

## Chapter 2

# Tone and Accent in Tonga

John Goldsmith

### 1. INTRODUCTION

The tonal system of Tonga, a major language of Zambia, has been discussed in a series of papers of especial interest to Bantu scholars and phonologists more generally.<sup>1</sup> I hope to continue the discussion in this chapter, and illustrate how an accentual autosegmental theory can illuminate the intricacies of the Tonga verbal system. I have drawn heavily on material published by Hazel Carter (1962, 1971, 1972), and found inspiration in A.E. Meeussen's analysis of the morphotonology of Tonga (1963). I have also profited from discussions with Jerome Hachipola, a linguist and speaker of Tonga at Indiana University.

I shall generally assume an autosegmental theory of the form described in Chapter 1, and try to indicate ways in which the straightforward tonology of Tonga can best be treated autosegmentally, and, more importantly, show how the more complex accentual system can best be understood as the result of a small number of accentual, non-tonal rules which precede the Underlying Tone Level. At the Underlying Tone Level, a High-Low (HL) melody is assigned, with one copy per derived accent (i.e., one for each accent present at the Underlying Tone Level). These melodies are linked to the vowels of the word by a rule that associates the Low tone of the melody - the accented tone, as we shall call it - to the accented vowel in question.

In Section 2 below, we shall consider the nominal system, in which the basic HL melody is most directly manifested. Section 3, the longest and central part of this paper, addresses the verbal system and its accentual rules. Finally, in Section 4 we shall consider the diachronic antecedents to the present-day accentual system found in Tonga.

### 2. THE NOMINAL SYSTEM

#### 2.1 Introduction

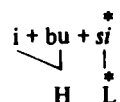
We shall first consider the tonal patterns on Tonga nominals in isolation,

generally with the class prefix, which will be seen to be itself accentless, and thus tonally inert.

Guthrie notes that Tonga has three tonal classes in bisyllabic nominal stems, and not the four that might be expected of a two-tone language, and which were found in Proto-Bantu (see Section 4 below on the historical development). Carter (1962:13) notes that there are similarly three tonal classes of monosyllabic stems. Typical examples cited by Carter of the first class, Class A, include those in (1) and (2), where the stem is italicized for ease of identification.

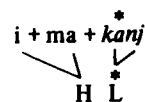
(1) Class A monosyllabic stems

- í + bú + *sí* 'smoke' (noun class 14)  
 í + kú + *pà* 'to give' (noun class 15)



(2) Class A bisyllabic stems

- í + má + *kàni* 'news, affairs' (cl. 6)  
 í + mó + *òmbè* 'edge' (cl. 3)

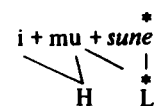


All nouns in class A fall into the autosegmental patterns of (1) or (2), with the L of a HL melody associated with the final syllable of the stem.

Class B2 is distinct from Class A in that all forms in Class B2 may be represented as in (3). The same HL melody is present, but the L toneme is not associated with the stem-initial vowel.

(3) Class B2

- í + mú + *súnè* 'ox' (cl. 1)  
 í + mó + *ómbè* 'calf' (cl. 1)



Carter identifies the crucial property here as the presence of H-tone on the stem-initial syllable, and includes as case B1 certain monosyllabic stems, as in (4), which may display either of two tone patterns. We shall assume that

these are essentially Class A stems; their basic tone is thus that given first in (4). They must, however, be irregularly marked to undergo a final L-deletion rule.

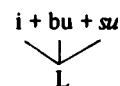
(4) Class B1

- í + má + *lì* or í + má + *lí* 'money' (cl. 6)  
 í + kú + *lè* or í + kú + *lé* 'far away' (cl. 17)

The third class is composed of nouns with all syllables Low in tone, as in (5). These we shall analyze as being unaccented.

(5) Class C

- ì + bù + *sù* 'meal, flour' (cl. 14)  
 ì + kù + *tì* + à 'to pour' (cl. 15)  
 ì + mà + *tòngò* 'ruins' (cl. 6)  
 ì + cò + *òlwè* 'good fortune' (cl. 7)



We shall return to these below.

In addition, there are polysyllabic stems of the sort illustrated in (6), with two Low-toned syllables interrupted by a High. We shall call these Class D.

(6) Class D

- àcísyà 'uncle' (cl. 1a)  
 | | |  
 L H L  
 tòmbélà 'lizard' (cl. 1a)  
 | | |  
 L H L

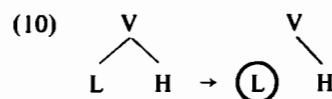
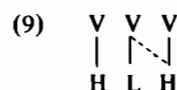
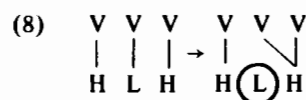
When a prefix is attached, we find the tone pattern in (7).

- (7) a. bá + <sup>1</sup>á cí syà      b. bá + <sup>1</sup>tóm bé là  
          |      |      |      |      |      |  
          H (L) H      L      H (L) H      L

That is, the addition of the (otherwise inert) prefix rather strikingly alters the surface tone pattern in this case, putting the first and second syllables on the same tone (<sup>1</sup>á cí), while in the singular they had been on different tones (à cí). Clearly, however, the "slip-tone" or downstep observed in (7)

and indicated by “!” is the effect of the L tone originally on *a*, but now unassociated. Tonga, we observe, is a language with downdrift; two High tones separated by a Low tone will be realized with the second High a bit lower in pitch than the first. The Low tone, we now see, need not be associated to effect this lowering.<sup>2</sup>

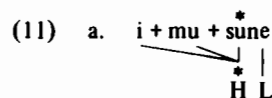
Thus we may hypothesize a rule as in (8). In fact, we shall see below that the two effects of (8) – the spreading leftward of the H tone following HL, and the disassociation of the L in a Rising pattern – should be separated, as in (9), (10).



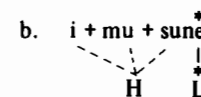
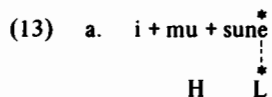
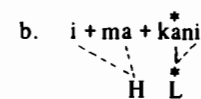
The question naturally arises as to the source of the four tonemes in (7a) and (7b). We shall see immediately below, when we consider accentless stems, that such prefixes as the *ba* in (7) have themselves no inherent tone, but rather accept the closest tone provided by the stem (see (5) above). The natural conclusion to draw, then, is that the entire sequence *HLHL* comes from the stems *acisya/tombela*.

Summarizing up to this point, we have found stems (Classes A and B) with a HL melody, and those (Class D) with a HLHL melody. In general, before the application of rules of tone-simplification, all words in Tonga display tone melodies of the form (HL)ḡ. Tonga thus has what we called in Chapter 1 the *factorization property*, and tone-assignment may be viewed as an accentual process. We need only specify the association of a fixed tone in the tone melody to a lexically determined vowel in a given word.

But which tone of the tone melody is accented? That is, which tone of the HL sequence is associated with the accented vowel? The hypothesis that the H is accented might work for Class B words, where we might say that a word like *imá + sùnè* was accented on the first vowel of the stem, as in (11).

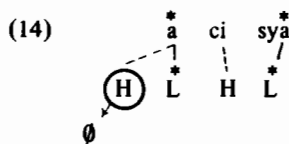


But this hypothesis gives way to the hypothesis that the basic melody is HL (that is, that the Low tone is primarily associated with the accented vowel) when we consider Class A words, which can be naturally treated as initial-accent forms, as in (12). Class B forms are then analyzed not as in (11) but as in (13), with accent on a non-initial vowel.

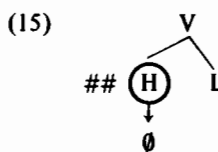


On this HL analysis, then, we find that the accent can fall on any vowel, and there can be two accents in a single morpheme, a perhaps surprising result. It should also be observed that the accent has no other local phonetic effects. In a recent phonetic study, Luce (1981) showed that there was no influence on length caused by the accent in Tonga. There is also no perceptible loudness effect of the tonal accent.

In Class D, we find the possibility of the accent falling not only stem-initially, but also word-initially, as in (14).



By the Well-formedness Condition, the initial H will be associated with the first vowel of the word, even in a case like (14), thus producing in effect a Falling tone. The surface L tone is the effect of the tone-simplification rule (15), which simplifies HL to L in absolute word-initial position.



Finally, we must note that unaccented words must be assigned a Low melody, by what we might call a recessive tone rule. It is possible that this is achieved accentually, as Bill Poser has pointed out to me. If Tonga contains a rule that places an accent on the first syllable of any word that otherwise contains no accent, then this will provide the Low melody, through the effects of rule (15).

