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INTERACTION OF SEGMENTAL AND TONAL COMPONENTS OF ILYAMBA VERBS

Helen Erickson

0. Introduction
1. General observations relative to tone change
2. Patterns of tone change
3. Distinguishing segmental characteristics of verb classes

0. The iLyamba language (officially Iramba) is a Bantu language spoken by 175,000 people in the Central Province of Tanganyika, East Africa. Speakers of the language inhabit an area of about 3,000 sq. miles in the Kiomboi District of the Central Province.

The main dialect is spoken in the central part of this district, known as the Iramba Plateau. Several subsidiary, mutually intelligible dialects are found in areas surrounding the plateau. These dialects, while retaining most of the grammatical and lexical features of the plateau dialect, show some influence from neighboring languages, such as Turu (Rimi) to the south and Sukuma to the west. It is interesting to note that speakers of the subsidiary dialects readily comment, "We do not speak 'pure iLyamba'. They speak 'pure iLyamba' on the plateau". Thus there is no apparent rivalry between speakers of the various dialects. All are agreed that the most universally understood dialect for a written literature is that which is spoken on the plateau.

The iLyamba language is a tone language. While lexical tone is present and important, it appears to be a relatively minor feature from the standpoint of analysis. Far more complex is the interaction of grammatical features causing a great variety of tone change patterns.

This paper attempts to describe the interaction of various elements causing tone change in iLyamba verbs.

1. General observations relative to tone change in verbs

The characteristics peculiar to all verb classes and the phenomena regularly occurring with bound pronouns are basic to the treatment of tone change in verbs.

1.1 Characteristics peculiar to all verb classes:

A. Certain affixes subdivide the verbs into Immediate Past, Continuative, and Perfective conjugations. These are:

- a) vowel prefixes immediately following the subject prefix and/or
- b) a suffix immediately following the stem.

Immediate Past is marked by a-

Continuative is marked by i- when no object occurs, and by the sequence u- and ku- (in that order) when an object occurs.

Perfective is marked by -il + -e (-e replacing final -a of the stem) without exception, and also by u- except when the first person singular subject prefix (N-, see Chart I, section 1.2.A below) occurs and no object occurs. When u- follows w-, w- is lost.

B. Differences of tone pattern in these conjugations divide the verb stems into four classes: A, B, C, and D. (See section 3).

C. The infinitive tone pattern is basic. That is, the tone of all other forms of the verb may be predicted from the infinitive tone pattern, except for Class C in the following two aspects: a) the Immediate aspect when one of the following subject prefixes occurs: w- '3rd person singular', y- 'mĩ- plural (Class 4)', or y- 'n-singular (Class 9)', and b) the Perfective aspect when any subject prefix occurs. In these cases, the tone pattern is predictable from the Imperative tone (see 3.3).

D. In utterance-final position, a high tone on the final vowel of a verb changes to penultimate high.

1.2 Phenomena occurring with all bound subject and object pronouns:

A. Bound pronouns show concord with the Person/Gender classes of nouns.

Nouns are divided into fifteen Person/Gender classes by the allomorphs of singular and plural prefixes with which the nouns occur.

The Person/Gender classes of nouns are listed below in Chart I together with the subject and object prefixes¹ which agree with them. Membership of classes 3-19 involves third person only. Membership of Classes 1 and 2 consists mainly of nouns referring to people, and therefore involves all three persons--first, second, and third.²

CHART I

<u>Person/Gender Class</u> ³			<u>Subject Prefixes</u> ⁴		<u>Object Prefixes</u> ⁴	
Singular	Plural		Singular	Plural	Singular	Plural
1 mu-	2 a-	1st person	n-~N- ⁵	kw-	**N- ⁵	ku-
		2nd person	w-	mw-	**ku-	mu-
		3rd person	*w-	a-	**mu-	a-
3 mu-	4 mĩ-		w-	*y-	u-	ĩ-
5 li-	6 ma-		ly-	m-	lĩ-	ma-
7 kĩ-	8 i-		ky-	y-	kĩ-	i-
9 n-	10 n-		*y-	z-	**mĩ-	zi-
11 lu-	10 n-		lw-	z-	lu-	zi-
14 u-			w-		u-	
13 ka-	19 pi-		k-	py-	ka-	pi-
				Reflexive	kĩ-	

