinitive marker ku- inside the future verb. The careful reader will have noted that we find precisely that when a reflexive object marker is present. In general the ku- prefix is indeed found inside the future verb whenever the verbal begins with a vowel, a circumstance that will arise either if a reflexive object marker is present, or if the verb stem begins with a vowel and there are no object markers. This second case is illustrated in 72.

72. a. stem : andik "write"
b. n zoo kw andik a "I will write"
c. n zoo mw andik ir a "I will write for him"

To put the matter the other way around, the infinitival prefix ku- is indeed present in the future verb, but is deleted when followed by a consonant in Layer 3, by rule 73.

73. ku → ø / zoo — C

The second indication that zoo is attached to an infinitive concerne the Final Vowel. We remarked in Section 2 above that in all other tenses, the Final Vowel may be either the perfective -ye or the neutral -a, semantics permitting. In the Future, we find only the Final Vowel -a, and never -ye; thus we have a-zoo-bon-a, but no *a-zoo-bon-ye. This follows immediately if the future is based on the infinitive, which always has the Final Vowel -a.

The third argument involves a small number of stems which have no infinitival form, such as Vzi 'know' (cf. *ku-uzi, *azooki, etc.) and -ri, one of the copulas, used, for example, in the most common continuous tense, as in 74.

74. ba ri — kó — ba ra rim — a
SM copula — complementizer — SM FOC cultivate — FV
lit., "they are that they cultivate"; i.e.,
"they are cultivating"

If there is no infinitive, we would predict that there is equally no future tense for such radicals. This is correct, and to form the future continuous, another copular verb is used, a radical (-b) which has an infinitive kuba).

The fourth argument is based on the fact that in addition to the simple infinitive as in 8, there is also a future infinitive of the form ku-zóo(ku)-suprastem, (e.g. ku-zóo-rima, 'to be going to cultivate'). No other tense or tense marker has such a special infinitive, and we would expect none such. The only grounds on which we would expect a future infinitive is precisely if -zóo- is a verb, in which case we would expect it to have an infinitive -- and these are precisely to so-called future infinitives.

We are thus led to the conclusion that -zóo- is radical that takes infinitival complements, and phonological evidence suggests as well that it is added on a later layer; (See Sadock 1984 for a discussion of autolexical syntax, a framework in which such cases can be insightfully dealt with; see also Lieber 1981 for a discussion of category/subcategorization frames for morphemes.) We may summarize the properties of -zóo-, and of the main clause negative nti- as well, as in 75.

75. a. [zoo [ ]]
V/N N
b. [nti [ ]]
V V

We see in 75a that -zoo-, like any "verbal" radical, can be marked either as a noun or a verb, and the choice of one feature or the other will determine which inflectional prefixes are attached to the stem. No such choice is available with nti-.

Following this prefixation, it must be possible for the "routing" of the morphology to go back up to the Layer Two morphology, up at least three rules' worth (as is shown in Table 1), since the subordinate Future form may have the subordinate negative marker -ta- as well as either the Subject Marker or the nominal ku- prefix. The precise nature of this non-linear routing in the morphology remains an open question, and one whose resolution we hope this inquiry will stimulate. We should observe that it does not seem possible to maintain the straightforward proposal that the output of Layer 3 might be able to loop backwards (using a term reminiscent of Mohanan's 1982 proposal) only by going all the way back through the Layer 2 morphology. We note that no object markers, for example, or second Final vowel, may be added on the second time through the Layer 2 morphology, and we also note that it is possible to propose (an otherwise plausible sounding) principle to block redundant double spelling-out of morphological features, since it is in fact possible to find verbal forms with two copies of the Subject Marker, each one having been spelled out on a pass through the Layer 2 morphology (this is found in the Present Continous negative in KiHunde, another Group J language).

VII. HISTORICAL- COMPARATIVE OBSERVATIONS

In this final section, we would like to discuss briefly three observations that bear on the analyses that we have developed in this paper. In each case, similarities and differences in nearby Bantu languages appear to shed some light on the phenomena that we have described in Kirundi.