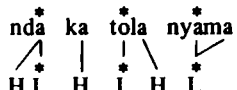
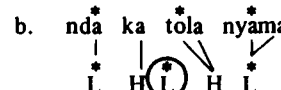
## 2.2 Weak/Strong Forms

An important role is played in Carter's grammar by the distinction between the *strong* and *weak* tonal patterns on nominals and verbs. Consider the contrast in (16), involving the Prehodiernal Past tense with an accented verb stem (see section 3.4).

- (16) a. ndà-ká-tòlà nyàmà. 'I took meat.'  
b. ndà-ká-tólá nyàmà. 'I took meat.'

As Carter says, (16a) "implies, e.g., 'I didn't bring it'," (16b) "'I took nothing else'". Carter notes, "the strong series require no support and may stand at the end of an utterance; the weak series require the support of a following item, usually nominal or particle."

As the verb in (16) suggests, the shift from the (more basic) strong form to the weak form includes a raising of the entire sequence of final Low tones, though this sequence of now-High-toned vowels is separated from a preceding High by a downstep (the raised exclamation point of (16b)). Given rules (9) and (10), we may well conclude that (16b) is the surface realization of a structure as in (17) in which the verb and its object have formed a single phonological word with an accent peculiar to this construction placed on the first syllable of the object.

- (17) a.  b. 

On this account, which we shall adopt, the weak series is formed by the application of a rule such as (18).<sup>3</sup>

- (18) [ ]<sub>v</sub> ## [ CV ... ] → [ ]<sub>v</sub> + [ CV ... ]

This analysis predicts that if the second word in a weak construction has itself an accent on a syllable other than the first syllable, then, when placed in this construction, it will appear to have two accents. This is correct, as we see in (19).

- (19) a. músénè 'ox'  
b. ndà ká! tò lá! mú sé nè 'I took an ox'  
c.  →  
d.  = (b)

The connection between an induced initial-accent on the element immediately following a weak form is thus easily established tonally. That the two form a single phonological word is supported by such observations as the following, from Carter (1962:15): "Certain particles such as *biyó* or (!)*biyo* 'only' and the IN [independent nominal] *nzi*? 'what?', usually written as an enclitic, are always preceded by a weak pattern."

If the following word already has initial accent, the weak and the strong forms may be indistinguishable, as in Carter's example (1962:10) *twalyá zimbwali* 'we ate sweet potatoes'.

## 2.3 Accented Nominal Prefixes

Unlike the usual class prefixes, which are unaccented, there are two kinds of accented nominal prefixes. Carter presents the following contrasts with the prefixes *a-* 'and, by, with' and *si-* 'one who Vs'.

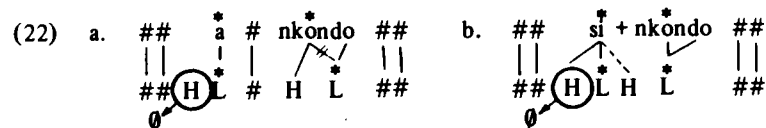
- (20)
- | Stem type          | Word        | 'and a -' | V-er      |             |
|--------------------|-------------|-----------|-----------|-------------|
| accentless         | (i) lwèèndò | àlwèèndò  | silwèèndò | 'traveller' |
| initial accent     | (i) nkòndò  | ànkòndò   | sìnkòndò  | 'enemy'     |
| non-initial accent | (i) kùkòlwa | àkùkòlwa  | sìkùkòlwa | 'drunkard'  |

We observe that the prefixes *a-* and *si-* are consistently Low in tone when they precede an accentless word, unsurprisingly, or when they precede a stem with accent at least one syllable away, as in the final row of (20). This is illustrated in (21).

- (21) a.  b. 

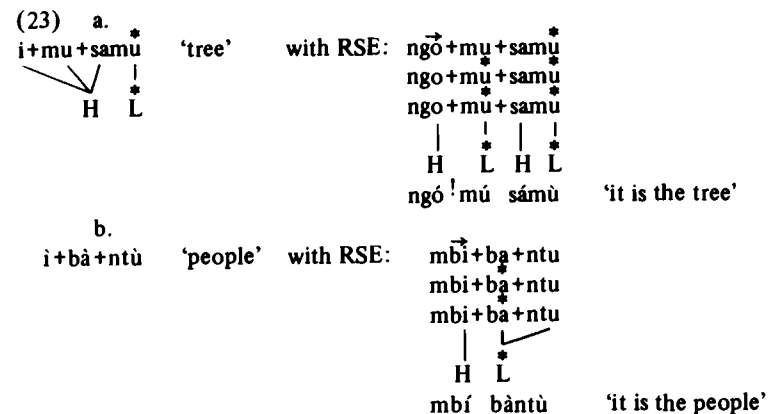
However, when the prefix accent and the stem accent abut, the two

prefixes respond in different ways. *a*- throws back the High tone from the stem, and since that H is not word-initial, it does not delete, but is simplified by a rule discussed below. Both cases in (22) illustrate the unusual situation in which two consecutive accents appear at the Underlying Tone Level.



#### 2.4 Post-accenting Prefixes

The view that Tonga morphemes may have accentual properties, but not tonal properties *per se*, is confirmed by the presence of nominal prefixes that fall neither into the unaccented nor the accented class. The Restricted Stabilizing Element (RSE) (Carter 1962:21) is, rather, a post-accenting element, symbolized here as  $\checkmark$ . This post-accent is present as part of the underlying morphological representation. The phonological make-up of the RSE depends on the class of the nominal, but it begins with a nasal and is typically one syllable in length. The post-accent immediately shifts to the following syllable, due to its inherent properties, and the tonal pattern derived is provided at the Underlying Tone Level by the regular processes of the language. Thus words with accent on the second syllable (Class B) undergo a derivation as in (23a), and unaccented words as in (23b). Clear examples of Class A words are not available.



### 3. THE VERBAL SYSTEM

#### 3.1 Introduction

A.E. Meeussen's analysis of the tonal system of Tonga begins with a discussion of the tone found in the present perfect indicative, as in (24), and the present indicative, as in (25).

#### (24) Present Perfect

a. Verb stems of type *-lang-* 'look at'

Subject	No Object	Type 1 Obj Prefix (sg.)	Type 2 Obj Prefix (pl.)
1 sg.	ndi-lí-láng-ide	ndi-lí-mú-láng-ide	ndi-li-ba-láng-ide
3 pl.	ba-lí-láng-ide	ba-lí-mú-láng-ide	ba-lí-bá-láng-ide

b. Verb stems of type *-bon-* 'see'

Subject	No Object	Type 1 Obj Prefix (sg.)	Type 2 Obj Prefix (pl.)
1 sg.	ndi-li-bon-ide	ndi-li-mu-bon-ide	ndi-li-ba-bon-ide
3 pl.	ba-lí-bon-ide	ba-lí-mú-bon-ide	ba-lí-ba-bon-ide

#### (25) Present Indicative

a. *-lang-*

Subject	No Object	Type 1 Obj Prefix (sg.)	Type 2 Obj Prefix (pl.)
1 sg.	ndi-la-lang-a	ndi-la-mu-lang-a	ndi-la-ba-lang-a
3 pl.	ba-la-lang-a	ba-la-mu-lang-a	ba-lá-ba-lang-a

b. *-bon-*

Subject	No Object	Type 1 Obj Prefix (sg.)	Type 2 Obj Prefix (pl.)
1 sg.	ndi-la-bon-a	ndi-la-mu-bon-a	ndi-la-ba-bon-a
3 pl.	ba-lá-bon-a	ba-lá-mú-bon-a	ba-lá-ba-bon-a

Meeussen observes that each of the three major classes of morphemes - subject prefixes, object prefixes, and verb stems - can be subdivided into two classes, those which are always Low in tone (*ba, bon, etc.*) and those which may be either High or Low (*lang, mu, la, ndi, etc.*). In a singularly clever move, he suggests that we underline those morphemes that fall into the class that is everywhere Low. (25) can then be rewritten as (26). (Underlined morphemes are here italicized.)

(26)

ndi la lang a	ndi la mu lang a	ndi la <i>ba</i> lang a
<i>ba</i> la lang a	<i>ba</i> la mu lang a	<i>ba</i> lá <i>ba</i> lang a
ndi la <i>bon</i> a	ndi la mu <i>bon</i> a	ndi la <i>ba</i> <i>bon</i> a
<i>ba</i> lá <i>bon</i> a	<i>ba</i> lá mú <i>bon</i> a	<i>ba</i> lá <i>ba</i> <i>bon</i> a

As Meeussen notes, "the rule is: elements of the first group [those not underlined] are high if and only if they occur between elements of the second group [those underlined]." While this procedure works, the algorithm is difficult to reinterpret from a generative point of view, as

McCawley (1973) points out. Taking the italicized elements to be either basically High or Low toned, the rule in question is curiously and peculiarly anti-assimilatory.