Basic stem tone patterns of verbs undergo predictable changes when subject and/or object prefixes occur with the stem. Subject prefixes marked by an asterisk (*) co-occur with a common stem tone pattern. That is, the same stem tone pattern obtains when any one of the following subject prefixes occurs:

- w- '3rd person singular'
- y- 'mĩ- plural (Class 4)'
- y- 'n- singular (Class 9)'

To provide a cover reference for this group of subject prefixes, the label (3ss) '3rd singular subject' will be used.

Subject prefixes which are unmarked by an asterisk (*) co-occur with a common stem tone pattern which contrasts with that occurring with (3ss). To provide a cover reference for the whole group of twelve subject prefixes, the label (1ss) '1st singular subject' will be used.

When object prefixes are included with the verb, the stem tone pattern is modified from what it was when it occurred with the subject prefix only (that is, when it occurred without an object prefix).

Object prefixes marked by double asterisk (**) share a common modification of the stem tone pattern. That is, the same modification obtains when any of the following object prefixes occurs:

- N- '1st person singular'
- ku- '2nd person singular'
- mu- '3rd person singular'
- mĩ- 'n- singular (Class 9)'

To provide a cover reference for this group of four object prefixes, the label (3so) '3rd singular object' will be used.

The twelve object prefixes unmarked by double asterisk (**) share a common modification which contrasts with that occurring with (3so). To provide a cover reference for the whole group of twelve object prefixes, the label (3plo) '3rd plural object' will be used.

B. So then, stem tone patterns undergo changes conditioned by the subject prefixes occurring with the verb or by the combination of subject and object prefixes occurring with the verb.

Two distinct stem tone patterns occur when a subject prefix occurs with no object prefix occurring: one when a member of the (1ss) group of subject prefixes occurs, and another when one of the members of the (3ss) group of subject prefixes occurs.

In addition, four distinct stem tone patterns occur when a subject-object combination of prefixes occurs. Thus the basic (infinitive) stem tone pattern of a given verb has a potential of six variations conditioned by the subject or subject-object prefix combinations with which it occurs:

- 1) (lss)
- 2) (lss) + (3so)
- 3) (lss) + (3plo)
- 4) (3ss)
- 5) (3ss) + (3so)
- 6) (3ss) + (3plo)

C. Tones of bound pronouns.

All bound subject pronouns initial in the utterance have low tone on the following aspect vowel (see 1.1,A). The low tone is never altered when a member of the (3ss) group of subject prefixes occurs. However, the aspect vowel following a member of the (lss) group of subject prefixes is raised to high tone if the subject prefix is preceded by:

- a) a low tone substantive,
- b) a relative pro-clitic of the verb phrase, or
- c) any verb except one with final high tone.

All bound object pronouns have basic low tone. The low tone is never altered on a member of the (3so) group of object prefixes. However, members of the (3plo) group of object prefixes are raised to high tone:

- a) whenever they occur with the Continuative aspect of the verb, and
- b) whenever they co-occur with a member of the (3ss) group of subject prefixes.

2.0 Patterns of tone change

Tone changes in verbs are a result of the interaction of aspect and bound pronouns with the basic stem tone of a given verb class. None of the elements of this interaction consistently functions as the prime factor causing tone change. Rather, a system of priorities occurs (see 2.2), whereby at times the subject prefix (with no object occurring) conditions the stem tone change; at times the subject-object prefix combination conditions the stem tone change; at times the aspect conditions change; and at times the stem tone pattern resists change.

The interaction of the three elements (aspect, bound pronouns, and basic stem tone) which cause tone change in verbs is discussed in the following paragraphs. In the discussion of these three elements, it is essential to consider the priorities involved in their interaction. Since patterns of tone change are regarded as alterations of the basic tone, basic stem tones will be treated before considering the conditioning priorities. Then the segmental and tonal components of the bound pronoun morphemes will be listed.

2.1 Basic stem tones of verbs

Basic stem tones for each of the four verb classes are listed below,

with V as the symbol for vowel of the verb stem. Since Imperative is one of the two basic stem tone patterns in Class C, it is given as well as the Infinitive (see 1.1,C).