7.1 Focus Markers. As we observed above, the Kirundi verb has a Focus Marker position immediately following in the Tense Marker. In the Present and Far Past tenses, this Focus Marker is -ra-; in the Recent Past, it is -a-. While it is not unusual for Bantu languages to have focus systems with parallel functions, it is unusual to have an overt Focus Marker inside the verb. Where did it come from, and why is there such allomorphy ?

If we look at the formal means by focus systems in other Bantu languages, we generally find two kinds (which can, to be sure, coexist). In Zulu and Tonga, for example, we find a verb focus/non-focus contrast expressed in the present tense by the presence or absence of the Tense Marker (ya and ia, respectively). In such languages as Tonga and LuGanda, we find a difference in focus expressed by changing

the type of phonological boundary present between the verb and its following object. In general, the stronger boundary (word-boundary) expresses focus on the verb, and phonological merger of the verb and its object expresses focus on a later constituent or on the VP as a whole.

If we further recognize that -ra- was originally the Present Tense marker, then we may infer that the focus/non-focus contrast was originally expressed in a pre-Kirundi stage segmentally only in the Present Tense (similar to Zulu, though in Zulu a contrast is expressed in the Past Tense by contrasting the Final Vowels -ile [verb focus] and -e [non-focus]. When the Present Tense marker was omitted, focus was off the verb, and -ra- was naturally reanalyzed as a Focus Marker. The extension of the use of -ra- as a Focus Marker to the Far Past, as we find today, was then only natural.

-ra- is not used, however, in the Recent Past, where a long vowel -aa- (verb focus) contrasts with a short vowel -a- (non-focus). This may well be a reflection of an earlier state of affairs. L. Hyman (personal communication) has pointed out that some of the odd accentual behavior of the Tonga Recent Past marker -a-, presently a short vowel, can receive a historical explanation if -a- were originally a long vowel with a High tone on the first mora; this oddity, crucially, disappears in the non-focus form, suggesting that at an earlier stage the focus/non-focus contrast affected vowel length of the Recent Past marker cf. Goldsmith 1984, in press a). This reconstructed phonetic structure in just what is found in Kirundi today.

7.2 Two Object Markers. Eastern Bantu languages vary considerably in their tolerance for multiple Object Markers. Some, like KiHunde, permit only animate Object Markers (while KiHunde even disalloms the third person plural Object Marker). In many other languages, such as Swahili, only one Object Marker is permitted; still others permit two, as in CiRuri; and finally, there are languages like a KiRundi where even more Object Markers are possible under conditions of extreme syntactic duress. Our knowledge of the evolution of these structures is not sufficien to determine which type most closely represents the earlier stage of the languages.

It is therefore interesting to note that in more than one language, special tone rules come into the picture when two or more Object Markers are present. In CiRuri, for example, all Object Markers are High in tone, and when two precede the verb stem, a special rule steps in and places a High tone on the Final Vowel (cf. Massamba 1982, 1984, Goldsmith 1982). But this is surely not the original state of the rule. There is in the language a later rule (restricted in the language today to the Present Continuous and the Subjunctive, it is true) that copies any High tone on the Final Vowel back to the first vowel of

the verb stem. It is highly likely that this rule is in part an inversion of the earlier situation, a stage at which a high tone was specially placed on the first vowel of the stem when two Object Markers preceded the stem, precisely as in Kirundi. This rule, in turn, can be understood as the result of the result of Meeussen's Rule shifting from a post-cyclic to a cyclic rule, in fact. When Meeussen's Rule operated in a left-to-right manner (as Odden 1981 suggests, for example, for Shona) on two High toned Object Markers in front of a High toned stem, it would leave behind a rhythmic High-Low-High result. When Meeussen's Rule became lexical (cf. Goldsmith in press b), it may have applied cyclically, and thus it would have applied outward from the radical, appearing to apply from right to left across the Object Markers. A rule inserting a high tone on a stem preceded by two Object Markers would then reinstate the pre-change surface facts.