Meeussen himself felt no misgivings. He appended his algorithm with the caveat, "It is necessary to realize that this rule, no more than the grouping of sub-types into the categories "unmarked" and "marked", is neither true nor false; it can be more or less applicable, and this will have to be tested by examining other tenses."

Our own view is somewhat different. The theoretical framework being used here does force certain moves in the analysis, and forbids others; degrees of variation of the application of rules are not without limit. Meeussen's principle must surely be an artifact of something rather different.

Meeussen's division of prefixes and stems into two tonal classes is clearly both correct and necessary. In fact, it corresponds precisely to the notion of accented and unaccented vowel as developed in Section 2 above for nominals. That is, all of the morphemes that appear in such verbal forms as (24) and (25) also appear in nominal forms such as infinitives and free subject relatives. We find, perhaps not surprisingly, that the morphemes that Meeussen called "determinant" or "underlined" are, in our terms, precisely the accented morphemes. The rest are unaccented, and receive their tone by the Well-formedness Condition. This correspondence can be seen in such examples as (27).

- (27) a. i kú bôn a 'to see' [í kú bôn a]  
 b. i kú mú bôn a 'to see him' [í kú mú bôn a]  
 c. i kú bā bôn a 'to see them' [í kú bā bôn a]  
 d. i kú lang a 'to look at' [í kú lang a]

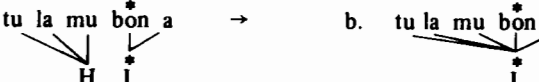
The principles developed in Section 2 lead to the correct nominal tone patterns in (27); the question arises, however, as to how to derive the verbal patterns of (25), for example, for which Meeussen's principle works.

The answer is clear. The verbal patterns in (24) and (25) differ from the corresponding nominal patterns in that a sequence of expected initial High syllables is Low (except in the first two forms in (24a), forms to which we return below). Forms with only a single accent do not present surface High tones. From an autosegmental perspective, we conclude that there is a rule as in (28) that deletes an initial H tone on the autosegmental tier, thus leaving the remaining L tone to associate leftward by the Well-formedness Condition, as in (29).



- (28)  $H \rightarrow \emptyset / [\text{verb} \# \text{---}]$

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- (29) a. tu la mu bôn a → b. tu la mu bôn a  


This analysis so far accounts for the nonoccurrence of High tones in verbs with only one accented syllable (holding aside the one exceptional case already noted); it also predicts that if a verb has two accents, as in (30), H tones will occur in between the accents, as Meeussen's algorithm notes, and that if the left-most of the two accents is not on the first syllable, the syllables to the left will be Low, as in (31). We shall see below that this is true.

- (30) a. bā la bôn a → b. bā la bôn a  
  
 (31) a. CV CV CV CV CV → b. CV CV CV CV CV  


It is worth emphasizing that on this autosegmental account, there is no special realization rule for verbal forms, as has been suggested in earlier analyses. We have the same basic melody, HL, in all cases, though there is a strictly tonological rule that operates on verbal forms. Those forms based on a verb root, but which are syntactically nominal, do not undergo H-deletion (28).


To pursue this point a moment, we might well imagine a system similar to Tonga's in which verbs and nouns were assigned accent in similar, or identical, ways, but in which the basic tone melody for nouns was HL and that for verbs was HL. In such a system, we would find a rather striking difference between nouns and verbs, as in Tonga, but no convergence of the underlying tone melodies. Tonga's use of a *single* basic tone melody across categories, along with its tolerance of a tonal rule sensitive to lexical category, suggests (32).

- (32) Conjecture: If an accentual language has only one basic tone melody for each lexical category, the respective melodies must be identical.

There is a second rule operative in the verbal data that we have considered so far. This rule is central to Tonga accentuation, and we shall refer to it as "Meeussen's Rule", for as Meeussen noted, "in a sequence of determinants [our accents], only the first is treated as a determinant". We shall

formalize this as in (33). Thus in a form like *bā la bā bon a*, the accent on *-bon-* is deleted by an accentual rule before the Underlying Tone Level, and the HL melodies are assigned as in (34a), not (34b).

(33)  $\bar{V} \rightarrow \bar{V} / \bar{V} C_0 \text{ —}$

(34) a. *bā la bā bon a*      b. *bā la bā bon a*  


### 3.2 Present Indicative

Consider the following data from Carter, consisting of forms in the Present Indicative. These verbs are all of the form:

Subject markers	Tense marker	(object markers)	Verb stem	Final vowel
ndi 1 sg.	la	ndi 1 sg.	bon 'see'	a
u 2,3 sg.		ku 2 sg.	lang 'look at'	
		mu 3 sg.	etc.	
tu 1 pl.		tu 1 pl.		
mu 2 pl.		mu 2 pl.		
ba 3 pl.		ba 3 pl.		

#### (35) Present Indicative

##### a. Accented stems

No Object Marker	Unaccented Object Marker	Accented Object Marker
tu la bon a	tu la ku bon a	tu la ba bon a
tu la silik a	tu la ku silik a	tu la ba silik a
tu la swiilil a	tu la ku swiilil a	tu la ba swiilil a
ba lá bon a	ba lá ndí bon a	ba lá ba bon a
ba lá silik a	ba lá ndí silik a	ba lá ba silik a
ba lá swiilil a	ba lá ndí swiilil a	ba lá ba swiilil a

##### b. Unaccented stems

tu la lang a	tu la ku lang a	tu la ba lang a
tu la tobel a	tu la ku tobel a	tu la ba tobel a
tu la yandaul a	tu la ku yandaul a	tu la ba yandaul a
ba la lang a	ba la ku lang a	ba lá ba lang a
ba la tobel a	ba la ku tobel a	ba lá ba tobel a
ba la yandaul a	ba la ku yandaul a	ba lá ba yandaul a

By assigning underlying accent to 3rd person subjects and to plural object markers, as well as to stems such as *bon*, we find accent patterns as in (36). The circled accents represent accents deleted by Meeussen's Rule (33).

#### (36) Present Indicative

tu la <sup>*</sup> bon a	tu la ku <sup>*</sup> bon a	tu la <sup>*</sup> ba <sup>*</sup> bon a
tu la <sup>*</sup> silik a	tu la ku <sup>*</sup> silik a	tu la <sup>*</sup> ba <sup>*</sup> silik a
tu la <sup>*</sup> swiilil a	tu la ku <sup>*</sup> swiilil a	tu la <sup>*</sup> ba <sup>*</sup> swiilil a
<sup>*</sup> ba la <sup>*</sup> bon a	<sup>*</sup> ba la ndi <sup>*</sup> bon a	<sup>*</sup> ba la <sup>*</sup> ba <sup>*</sup> bon a
<sup>*</sup> ba la <sup>*</sup> silik a	<sup>*</sup> ba la ndi <sup>*</sup> silik a	<sup>*</sup> ba la <sup>*</sup> ba <sup>*</sup> silik a
<sup>*</sup> ba la <sup>*</sup> swiilil a	<sup>*</sup> ba la ndi <sup>*</sup> swiilil a	<sup>*</sup> ba la <sup>*</sup> ba <sup>*</sup> swiilil a
tu la lang a	tu la ku lang a	tu la <sup>*</sup> ba lang a
tu la tobel a	tu la ku tobel a	tu la <sup>*</sup> ba tobel a
tu la yandaul a	tu la ku yandaul a	tu la <sup>*</sup> ba yandaul a
<sup>*</sup> ba la lang a	<sup>*</sup> ba la ku lang a	<sup>*</sup> ba la <sup>*</sup> ba lang a
<sup>*</sup> ba la tobel a	<sup>*</sup> ba la ku tobel a	<sup>*</sup> ba la <sup>*</sup> ba tobel a
<sup>*</sup> ba la yandaul a	<sup>*</sup> ba la ku yandaul a	<sup>*</sup> ba la <sup>*</sup> ba yandaul a

These patterns extend the data given in (25) above.

If we look at Hachipola's Central dialect, we find a slightly different, and more interesting pattern, as in (37).

#### (37) a. Subject *u* (3rd singular)

u lá ndí bon a	'he sees me'	u lá tú bon a	'he sees us'
u lá kú bon a	'he sees you'	u lá mu bon a	'he sees you'
u lá mú bon a	'he sees him'	u lá bá bon a	'he sees them'

u la ndi lang a	'he looks at me'
u la ku lang a	etc.
u la mu lang a	

u lá tú lang a
u lá mu lang a
u lá bá lang a

#### b. Subject *ndi* (1st singular)

ndi la ku bon a	'I see you'	ndi la mu bon a	'I see you-pl.'
ndi la mu bon a	'I see him'	ndi la ba bon a	'I see them'

ndi la ku lang a	'I look at you'	ndi la mu lang a	
ndi la mu lang a	etc.		

The tones in (37a) correspond to the accents indicated in (38).