<u>Class</u>	<u>Infinitive</u>	<u>Imperative</u>
Class A	V1 high, all other V low	
Class B	V1 high, all other V low	
Class C	All V low tone	V2 high, all other V low
Class D	V1 high, all other V low	

Basic stem tones remain constant unless a change is required by some conditioning priority (2.2) or by a bound pronoun morpheme (2.3).

2.2 Conditioning priorities

The following rules of tone change have priority in the order listed; that is, when there is conflict in the application of any two or more of the following rules, the rule having the smallest number should be applied.

- 1) Members of the (3plo) group of object prefixes lower high tone of V1.
Exception: In Class D, Perfective aspect, V1 retains its high tone.
- 2) In Class B verbs, V2 is raised to high tone when the tone of V1 is lowered (see 2.2, 1 and 2.3,A).
Exception: In Immediate Past with a member of the (1ss) group of subject prefixes, V2 is not raised to high.
- 3) Continuative aspect occurs with basic infinitive tone in all classes and with subject pronouns of all Person/Genders.
Modification: When a member of the (3plo) group of object prefixes occurs with the verb, the basic tone is altered (see higher priorities 1 and 2).
- 4) Members of the (3so) group of object prefixes outrank all subject pronoun morphemes in relation to tone of V1 (cf. 2.3,B with 2.3,A).
- 5) In Class C, the tone of the Imperative is basic for the Perfective aspect with any subject prefix and for the Immediate Past with members of the (3ss) group of subject prefixes (see 1.1,C and 3.3).

2.3 Bound Pronoun Morphemes

The components of bound pronoun morphemes are:

- a) a subject or object prefix (see Chart I, 1.2), and
- b) the tone changes regularly occurring with the given subject or object prefix.

A. Subject Pronoun Morphemes:

(1ss) = any member of the (1ss) group of subject prefixes
+ lowering of high tone on V1 except in Class D, Perfective aspect,

+ raising final vowel to high tone in Immediate Past (and in the causative of the Perfective aspect).⁶

(3ss) = any member of the (3ss) group of subject prefixes
+ high tone on members of the (3plo) group of object prefixes
+ lowering of V1 in Perfective aspect of Class B.

B. Object Pronoun Morphemes

(3so) = any member of the (3so) group of object prefixes
+ retention or restoration of all basic V1 high tones.

(3plo) = any member of the (3plo) group of object prefixes
+ high tone on the object pronoun in the Continuative aspect (subject pronouns do not alter the tone pattern here);
+ high tone on the object pronoun in all aspects if the subject pronoun is a member of the (3ss) group of subject prefixes;
+ lowering of high tone on V1 except in Class D, Perfective aspect (see Priority 2).

2.4 Application of conditioning priorities to a specific problem:

Now then, the interaction of aspect and bound pronouns with the basic stem tones can be illustrated for various verb classes. For example, given the imperative form kila! 'pass by!' and the information that this is a Class A verb stem, we may construct the Continuative 'I am passing by them' as follows:

a) We shall need the following morphemes: 1st person singular subject pronoun, Continuative aspect morpheme, 3rd person plural object pronoun, and the verb stem.⁷

b) We know that the 1st singular subject prefix is n- (Chart I, 1.2), the Continuative aspect is marked by u- + ku- when an object prefix is included with the verb (1.1,A), the 3rd person plural object prefix is a- (Chart I, 1.2), and the basic stem tone is high tone on V1 (2.1).

c) In applying the priorities relevant to our problem, we find:

1) The high tone on V1 is lowered (2.2, Priority 1. This priority, having the smaller number, is to be applied rather than Priority 2, which deals with the Continuative aspect, but conflicts with Priority 1.)

2.3,A tells us that 1st singular subject pronoun, which is a member of the (1ss) group of subject pronouns, also lowers the tone of V1, but this has already been accomplished by the 3rd plural object pronoun, which has higher priority than the subject pronoun.

2) The 3rd plural object pronoun takes a high tone in the Continuative aspect (2.3,B).