7.3 Long vowels. The treatment of vowels in KiRundi is especially intricate, as we have seen. We have appealed to metrical structure in several places to account for this behavior. It is therefore of some interest to note that in Shi (Polak-Bynon 1975), another Group J language, certain similar effects can be found. When a High tone falls on the second mora of a long radical vowel (though in Shi this need not be in a subordinate or negative verb form), it is shifted to the following syllable, just as in KiRundi. In Shi, however, the conditioning factor is different; what must occur for this shift to apply is not a metrical condition, but rather a high toned Object marker or Tense Marker immediately before the stem.

If the Shi system and the KiRundi rule are indeed descendents of the same principle, then it is likely that the Shi formulation is more conservative and that it may enable us to gain some insight into the origin of the rule. In KiRundi, we have suggested that the shift of the High vowel from the second mora of a long vowel occurs under conditions of metrical weakness, given a metrical structure on the suprastem. In Shi, the "weak position" of the stem is tonally determined; the stem vowel is weak, and thus incapable of bearing a Rising tone, if and only if it is preceded by a High tone. This is highly reminiscent of the situation in early Germanic, as described by Hollifield 1983 : "In Slevers' Law conditioning, the second syllable in appears to count only as a single mora (lambic shortening), although it preserves the opposition of long and short vowels."

In conclusion, we hope that further comparative work of the type in this section will aid us in arriving at a deeper understanding of the modern-day grammar of KiRundi and the other Bantu languages.

TONS ET ALLOTONS A PROPOS DU NOMINAL RWANDAIS

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Le kinyarwanda et le kirundi sont des langues dans lesquelles seuls les éléments vocaliques sont susceptibles de porter des unités suprasegmentales.

Ces éléments vocaliques sont de deux types, brefs ou longs, ainsi que l'attestent les exemples suivants :

(1) guhaga "gonfler" / guhaaga "être rassasié"
gusiba "rayer" / gusiiba "s'absenter"
gusura "péter" / gusuura "rendre visite"
kongera "recommencer" / kongeera "augmenter"
gutota "être mouillé" / gutoota "harceler"

Les éléments vocaliques longs se décomposent en deux éléments. De nature homophone, ils sont analysés comme une succession de deux unités brèves appelées mores car chacune d'entre elles peut être support de ton ainsi que le montrent les exemples suivants :

(2) gùhíigà "chasser" (haut-bas) ; ùmùsàámbì "grue couronnée"(bas-haut)

Deux mores successives appartiennent toujours à la même syllabe : -/v + v/- et non -/v/- + -/v/- ; soit un phonème (/v :/) décomposé en deux mores (v+v) appartenant à une même syllabe (- -) et non deux phonèmes appartenant à deux syllabes différentes.

La segmentation syllabique obéit à la règle suivante :

(3) Tracer une frontière syllabique après chaque centre de syllabe que celui-ci soit géminé ou non.

Le mot "natte" se segmentera de la façon suivante :
"ù-mù-sàà-mbì" (ùmùsàámbì)[1]

(1) L'instruction ministérielle du gouvernement rwandais du 2 juillet 1985 (n° 13. 02/ 03. 02/ 003) portant sur la fixation de l'orthographe officielle du kinyarwanda consacre deux usages, l'un pour l'orthographe ordinaire qui n'utilise ni la notation des tons ni celle des longueurs vocaliques (article 2) et l'autre pour l'usage scientifique : "Article 24 : Dans l'usage scientifique (dans l'enseignement et la recherche) la tonalité est représentée par l'accent circonflexe (ˆ) pour le ton haut et par l'absence de signe sur le ton bas. La quantité vocalique est représentée par une seule voyelle sur les syllabes brèves et par le redoublement de la voyelle sur les syllabes longues." Nous conservons ces conventions que nous avons toujours utilisées à l'exception du ton haut que nous notons par l'accent aigu (´) en accord avec les normes internationales.