- (38)
- |        |    |     |        |    |   |
|--------|----|-----|--------|----|---|
| *<br>u | la | ndi | *<br>b | on | a |
| *<br>u | la | ku  | *<br>b | on | a |
| *<br>u | la | mu  | *<br>b | on | a |
- 
- |        |    |    |        |    |   |
|--------|----|----|--------|----|---|
| *<br>u | la | tu | *<br>b | on | a |
| *<br>u | la | mū | *<br>b | on | a |
| *<br>u | la | ba | *<br>b | on | a |
- 
- |        |    |     |      |   |
|--------|----|-----|------|---|
| *<br>u | la | ndi | lang | a |
| *<br>u | la | ku  | lang | a |
| *<br>u | la | mu  | lang | a |
- 
- |        |    |    |        |     |   |
|--------|----|----|--------|-----|---|
| *<br>u | la | tu | *<br>l | ang | a |
| *<br>u | la | mū | *<br>l | ang | a |
| *<br>u | la | ba | *<br>l | ang | a |

We observe in the boxed data that an underlyingly accentless stem receives an accent when preceded by the object markers *-tu-* and *-ba-*. That is, in this dialect they are post-accenting; we summarize these forms in (39a). In (39b), we have indicated the forms from Carter's description of a closely related dialect.

- (39)
- |    |     |    |  |    |     |    |
|----|-----|----|--|----|-----|----|
| a. | ndi | tū |  | b. | ndi | tū |
|    | ku  | mū |  |    | ku  | mū |
|    | mu  | bā |  |    | mu  | bā |

Let us postulate that the theory of accent contain within it post- and pre-accenting elements, indicated by  $\vec{v}$  and  $\bar{v}$ , respectively. These elements, formally parallel to simple accents, will be everywhere subject to the convention that if  $\bar{v}$  is followed by a syllable, it automatically and immediately shifts to the right one syllable and becomes a \*. Similarly,  $\vec{v}$  preceded by a syllable immediately shifts leftward and becomes a \*.

Tonga is, we may note, undergoing a shift in the lexical marking of the plural object markers from accented (which is etymologically expected) to post-accenting, an interesting historical change. The resistance of the 2nd plural *mu* to this change is perhaps related to its near homophony to the 3rd singular object marker; the resistance to the change maximizes their surface distinctness.

A form like *u la tū lang a* is derived as in (40).

- (40)
- |        |    |    |      |   |                        |
|--------|----|----|------|---|------------------------|
| *<br>u | la | tū | lang | a | UR                     |
| *<br>u | la | tu | lang | a | by convention          |
| *<br>u | la | tu | lang | a | Tone Melody assignment |
- 
- 

### 3.3 Recent Past

Let us turn now to the tone of the Recent Past tense (Carter's Tense 15 and 16). This tense is characterized by the tense marker *-a-*, appearing

immediately after the subject marker, parallel to the *-la-* in the Present Indicative. First we shall consider the tone pattern of this tense in the *weak* construction, that is, with a cliticized element following (a question word, for example). Rule (18) applies here, cliticizing the complement and assigning a \* to the first syllable of the following object.

#### (41) Recent Past (Weak)

	No object	*-less object	*-ed object
'I'	ndabóná!	ndakúbóná!	ndabábóná!
	ndasilíká!	ndakúsíliká!	ndabásíliká!
	ndaswíililá!	ndakúswíililá!	ndabáswíililá!
'they'	bábóná!	bákúbóná!	bábábóná!
	básíliká!	bákúsíliká!	bábásíliká!
	báswíililá!	bákúswíililá!	bábáswíililá!
'I'	ndalángá!	ndakúlángá!	ndabálángá!
	ndatóbélá!	ndakútóbélá!	ndabátóbélá!
	ndayándáulá!	ndakúyándáulá!	ndabayándáulá!
'they'	bálángá!	bákúlángá!	bábálángá!
	bátóbélá!	bákútóbélá!	bábátóbélá!
	báyándáulá!	bákúyándáulá!	bábáyándáulá!

The forms in (41) reflect an accentual pattern as in (42); as noted above, there is an accent (\*) on the first syllable of the following object in each case due to rule (18). It is this following accent which gives rise to the downstep noted at the end of each word in (41).

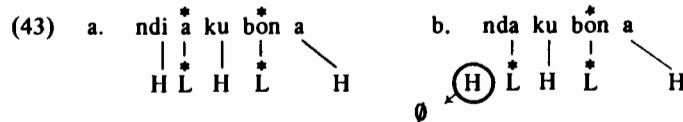
#### (42) Recent Past (Weak)

ndi <sup>*</sup> <sub>a</sub> bon <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ku bon <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ba bon <sup>*</sup> <sub>a</sub>
ndi <sup>*</sup> <sub>a</sub> silik <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ku silik <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ba silik <sup>*</sup> <sub>a</sub>
ndi <sup>*</sup> <sub>a</sub> swiilil <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ku swiilil <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ba swiilil <sup>*</sup> <sub>a</sub>
ba <sup>*</sup> <sub>a</sub> bon <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ku bon <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ba bon <sup>*</sup> <sub>a</sub>
ba <sup>*</sup> <sub>a</sub> silik <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ku silik <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ba silik <sup>*</sup> <sub>a</sub>
ba <sup>*</sup> <sub>a</sub> swiilil <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ku swiilil <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ba swiilil <sup>*</sup> <sub>a</sub>
ndi <sup>*</sup> <sub>a</sub> lang <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ku lang <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ba lang <sup>*</sup> <sub>a</sub>
ndi <sup>*</sup> <sub>a</sub> tobel <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ku tobel <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ba tobel <sup>*</sup> <sub>a</sub>
ndi <sup>*</sup> <sub>a</sub> yandaul <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ku yandaul <sup>*</sup> <sub>a</sub>	ndi <sup>*</sup> <sub>a</sub> ba yandaul <sup>*</sup> <sub>a</sub>
ba <sup>*</sup> <sub>a</sub> lang <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ku lang <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ba lang <sup>*</sup> <sub>a</sub>
ba <sup>*</sup> <sub>a</sub> tobel <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ku tobel <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ba tobel <sup>*</sup> <sub>a</sub>
ba <sup>*</sup> <sub>a</sub> yandaul <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ku yandaul <sup>*</sup> <sub>a</sub>	ba <sup>*</sup> <sub>a</sub> ba yandaul <sup>*</sup> <sub>a</sub>



Accents deleted by rule are indicated, again, by a circled star. As we see in (42), all sequences of consecutive \*s reduce to the leftmost accent. Meeussen's rule (33) gives the right result in each case, whether applying simultaneously, or iterating from right to left.

The relation between the derived accentual patterns in (42) and the surface patterns in (41) is straightforward, given the principles discussed up to now, except in the case of the merger of syllables containing the subject markers *ndi-*, *ba-*, and the tense marker *-a-*. Note that the final H in the following examples comes from the accent on the initial vowel of the following object by (18).



The underlying accent pattern is thus simple: the tense marker *-a-* is always accented; third person subjects are accented, first and second person are not; plural (personal) objects are accented, singular are not; and accents are deleted in accordance with Meeussen's Rule before the tone melodies are assigned.

The situation is considerably more complex, however, when we turn to the strong form of the Recent Past, the form in which the verb is not cliticized to the following object. The tone patterns are given in (44).

(44) Recent Past (Strong)

a. Accented Stems

No object	*-less object	*-ed object
ndabóna	ndakúbona	ndabábona
ndasílíka	ndakúsílíka	ndabásílíka
ndaswíílíla	ndakúswíílíla	ndabáswíílíla
wábona	wándíbona	wábabona
wásílíka	wándísílíka	wábasílíka
wáswíílíla	wándíswíílíla	wábaswíílíla

b. Unaccented Stems

ndalanga	ndakulanga	ndabálanga
ndatobela	ndakutobela	ndabátobela
ndayandaula	ndakuyandaula	ndabáyandaula
walanga	wandilanga	wábalanga
watobela	wanditobela	wábatobela
wayandaula	wandiyandaula	wábayandaula

Given the principles discussed so far, these surface forms apparently reflect an accentual pattern as in (45).