3) Thus, we have succeeded in constructing the form: n-u-ku-ă-kîla⁸ (nukuăkîla) 'I am passing by them'. A comparison with the parallel form n-u-ku-ă-kîlîka 'I am treating them', on Chart II, p. 67, shows that the test form has been correctly constructed.

This procedure could be repeated for verbs of any class, and in any of the aspects; with any combination of bound pronouns, and yield the correct tone pattern.

So far, however, the only distinctive feature of verb classes which has been considered is the basic stem tone. Without knowledge of other phonological and morphological features, the information needed to choose the correct segments as well as the correct tone pattern, would be incomplete. Further features which identify and differentiate the verb must also be considered.

3.0 Distinguishing segmental characteristics of verb classes

In giving CV patterns with each verb class, no attempt is made to exhaust the possibilities for expansion of the verb stem. Generally, verb roots seem to be two-syllable structures. These roots can be expanded by a great variety of derivational affixes to form stems, but stem construction has not been adequately studied for treatment at this time.

3.1 Class A has two subdivisions: Class A-1 and Class A-2

Class A-1. Basic tone is high tone on V1. Infinitive: kwi-kîlîka 'to treat medically'.

Class A-1 consists of stems with the following CV structures, where superscript numerals indicate the maximum number of times that the syllable within the parentheses may be optionally repeated⁹: CV(CV)³ and V(CV)². Within this framework, V = either V or VV.¹⁰

Class A-2. Basic stem tone is high tone on V1. This is deduced for the following reasons:

- a) The infinitive form, ku-kî-tûîka 'to put a load on (one's own) head', is not a simple infinitive. Class A-2 verbs are reflexive verbs, and the reflexive prefix as well as the infinitive prefix is obligatory to the infinitive in this subclass. The reflexive prefix is a member of the (3plo) group of object prefixes, and as such, causes tone of V1 to be lowered.
- b) In verbs which can be observed in the simple infinitive, the tone pattern for the Continuative aspect when a member of the (3so) group of object prefixes occurs is always identical with the infinitive tone pattern. Class A-2 verbs in the Continuative aspect and with the occurrence of a member of the (3so) group of object prefixes, has high tone on V1.
- c) Class A-1 may be made reflexive by inclusion of the reflexive prefix kî-: ku-kî-kîlîka 'to treat oneself'. In this form, tone of Class A-1, reflexive infinitive, is identical with that of Class A-2.

Explanation of symbols, Chart II

lss } These symbols represent any member prefix of the respective groups of
3ss } subject or object prefixes represented by the labels (lss), (3ss),
3so } (3so), and (3plo)--see 1.2. In the chart, the subject and object
3plo } prefixes used with the verb examples are the member morphemes '1st
singular subject prefix', '3rd singular subject prefix', '3rd singular
object prefix', and '3rd plural object prefix.' However, if any
other member prefix of any of the respective groups is substituted,
the tone pattern shown on the chart will still obtain.

S only: in the line with this symbol, verbs are given with subject prefix only (i.e., without object prefix).

+ Rflx: in the line with this symbol; the verb is given with a subject prefix and the reflexive prefix.

Tone Chg. The columns under this heading show change from basic stem tone. These changes involve only the following segments:

O = Object prefix

V₁ = 1st stem vowel

V₂ = 2nd stem vowel

F = Final stem vowel

Tone markings. Vowels not marked for tone have low tone.

^ = basic high tone changed to low tone.

˘ = basic low tone changed to high tone.

' = unchanged basic high tone.

* = free variation. Low tones in the starred positions may occur as high tone in Classes A-2 and D. It will be noted that this optional variation is limited to occurrences preceding or following high tone in both Class A-2 and Class D in the Continuative, and in Class A-2 in the Perfective, except for the subject-object combination "3ss + Rflx".

() The parentheses enclosing the first member of the Class B verb stem indicates a long vowel which is shortened in certain contexts (see 3.2).