(45) Recent Past (Strong)

A $\begin{array}{c} \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{bon}} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{silik}} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{swíilil}} \text{ } \overset{*}{\text{a}} \end{array}$	$\begin{array}{c} \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{ku} \text{ } \overset{*}{\text{bon}} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{ku} \text{ } \overset{*}{\text{silik}} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{ku} \text{ } \text{swíilil} \text{ } \overset{*}{\text{a}} \end{array}$	B $\begin{array}{c} \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \overset{*}{\text{bon}} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \overset{*}{\text{silik}} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{swíilil} \text{ } \overset{*}{\text{a}} \end{array}$
C $\begin{array}{c} \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{bon}} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{silik}} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{swíilil} \text{ } \overset{*}{\text{a}} \end{array}$	$\begin{array}{c} \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{ndi} \text{ } \overset{*}{\text{bon}} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{ndi} \text{ } \overset{*}{\text{silik}} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{ndi} \text{ } \text{swíilil} \text{ } \overset{*}{\text{a}} \end{array}$	D $\begin{array}{c} \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \overset{*}{\text{bon}} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \overset{*}{\text{silik}} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{swíilil} \text{ } \overset{*}{\text{a}} \end{array}$
$\begin{array}{c} \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{lang} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{tobel} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{yandaul} \text{ } \overset{*}{\text{a}} \end{array}$	$\begin{array}{c} \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{ku} \text{ } \text{lang} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{ku} \text{ } \text{tobel} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \text{ku} \text{ } \text{yandaul} \text{ } \overset{*}{\text{a}} \end{array}$	E $\begin{array}{c} \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{lang} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{tobel} \text{ } \overset{*}{\text{a}} \\ \text{ndi} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{yandaul} \text{ } \overset{*}{\text{a}} \end{array}$
$\begin{array}{c} \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{lang} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{tobel} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{yandaul} \text{ } \overset{*}{\text{a}} \end{array}$	$\begin{array}{c} \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{ndi} \text{ } \text{lang} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{ndi} \text{ } \text{tobel} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \text{ndi} \text{ } \text{yandaul} \text{ } \overset{*}{\text{a}} \end{array}$	F $\begin{array}{c} \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{lang} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{tobel} \text{ } \overset{*}{\text{a}} \\ \overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{yandaul} \text{ } \overset{*}{\text{a}} \end{array}$

Of the twelve triplets of forms in (45), the six boxed sets represent anomalies when compared to the apparently well-behaved forms of (41)–(42). We shall see that each anomaly allows of a simple resolution. Let us review what is puzzling in these cases.

In (A), the accent on the stem is absent, as expected, but an accent appears on the *following* syllable. This, in fact, is the key to all of the anomalous forms. Let us posit a rule (46) which shifts the accent one syllable to the right following *-a-*.

(46) Accent Shift

- a.  $\overset{*}{\text{a}} \text{ } \overset{*}{\text{V}} \text{ } \text{V} \rightarrow \overset{*}{\text{a}} \text{ } \text{V} \text{ } \overset{*}{\text{V}}$ ; or,  
b.  $\overset{*}{\text{a}} \text{ } \overset{*}{\text{V}} \rightarrow \overset{*}{\text{a}} \text{ } \overset{*}{\text{V}}$

Case (E) represents essentially the same problem, and is solved by the same rule (46) of Accent Shift. While *ba* has correctly lost its accent, the accentless stem that follows has picked up an accent somehow, and it is precisely through rule (46) that this arises.

All six boxed triplets pose a single problem as well: in each case, a sequence of three or more accents occurs, but the surface form is *not* formed by deleting all but the leftmost accent in the strong.  $\overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \overset{*}{\text{bon}} \text{ } \overset{*}{\text{a}}$ , which becomes  $\overset{*}{\text{u}} \text{ } \overset{*}{\text{a}} \text{ } \overset{*}{\text{ba}} \text{ } \text{bon} \text{ } \overset{*}{\text{a}}$ , illustrates this strikingly.

Again, (46) Accent Shift is crucial to understanding this. And yet, the

The data and part of the analysis of this section come from Hachipola (1982). The tense morpheme *-ci-* of the Present Continuous displays certain puzzling aspects. Compare the following tonal patterns to those found either with an unaccented tense marker (*-la-* in (25), the Simple Present), or an accented tense marker (*-á-* in (41), the Recent Past).

(51) a. Accented Stem *-bón-*

	No	Unaccented	Accented
Subject	Object Marker	Object Marker	Object Marker
Unaccented	u ci bon a	u ci mu bon a	u ci ba bon a
Accented	(see text)	ba cí mú bon a	ba ci ba bon a
b. Unaccented Stem <i>-lang-</i>			
Unaccented	u ci lang a	u ci mu lang a	u ci ba lang a
Accented	ba ci lang a	ba ci mu lang a	ba ci ba lang a

The nearly complete lack of High tones in this pattern suggests that *-ci-* is accented, parallel to *-á-*. If we were to analyze *-ci-* in this way, all of the forms in (51b) would be correctly derived. However, *ba cí mú bon a* suggests that *-ci-* is unaccented, like *-la-*. More generally, *-ci-* appears to be underlyingly unaccented, but it becomes accented when a following morpheme is accented. Curiously, with the paucity of data available to us and the arrangement of the accentual system, we could equally well posit a rule that assigns accent to *-ci-* when an accented morpheme precedes it. Under either analysis, the assignment of accent to *-ci-* must precede Meeussen's Rule.

There remains, however, an unexplained point with respect to forms with accented subject and verb, but no object marker. On the account presented so far, we would expect a derivation as in (52a). As we see in (52b), however, this is correct only in certain cases.

(52) a.				
	<i>bá ci bôn a</i>	<i>bá ci sílik a</i>	<i>bá ci swíilil a</i>	UR
	<i>bá ci bôn a</i>	<i>bá ci sílik a</i>	<i>bá ci swíilil a</i>	<i>-ci-</i> Rule
	<i>bá ci bon a</i>	<i>bá ci sílik a</i>	<i>bá ci swíilil a</i>	M's Rule
	*[bá ci bôn à]	[bá ci sílik à]	[bá ci swíilil à]	Surface
b. correct:				
	[bá ci bôn à]	[bá ci sílik à]	[bá ci swíilil à]	

It appears that the only way to derive the correct form for *bá ci bon a* is to assume that the tense marker is *-aci-* in this form, and that neither syllable is accented. (This may weigh in favour of a formulation of the *-ci-* accent marking rule which copies accent from the left, for if that rule copies accent onto the irregular *-aci-*, making it *-áci-*, Meeussen's Rule will undo its effects correctly in this case.) The rules we have postulated so far will then correctly derive the surface tonal pattern (*ba-áci-bón-a* > *ba-áci-bon-a* > *bácibona*). We must leave this question for further investigation.

## 3.6 Final Vowel accent

A major aspect of the treatment of Bantu verbal tone involves the behavior of the tone of the Final Vowel (FV). This morphological position is filled by a single vowel whose quality (*-e, -a*) is determined by the particular tense.

From the point of view of accent, the FVs of the various tenses may be accented or not, and the accented FVs furthermore fall into two categories, the stable FV accent, and the unstable FV accent. In all but one case, each tense whose FV is accented specifies whether the FV's accent is stable or unstable; in one case, however, the "stability" of the FV accent is predictable from context, and varies within the tense. This happens when there is no overt Tense Marker, as in the Dependent Affirmative tense, discussed in section 3.6.4.<sup>5</sup>

The stable FV accent is stable in a double sense. It is, first, immune to the effects of Meeussen's Rule. It thus does not become unaccented even when an accented verb stem immediately precedes.

The stable FV accent is also impervious to another process that could potentially remove it, a rule that shifts FV accent leftward onto an otherwise accentless verb stem. Before considering in detail the behavior of this leftward shift of the unstable accent, let us turn to one of the stable-accented tenses, the Hortative Affirmative.

## 3.6.1 Hortative Affirmative

In this tense, the final vowel *-a* is accented, and is immune to the effects of Meeussen's Rule; furthermore, it never deletes. The relevant data is displayed in (53), and the corresponding accentual patterns are seen in (54). The initial *ka* is a tense-mood marker.

## (53) Hortative Affirmative

No Object Marker	Unaccented Obj Marker	Accented Obj Marker
ka mu bôn a	ka mu ndí bôn á	ka mu bá bôn a
ka mu sílik a	ka mu ndí sílik a	ka mu bá sílik a
ka mu swíilil a	ka mu ndí swíilil a	ka mu bá swíilil a
ka mu láng a	ka mu ndí láng a	ka mu bá láng a
ka mu tóbél a	ka mu ndí tóbél a	ka mu bá tóbél a
ka mu yándául a	ka mu ndí yándául a	ka mu bá yándául a

## (54)

ka mu bôn a	ka mu ndí bôn a	ka mu bá bôn a
ka mu sílik a	ka mu ndí sílik a	ka mu bá sílik a
ka mu swíilil a	ka mu ndí swíilil a	ka mu bá swíilil a

ka mü lang a      ka mü ndi lang a      ka mü ba lang a  
 ka mü tobel a      ka mü ndi tobel a      ka mü ba tobel a  
 ka mü yandaul a      ka mü ndi yandaul a      ka mü ba yandaul a

If we accept that the suffix *-a* is immune from deletion by Meeussen's Rule, then all of the data in (54) is as predicted: in a string of contiguous accents, only the leftmost remains. For this reason, and for another that will emerge below, we shall identify the stable FV as one preceded by word-boundary, while the unstable FV shall be represented as being preceded only by morpheme-boundary.