The verb stems used as examples in the chart are given below in the infinitive constructions with their translations. (The imperative form is also included for Class C) Note that Class C is placed first to facilitate comparison of classes with similar tone patterns:

Class C kwi-paapa 'to carry (a child) on the back'. (infinitive)

paapa 'carry (a child) on (your) back'. (imperative)

Class A-1 kwi-kilika 'to treat medically'

Class A-2 ku-ki-tuika 'to put a load on (one's own) head'

Class B kwi-(o)ópooka 'to fear'

Class D ku-ki-juka 'to remember'

CHART II PATTERNS OF TONE CHANGE IN ILYAMBA VERBS

IMMED. PAST			Tone Chg. CONTINUATIVE		Tone Chg. PERFECTIVE		Tone chg.	
			O V ₁ V ₂ F	n-i- paapa	O V ₁ V ₂ F	N- paap-il-e	O V ₁ V ₂ F	O V ₁ V ₂ F
Class C	S. only	n-a- paapā	✓	n-i- paapa	✓	N- paap-il-e	✓	✓
	+ 3so	n-a-mu-paapā	✓	n-u-ku-mu-paapa	✓	n-u-mu-paap-il-e	✓	✓
	+ 3plo	n-a-a-paapā	✓	n-u-ku-ā-paapa	✓	n-u-a-paap-il-e	✓	✓
Class A-1	S. only	w-a- paāpa	✓	w-i- paapa	✓	u- paap-il-e	✓	✓
	+ 3so	w-a-mu-paāpa	✓	u-ku-mu-paapa	✓	u-mu-paap-il-e	✓	✓
	+ 3plo	w-a-ā-paāpa	✓	u-ku-ā-paapa	✓	u-ā-paap-il-e	✓	✓
Class A-2	S. only	n-a- kīlīkā	✓	n-i- kīlīka	✓	N- kīlīk-il-e	✓	✓
	+ 3so	n-a-mu-kīlīkā	✓	n-u-ku-mu-kīlīka	✓	n-u-mu-kīlīk-il-e	✓	✓
	+ 3plo	n-a-a-kīlīkā	✓	n-u-ku-ā-kīlīka	✓	n-u-a-kīlīk-il-e	✓	✓
Class B	S. only	w-a- kīlīka	✓	w-i- kīlīka	✓	u- kīlīk-il-e	✓	✓
	+ 3so	w-a-mu-kīlīka	✓	u-ku-mu-kīlīka	✓	u-mu-kīlīk-il-e	✓	✓
	+ 3plo	w-a-ā-kīlīka	✓	u-ku-ā-kīlīka	✓	u-ā-kīlīk-il-e	✓	✓
Class D	S. only	n- i-tūīkā	✓	n-ī- kī-tūīka	✓	n- i-tūīk-il-e	✓	✓
	+ 3so	n-a-mu-tūīkā	✓	n-u-ku-mu-tūīka	✓	n-u-mu-tūīk-il-e	✓	✓
	+ 3plo	n-a-a-tūīkā	✓	n-u-ku-ā-tūīka	✓	n-u-a-tūīk-il-e	✓	✓
Class E	S. only	w- i-tūīka	✓	w-ī- kī-tūīka	✓	w- i-tūīk-il-e	✓	✓
	+ 3so	w-a-mu-tūīka	✓	u-ku-mu-tūīka	✓	u-mu-tūīk-il-e	✓	✓
	+ 3plo	w-a-ā-tūīka	✓	u-ku-ā-tūīka	✓	u-ā-tūīk-il-e	✓	✓
Class F	S. only	n-(o)- ḍpookā	✓	n-i- (o)ḍpooka	✓	n-(o)- ḍpook-il-e	✓	✓
	+ 3so	n-a-m(o)-ḍpookā	✓	n-u-ku-m(o)-ḍpooka	✓	n-u-m(o)-ḍpook-il-e	✓	✓
	+ 3plo	n-a-(o)-ḍpookā	✓	n-u-ku-(o)-ḍpooka	✓	n-ī-(o)-ḍpook-il-e	✓	✓
Class G	S. only	w-(o)- ḍpooka	✓	w-i- (o)ḍpooka	✓	w-(o)- ḍpook-il-e	✓	✓
	+ 3so	w-a-m(o)-ḍpooka	✓	u-ku-m(o)-ḍpooka	✓	u-m(o)-ḍpook-il-e	✓	✓
	+ 3plo	w-a-(o)-ḍpooka	✓	u-ku-(o)-ḍpooka	✓	u-(o)-ḍpook-il-e	✓	✓
Class H	S. only	n- i-jūkā	✓	n-i- kī-jūka	✓	n- i-jūk-il-e	✓	✓
	+ 3so	n-a-mū-jūkā	✓	n-u-ku-mū-jūka	✓	n-u-mū-jūk-il-e	✓	✓
	+ 3plo	n-a-i-jūkā	✓	n-u-ku-ī-jūka	✓	n-u-ī-jūk-il-e	✓	✓
Class I	S. only	w- i-jūka	✓	w-i- kī-jūka	✓	w- i-jūk-il-e	✓	✓
	+ 3so	w-a-mū-jūka	✓	u-ku-mū-jūka	✓	u-mū-jūk-il-e	✓	✓
	+ 3plo	w-a-ī-jūka	✓	u-ku-ī-jūka	✓	u-ī-jūk-il-e	✓	✓