The tonal realizations of the accent patterns here are not totally transparent, however. The realization of *ka mü ndi bon a* as *ka mü ndi' bón a* is curious. Why is the final syllable High in tone?

Notice that postulating a deletion of the FV accent in this case would predict the incorrect surface tonal pattern *ka mü ndi bon a*, as we see in (55).

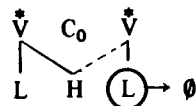
(55) ka mü ndi bon a (incorrect)

The raising of the tone on *bon* to downstepped High is in itself a direct indication that an accented syllable follows somewhere in the same word. However, we expect the form in (56) (compare (25b)).

(56) ka mü ndi bon a → ka mü ndi bon a = ka mü ndi' bón a

It is clear that the problem we face here is tonal, not accentual, in character. We have the correct tone pattern here, if we limit our sight to the tonal tier; the problem in (56) is the association to the syllabic tier. We might resolve the problem by positing a rule (57), Double-Accent Flop.

(57) Double-Accent Flop



(57) is actually over-specified. Either (58a) or (58b) is sufficient.

(58) a. b.

There are certain other forms in this tense that potentially interact with rule (57), forms that are complex and interesting in their own right. These involve verb stems that form a single syllable with the suffix *-a*. The suffix *-a* never loses its accent in this tense, as we have seen, and so this syllable is potentially adjacent to a preceding accented syllable.

The stems in question may be either accented or unaccented, as we would expect. They consist either of stems of the form CV, such as *pe*, 'give', *ti* 'pour', or stems consisting of only a consonant. The phonological situation is complex, and I have had reference to unpublished work on the subject by Hachipola, but these matters do not figure centrally in the discussion that follows. The accent on the stem can be seen, as expected, in the infinitival form. Thus *ikúpā* contrasts tonally with *ikùtyā*.

Consider these stems in the Hortative Affirmative in (59).

(59) Hortative Affirmative

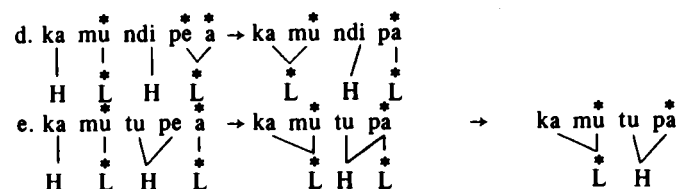
Stem	No Object	Accentless Obj Marker	Accented Obj Marker
Unaccented	ka mü tyā	(none given)	ka mwaā tyā
Accented	ka mü pá	ka mü ndí pa	ka mü tú pá

The key to understanding these forms is to recognize that the mapping of tones to vowels occurs before syllable merger. (60) gives the accentual patterns of the forms in (59); the circled accents, as before, indicate accents that have been deleted.

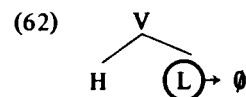
(60) ka mü ti a      ka mü ndi pe a      ka mü a ti a  
 ka mü pe a      ka mü ndi pe a      ka mü tu pe a

As in (54), the suffix *-a* does not lose its accent. The forms in (59) are derived tonally as in (61).

(61) a. → →   
 b. → →   
 c. → →



The first change in (61) involves initial High deletion and syllable merger, while the second involves a tonal simplification of non-initial Falling to High, as in (62), also seen in (58).



The derivation in (61d) has three accents in its first stage but only two tone melodies are inserted; furthermore, the accented L of the second melody specifically associates with the verb-stem vowel, not (only) the suffix vowel. This does not follow from the theory developed so far. We may conjecture that two (literally) adjacent accents merge to form a single accent, but the details remain much too underdetermined by the available data, unfortunately.

It is instructive to compare the analysis presented here with Meeussen's, and the elaboration of Meeussen's system developed by Carter (see especially Carter (1972)). It is particularly striking that Carter's system, which embodies both a notion of accent and of tonal realization of accent, is still unable to account for the various forms of the Hortative Affirmative in a uniform way, as Carter is at pains to point out (Carter (1972,58-62)). I would suggest that these results show that while an accentual treatment of Tonga is necessary, it is not sufficient; the tonal component of the Tonga analysis must also be autosegmental.

Carter suggests comparing the Hortative Affirmative with Independent Subject Relatives ("they who Verb ..."). Carter observes that, under her analysis, no uniform treatment of the accentual property of the suffix is possible: "the results are very similar to those obtained for Tense 2 [Hortative Affirmative] in that no one solution stands out as most acceptable. Moreover, none is capable of a wider application, e.g., to Tense 2, which would tip the balance in its favour." (1972,61).

Consider the Independent Subject Relatives in (63).

(63) Independent Subject Relative

Stem	No Object Marker	Unaccented Object Marker	Accented Object Marker
Unaccented	í bá tyá		í bá ! á tyá
Accented	í bá pà	í bá ndí pà	í bá ! tú pà
Unaccented	i ba ti á		i ba á ti á
Accented	i ba pe á	i ba ndi pe á	i ba tu pe á

Notice that the (bisyllabic) subject prefixes in this tense are not accented, unlike the Hortative Affirmative. This accounts for all of the differences in tonal realization between the two tenses. Note also that since these are not verbs (they are nominals), initial H-Deletion (28) does not apply. The reader may verify that the derivations that produce the tonal patterns from the accent patterns in (63) proceed precisely as in (61). (It should be noted that in Carter (1972), the High tone was accidentally left off the prefix in two of these forms.)

3.6.2 Unstable Final Vowel Accent: Remote Dependent Affirmative

Other tenses in Tonga have a FV which is underlyingly accented but which displays a rather different behavior from that studied in the preceding section. While the FV accent in the preceding example was unusual in that it did *not* delete where we would expect Meeussen's Rule to apply, in the Unstable FV tenses we find the accent on the FV missing or moved in more cases than Meeussen's Rule alone could account for.

Consider the following data, from the Remote Dependent Affirmative. *ka* is here the Tense Marker.

(64) Remote Dependent Affirmative

Stem	No Obj Marker	Unaccented Obj Marker	Accented Obj Marker
Unaccented	tu ká láng e	tu ká mú láng e	tu ká <sup>1</sup> bá láng e
	tu ká tóbel e	tu ká mú tóbel e	tu ká <sup>1</sup> bá tóbel e
	tu ká yándaúl e	tu ká mú yándaúl e	tu ká <sup>1</sup> bá yándaúl e
Accented	tu ká bon e	tu ká mú bon e	tu ká ba bon e
	tu ká silik e	tu ká mú silik e	tu ká ba silik e
	tu ká swiilil e	tu ká mú swiilil e	tu ká ba swiilil e

(65)

Stem	No Obj Marker	Unaccented Obj Marker	Accented Obj Marker
Unaccented	tú ka lang e	tú ka mu lang e	tú ka bá lang e
	tú ka tobel e	tú ka mu tobel e	tú ka bá tobel e
	tú ka yandaúl e	tú ka mu yandaúl e	tú ka bá yandaúl e

Accented	<sup>*</sup> tu ka <sup>*</sup> bōn ē	<sup>*</sup> tu ka mu <sup>*</sup> bōn ē	<sup>*</sup> tu ka <sup>*</sup> bā <sup>*</sup> bōn ē
	<sup>*</sup> tu ka <sup>*</sup> silik ē	<sup>*</sup> tu ka mu <sup>*</sup> silik ē	<sup>*</sup> tu ka <sup>*</sup> bā <sup>*</sup> silik ē
	<sup>*</sup> tu ka <sup>*</sup> swiilil ē	<sup>*</sup> tu ka mu <sup>*</sup> swiilil ē	<sup>*</sup> tu ka <sup>*</sup> bā <sup>*</sup> swiilil ē

While the FV shows no sign of being accented in the case of the accented stems, there is an accent present in the case of the unaccented stems, clearly a contribution of the FV. However, only in the case of the monosyllabic stems is the FV accent actually located on the FV itself. In the other cases, it shifts leftward, with the result that the FV accent appears on the first vowel following the first vowel of the verb stem.

Thus we have two generalizations to deal with. In the case of an unstable FV accent, the FV accent *deletes* when it follows an accented stem, even when the two accents are not in contiguous syllables. Furthermore, when the verb stem that precedes the FV is itself unaccented, the FV accent shifts to the V<sub>2</sub> position, that is, the first vowel following the first vowel of the verb stem.