*Free variation. High tone may occur

Class A-2 differs from Class A-1 in that the reflexive prefix $k\tilde{i}-\tilde{i}-$ is required in Class A-2 unless some other object pronoun occurs instead of the reflexive. Object pronouns other than reflexive may occur with some, but not all, verb stems in this subclass.¹¹

The reflexive prefix $k\tilde{i}-$ for Class A-2 verbs

a) is retained in the Continuative aspect, and
 b) occurs as the fused morpheme $\tilde{i}-$ in Immediate Past and Perfective.
 This fused morpheme represents the following combination of the aspect vowel and the reflexive prefix:

Immediate Past: $a- + k\tilde{i}- > \tilde{i}-$

Perfective: $u- + k\tilde{i}- > \tilde{i}-$ and $N- + k\tilde{i}- > n-\tilde{i}-$
 Since this morpheme, $k\tilde{i}-\tilde{i}-$ 'reflexive' is a member of the (3plo) group of object prefixes, Class A-2 verbs never occur without an included object pronoun.

A comparison of the tone patterning of Class A-1 and A-2 verbs will further demonstrate how these two classes are submembers of the same class. In comparing A-2 forms of the verb with A-1 forms on Chart II, it is seen that parallel constructions have identical tone patterns. The tone pattern of "S only" constructions of A-1 differs from that of "Rflx" constructions of A-2 because these constructions are not parallel. The "Rflx" construction is parallel with the construction in which the (3plo) object prefix occurs, and its tone pattern is identical to the tone pattern of that construction.¹² The tone pattern occurring in Class A-1 with the subject pronoun only ("S only") is not relevant to Class A-2 because Class A-2 cannot occur with subject pronouns only.

Class A-2 consists of a limited number of stems with the following CV structure: CV(CV)³.

3.2 Class B. Basic tone is high tone on V1. Infinitive: $kwi-(o)\acute{o}pooka$ 'to fear'.

Class B verbs are (V)V initial. (V)V indicates a long vowel which loses its length in certain contexts, a phenomenon which is not treated in this paper. Because of the phenomenon of shortening of the first syllable, the vowel following the parentheses is counted as V1 in this verb class.

Class B consists of a somewhat limited number of stems with the following CV structure: (V)V(CV)³. Within this framework, V of (CV) may be either V or VV.

3.3 Class C has two parallel basic tone patterns.

Basic tone' is low tone on all vowels. Infinitive: $kwi-paapa$ 'to carry (a baby) on the back.'

Basic tone'' is high tone on V2. Imperative: $pa\acute{a}pa$ 'carry (the child) on (your) back'.

CV structures for Class C are as for Class A.

3.4 Class D. Basic stem tone is high tone on V1. This is deduced for the following reasons:

a) The infinitive form, ku-kí-juka 'to remember', is not a simple infinitive. Therefore, it cannot be taken as an index to the basic tone.

b) However, in verbs which can be observed in the simple infinitive, the tone pattern for the Continuative aspect when a member of the (3so) group of object prefixes occurs is always identical with the infinitive tone pattern. Class D verbs in the Continuative aspect and with the occurrence of a member of the (3so) group of object prefixes, has a high tone on V1.