The second generalization is clearly the result of a leftward shift of the FV accent. The simplest statement of the shift makes use of the notion of post-accent discussed above. The FV accent shifts leftward and becomes a post-accent on the initial vowel of the verb stem, as in (66).

$$(66) \quad \left[ \text{stem} \overset{\curvearrowright}{\underset{\cdot}{\text{V}}} \dots \left[ \text{FV} \underset{\cdot}{\text{V}} \right] \right]$$

The post-accent immediately shifts rightward one vowel, giving the correct forms in (65), by the mechanism proposed above for post-accenting.

It is interesting to observe the effect of (66) on accented stems. As stated, it puts no condition on the accentual character of the first vowel of the stem. A similar process discussed in their paper on Haya by Hyman and Byarushengo in this volume is limited to cases where the stem is unaccented. In Tonga, however, no such condition need be placed on the rule. It is not *a priori* clear what will happen if both a post-accent and an accent arise on a single vowel. If they merge to become simply an accent, we arrive at the correct result; if, on the other hand, the post-accent hops, it will subsequently be deleted by Meeussen's Rule. Under either assumption, then, the FV accent will appear to vanish.

### 3.6.3 Unstable FV: Perfect Tense and the Restrictions on Initial High Deletion

The data in (24), repeated here as (67), was used by Meeussen to motivate the Determinant/Neutral distinction in the verbal morphology. The first two forms are surprising, though; if the data in (67a) motivates placing an accent on *ide*, it remains surprising that any High tones appear in the first two forms, where only one accent is present. In all other verbal forms

that we have seen, the single HL associated with a word bearing only a single accent is simplified to L by the initial High deletion rule (28).

#### (67) a. Unaccented Stem

Subject	No Obj Marker	Unaccented Obj Marker	Accented Obj Marker
Unaccented	ndí lí lǎng ide	ndí lí mú lǎng ide	ndi li bǎ lǎng ide
Accented	bǎ lí lǎng ide	bǎ lí mú lǎng ide	bǎ lí bǎ lǎng ide

#### b. Accented Stem

Unaccented	ndi li bon ide	ndi li mu bon ide	ndi li bǎ bon ide
Accented	bǎ lí bon ide	bǎ lí mú bon ide	bǎ lí bǎ bon ide

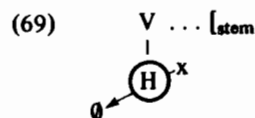
(68) a.	<sup>*</sup> ndi li lǎng ide	<sup>*</sup> ndi li mu lǎng ide	<sup>*</sup> ndi la <sup>*</sup> bǎ lǎng ide
	<sup>*</sup> bǎ li lǎng ide	<sup>*</sup> bǎ li mu lǎng ide	<sup>*</sup> bǎ li bǎ lǎng ide
b.	<sup>*</sup> ndi li <sup>*</sup> bōn ide	<sup>*</sup> ndi li mu <sup>*</sup> bōn ide	<sup>*</sup> ndi li <sup>*</sup> bā <sup>*</sup> bōn ide
	<sup>*</sup> bǎ li <sup>*</sup> bōn ide	<sup>*</sup> bǎ li mu <sup>*</sup> bōn ide	<sup>*</sup> bǎ li <sup>*</sup> bā <sup>*</sup> bōn ide

Meeussen concludes that the verbal formula is applicable "except if everything before the final is neutral, when all these neutrals are high, as if preceded by a determinant in preinitial position . . . . Since it would be awkward to introduce this into the formula, . . . the complication will better be stated as an auxiliary rule: when all elements, including a formative, are neutral before determinant extension or final, then all these elements are high." Carter (1971) states the exceptionality in a different way; she notes that all perfect tenses are realized under the "verbal" rule - Highs between Determinants - Except for the Present Perfect "with Neutral subject prefix and Neutral verbal radical, which is under the 'nominal' rule," i.e., has all Highs to the left of a Determinant.

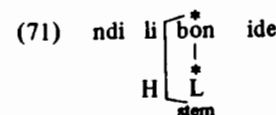
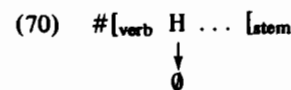
In fact, the non-deletion of the H in these special Perfect verbs is part of a much more general phenomenon in Tonga which involves the tonology at the phrase level. The larger generalization that governs these forms is this: the only High tones that delete verb-initially by rule (28) are those whose tonal domain does not extend as far to the right as the verb stem. Thus an accent one or more syllables to the right of the verb stem will have its High tone associated with at least one vowel in the verb stem; and these High tones *never* delete by rule (28).

The precise manner in which (28) should be modified to express this generalization is not without theoretical interest. If we assume, perhaps gratuitously, that no structural morphological information is available on the tonal tier, the conditioning factors will be addressed on the syllabic tier as in (69), and a notation like the one suggested by Kahn (1976) will be necessary, according to which a trailing association line knotted at the end with an "x" indicates that part of the structural description of the rule

in question is that there be *no* association lines in the indicated position. The association line indicated on the H in (69), then, will be taken to be the rightmost association of the H.

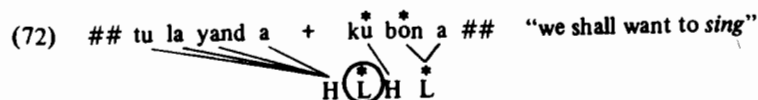


The more natural formulation of the rule in (70) is possibly only under certain assumptions regarding the way in which the tonal formula is morphologically organized. The crucial example here is *ndi-li-bon-ide*, where the initial H does in fact delete. The H from the single HL melody must be structurally outside of the verb stem for (70) to suffice; see (71).



But whether the rule is formulated as in (69), (70), or otherwise, the apparent irregularity in the Perfect tonal pattern is in fact part of a more general phenomenon, as I indicated above, and must be interpreted as the result of a tonal rule, not an accentual rule.

Carter (1972) identifies certain problematic cases under her approach, cases where verbal elements appear to be tonally realized in a manner parallel to nominals, that is (according to our analysis), where initial H deletion does not apply. In the Near Future, tonally identical to the *-la*-Present Tense, there is, as Carter notes, "the possibility that the whole form may contain nothing but Neutral elements; and when this is so, and the tense is in D-link complex [i.e., the Weak construction discussed in Section 2.2 above], the realization is under the nominal rule". She gives the example in (72), slightly modified here.



A simpler example of the same phenomenon is discussed later (Carter

1972,76) in connection with what Carter calls syntactic "composition", a fusion of the verb and its following object into a single phonological unit with the placement of an intrusive accent on the first vowel of the second element. There we find that the High tone that associates leftward into an accentless verb from an accented object (but not from an unaccented object) will not be deleted; see (73).

- (73)
- |              |                   |                     |
|--------------|-------------------|---------------------|
| tulaa mulimo | "we have work"    | (unaccented object) |
| túláá nhánda | "we have a house" | ( <i>nhánda</i> )   |

All of these phenomena, and a number of other irregularities in Carter's and Meeussen's "verbal realization rule", follow directly from the revised formulation of the initial H-deletion rule given above.

### 3.6.4 Dependent Affirmative

The final tense that we shall consider is the Dependent Affirmative, as in (74).

(74)

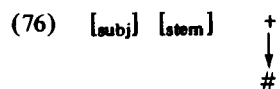
a. Accented Stem		
<i>No Obj Marker</i>	<i>Unaccented Obj Marker</i>	<i>Accented Obj Marker</i>
tu bón e	tu kú bon e	tu ba bon e
tu sílik e	tu kú silik e	tu ba silik e
tu swíilil e	tu kú swiilil e	tu ba swiilil e
b. Unaccented Stem		
tu lán g e	tu kú lán g e	tu bá lán g e
tu tóbél e	tu kú tóbél e	tu bá tóbél e
tu yándául e	tu kú yándaul e	tu bá yándaul e

(75)

a. Accented Stem		
<i>No Obj Marker</i>	<i>Unaccented Obj Marker</i>	<i>Accented Obj Marker</i>
tu bón e	tu ku bon e	tu ba bon e
tu sílik e	tu ku silik e	tu ba silik e
tu swíilil e	tu ku swiilil e	tu ba swiilil e
b. Unaccented Stem		
tu lán g e	tu ku lán g e	tu ba lán g e
tu tóbél e	tu ku tóbél e	tu ba tóbél e
tu yándaul e	tu ku yándaul e	tu ba yándaul e

The first column clearly behaves like a tense with a stable FV accent, while the second and third columns behave like a tense with an unstable FV accent. This oddity appears to be limited to those tenses which have no overt tense marker following the subject marker; in these cases, the FV becomes a stable one when the stem is adjacent to the subject marker. If we indicate the stable FV by a preceding word-boundary, and an

unstable FV by a preceding + boundary, then we can summarize this observation in (76).



#### 4. THE DIACHRONIC PICTURE

In this final section, I would like to describe briefly how Tonga arrived where it is today from an earlier tone system, and how certain characteristics of Tonga today appear to be vestiges of the tonal innovations that made the shift from a tonal system to an accentual system possible.

It is our good fortune that Bantu historical studies are among the most developed of those available among all the language families of the world. We know that Proto-Bantu had the hallmark characteristics of a tonal system, with four tonal classes among the bisyllabic noun stems (HH, HL, LH, and LL), and a good deal about the correspondences between modern Tonga and Proto-Bantu has been established, especially by Guthrie (1967-1971) and Carter (1973).

The tonal correspondences are odd, at first sight, as we see in (73).

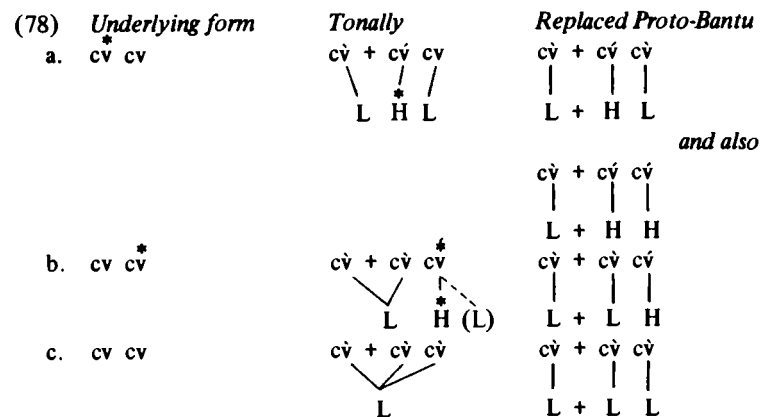
(77) Proto-Bantu	Tonga/tone	Tonga/accent
(Stem)	(Prefix + Stem)	(Stem)
H H	H + L L	C <sup>*</sup> V CV
H L	H + L L	C <sup>*</sup> V CV
L H	H + H L	CV C <sup>*</sup> V
L L	L + L L	CV CV

The tonal evolution viewed in isolation is puzzling, though quite regular. The changes from HH to LL and from LH to HL suggest that H and L were exchanged, but HL merged with HH to form LL, and the \*LL also stayed LL, though with the difference that its prefix is Low.

The puzzle vanishes when we compare the Proto-Bantu forms with the underlying accents in Tonga. Accent today appears, as Carter notes, where the first High tone in the proto-form did. As Guthrie observes, this collapsing of \*HL and \*HH occurs widely through his Zones F, G, and M.

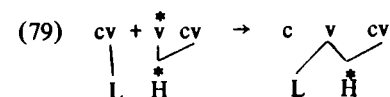
Evidently, Proto-Bantu had a grammar in which the tone pattern of each noun was given explicitly. The prefixes were consistently Low in tone (with three exceptions which have been lost in Tonga). With a judicious choice of a Basic Tone Melody, this tonal system could be mimicked by an accentual system with minimal change or loss of information, as we

have sketched in (78). Here we assume the original melody of accented stems was LHL. The forms represent a stage shared by a large class of Eastern Bantu languages, but I shall simply use the term Pre-Tonga to describe it.



This pattern of development of accent from Proto-Bantu appears to be the typical one. Other evidence suggests that at a point subsequent to the change described in (78), the Basic Tone Melody was LH. Today, as we have seen, the Basic Tone Melody is HL.

As Carter (1973,45) notes, there is a regular class of exceptions to the schema in (78). A form for which we would expect a modern stem with initial accent (corresponding to PB \*HH or \*HL) will have accent on the second syllable if it has lost its initial consonant. Apparently what happened with the loss of the initial consonant was the creation of a contour tone as the class-prefix and the stem-initial vowel merged to form a single syllable, as in (75).



Tone is typically absorbed in such cases by the syllable with the like tone, as has been observed for many years; since these forms were reanalyzed as having final accent, the Rising tone in (75) must have simplified to Low suggesting that the following syllable was High. Hence, the melody was LH at that point.

We are still faced with the more fundamental question as to why Proto-Bantu became accentual when it did, rather than earlier or later.



If Proto-Bantu had the tonal grammar T, what rule could it have been that was added to T to produce an output unequivocally reanalyzed as an accentual system by the next generation?

How could we possibly determine what rule R looked like? I would like to suggest that R must have been a tonal rule of which Meeussen's Accentual rule is a direct descendant. This rule would have been (80).

(80)  $H \rightarrow L / H \text{ —}$

If (80) were added to the tonal grammar, then the two cases that case (a) in (78) conflates would *already* have been collapsed on the surface by the addition of (80). Hence the reanalysis of tone as accent would have provided *no* less surface information than the earlier generation's grammar provided.

Secondly, whatever rule R actually was, we would expect some descendant rule in the accentual systems that grew out of the reanalysis. What rule do all, or most, of the accentual Bantu languages share? The answer is Meeussen's Rule (or its mirror-image, as in Rimi and Sukuma). It should be clear that if Proto-Bantu's grammar added rule (80), then in the verbal system we would find that any time High-toned morphemes were concatenated, only the first would surface as a High tone. Naturally, when the next generation noted this, they would interpret this as a loss of accent by the morphemes on the right. This is not circular; we know independently that High tone was reinterpreted as accent.

Much work remains to be done, clearly, to clarify this picture. Comparative work should lead us to a clearer picture of how a tonal system can evolve into the accentual system that we see today.

#### NOTES

1. I have had the good fortune to discuss the material presented in this paper with a number of linguists, and have profited from their comments in many ways. Among those I must thank are Nick Clements, Jerome Hachipola, Morris Halle, Larry Hyman, Chuck Kisseberth, and David Massamba. The initial stages of this work was done while I was an Andrew Mellon Faculty Fellow in the Linguistics Department at Harvard University, and I am grateful for the opportunity that this support provided me.

2. It is clearly necessary to permit specified segments on one tier to avoid the effects of the Well-formedness Condition, and thus to not associate. Consonants, for example, need not associate, though they may (see the discussion of depressor consonants by Laughren in this volume). A natural proposal to accommodate this observation is to suggest that two segments on opposite tiers may associate only if they share a feature specification. Normal (non-floating) tones would then be specified + syllabic, while floating tones would have no specification for the feature

syllabic at all. Depressor consonant tones would be marked -syllabic. On such an analysis, the change indicated in rule (10) would be in the value of the feature *syllabic* in the Low tone.

3. We will discuss below the notion of a *post-accent*, that is, an element which immediately shifts its position one syllable to the right when not in phrase-final position. Such an element will be represented on its vowel as  $\bar{V}$ . (18) would best be viewed, then, as reduction of the boundary between the verb and its object, and the placing of a post-accent on the Final Vowel.

4. The unusual behavior that we observe with the Tense Marker (TM)  $\bar{a}$  clearly demands an explanation of a historical sort as well. The tonal data in (44) suggest that in Boxes A, B, and E (that is, those boxes where the Accent Shift rule (46) gets a chance to apply), the TM  $\bar{a}$  functions to put a High tone on a following syllable. Such a notion is foreign to the prosodic system of present-day Tonga, where accent, realized as Low Tone, dominates the system. However, the peculiar character of the TM  $\bar{a}$ 's accentual effects suggests that rule (46) arose out of an accentual reanalysis of surface forms from an earlier stage in which the TM  $\bar{a}$  did precisely place a High tone on the following syllable. If we observe the Far Past in Luganda (Stevick (1969)), we find that the TM  $\bar{a}$  is indeed post-accenting, which has the effect in Luganda of placing a High Tone on the following syllable (*kú-gúl-á* in the infinitive, for example, becomes *yagúla* in the Far Past (3 sg.)). The  $\bar{a}$ -past tense discussed by Kisseberth in this volume also appears to be analyzable as possessing a post-accenting TM and an accented FV, while Ruri's Distant Past also has a post-accenting TM  $\bar{a}$ . In fact, both Ruri and Rimi possess post-accenting TMs  $\bar{a}$ ; Ruri's undergoes a secondary accent shift to the right, displacing the High tone two syllables from the TM, while Rimi's undergoes only one displacement. See Massamba (1982) and Schadeberg (1979).

5. Tonga appears to have only one FV accent shifting rule, and it may be written to apply independently of the accent on the verb stem. As Hyman and Byarushengo show in their analysis of Haya in this volume, the shift of the FV accent may be dependent on the *lack* of accent in the verb stem, in other languages of this family. Luganda displays both patterns, with a rule like Tonga's in the Far Past, and a rule like Haya's in the Near Past.

The shift from the FV position to the second vowel of the stem represents a natural pattern of tone association, if the tone that is logically associated with the FV is associated with the vowels of the verb in the familiar one-to-one fashion (see Clements' chapter in this volume for a discussion of the pervasive one-to-one tone-to-vowel association pattern). Thus we may conclude that any stage at which such a shift is introduced is a tonal, pre-accentual stage of the language, a useful criterion in historical reconstruction.