Morpheme ki- (meaning has not been determined)

a) is retained in the Continuative aspect, and

b) occurs as the fused morpheme i- in Immediate Past and Perfective.

This fused morpheme represents the following combination of the aspect vowel and morpheme ki-:

Immediate Past: a- + ki- > i-

Perfective: u- + ki- > i- and N- + ki- > n-i-

Formally, this morpheme, ki-~i- appears to be similar to the reflexive morpheme in Class A-2, but further study is needed to determine whether it is consistently reflexive in character.

Class D verbs are palatalized consonant initial. The palatalization on the initial consonant causes an a- preceding it to become i-, and an u- preceding it to become u-.¹³

Class D consists of a highly restricted number of stems with the following CV structures: CVV(CV)² or CVV(V)(CV). Within this framework, the vowels within the parentheses may be either V or VV, but V1 is always short.

4.0 A further section on verb morphology is being written to show the inflection of verbs beyond the very limited references to verb inflection which have been necessary in this paper to discuss the tone patterns. Such a section will show how the tone patterns described here apply to other conjugations, and how tone pattern is a pertinent element in separating verb types. It is hoped it might be possible in the near future to thus extend the scope of the present paper.

FOOTNOTES

1. The term "prefix" is used to refer only to the segmental portion of the bound pronouns. Later (sect. 2.3), we shall see that the accompanying tone change is also a part of the bound subject and object pronouns. They will then be referred to^{as} subject pronoun morphemes and object pronoun morphemes respectively.

2. While Class 1 and 2 are mainly nouns referring to people, there is a small subclass, 1a and 2a, referring to non-personal things. This subclass differs from Class 1 and 2 in structure of lexical items, but the same set of affixes that agree with Class 1 and 2 agree also with Class 1a and 2a. Membership of Classes 3-11 refers to non-personal things. Class 14 consists of abstract nouns and has no plural. Class 13 and 19 consists of diminutives. Nouns from all classes (including 1 and 2) may be made members of this class by adding the diminutive prefixes ka- 'singular' and pi- 'plural'.

3. Numbers given with the Person/Gender classes follow the numbers used by Meinhof and others for Ur-Bantu. Cf. Doke. 1943. Outline Grammar of Bantu. Johannesburg. Univ. of Witwatersrand. p. 20.

4. The shape of each subject and object prefix listed is representative. Allomorphs are not listed in this paper.

5. N- for subject and object prefixes represents the homorganic nasal. Manifestations of N- preceding a vowel vary according to the Class of verb stem to which N- is affixed. These allomorphs are not listed in this paper.

6. -il 'perfective' + -i 'causative' + -e 'mode' > -ilie 'causative of the perfective'. This structure will be treated in a paper on verb morphology.

7. Actually, we would not know from the foregoing discussion (except by inference) that these are all the affixes needed for this form of the verb. However, selection and order of morphemes are topics which belong in a section on verb morphology, and are too involved to be outlined here. Our present problem deals with the tone of the verb, and this can be predicted from the foregoing information.

8. See the use of ^ and ~ in the section, "Explanation of Symbols used in Chart II, p. 66. Note also how ' is used in this paper. Unmarked vowels are always low in tone.

9. That is, "the maximum number of times...a syllable...may be optionally repeated" according to data available at present. Further data might well change the superscript numerals.

10. VV may be homophonous or dissimilar vowels. The only possibility for a word-final VV is by juxtaposition of two suffixes consisting only of V.

11. Further study is needed to determine the permissibility of object pronouns other than reflexive occurring with Class A-2 verbs. A very few have been found, but it is extremely difficult to elicit Class A-2 verbs with any object pronoun other than the reflexive.

12. Free variation does occur in A-2 verb tones in Continuative and Perfective conjugations; when a member of either the (3so) or (3plo) group of object prefixes occurs. See the note on starred (*) items from Chart II in the section, "Explanation of Symbols used in Chart II", p. 66.

13. Symbols for the seven iLyamba vowels with their phonetic equivalents follow: /a/ = [a], /e/ = [ɛ], /ĩ/ = [ɪ], /i/ = [i], /o/ = [o], /u/ = [u], and /ũ/ = [u].