Several general features of the tonal system of the Old Moshi dialect of the Central Kilimanjaro group of Chaga dialects are treated in this paper. At the phonological level only two tones, high and low, need to be posited. Tone permutations involving down-stepped high tones are presented as well as examples of tone shift, a general phenomenon attested in other Bantu languages of East Africa. Finally, the tonal behavior of nouns, other elements of the NP, verbs, and particles, is discussed.

1. Introduction

Old Moshi (OM), or kimoci as its speakers call it, is one of the Central Kilimanjaro group of Chaga dialects. All the Chaga dialects have lexical and grammatical tone, as have most of the surrounding Bantu languages (Dašida, Pare, Kamba, etc.).

Phonological tones in OM correspond fairly closely to what can be reconstructed as Proto-Bantu (PB) tones, with a few exceptions, but the rules for surface realisation are quite complicated, as is the case with many Bantu languages in East Africa. This study is about the most general of these rules only. A complete description and analysis of the tone system of the language would be a formidable task indeed and one well beyond the scope of this paper. It follows from this that the analysis presented here is explicitly valid only for the environments described. Other environments would, in most cases, require supplementary rules.

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1 See Nurse and Philippson [forthcoming], where we have divided them into four major groups — West Kilimanjaro (Meru, Siha to Kibosho), Central Kilimanjaro (Uruto Vunjo), Rombo, and Gveno.

2 There exists a very complete grammar of OM, which however makes little reference to tone: Raum [1964]; also an article on phonetic tone in Machame: Sharp [1953].
At the phonological level in OM there are only two tones, high (H) and
low (L). A phonological syllable may be defined as a segment necessarily
bearing one of these two tones, so that there will be as many tones as sylla-
bles at this level. Phonological H is marked /\/, phonological L /\/. Phono-
logical strings are enclosed by diagonal lines, so /XYZ/. At the phon-
etic level, a high tone is marked ['], a low is not marked; in addition,
there are also downstepped high, marked ['], rising [\~], and falling [\~] tones.

A vexing question is that of downstepped high tones, which are quite
frequent at the phonetic level. They can be discussed under three headings:

a. Clear and predictable downstep linked to vowel coalescence: the
vowel coalescence rules in OM would justify a study in themselves and only
their consequences for tonal analysis will be given here. When two vowels
coalesce, as for instance between subject and tense markers in verbs, the
resultant phonologically long vowel\(^3\) will carry an underlying complex tone
(to be distinguished from surface rising or falling tones), which can be of
four types: H + H, L + L, L + H, H + L. The first two are identical to
single H or L respectively and behave accordingly. The last two, which
both contain a combination of H and L in a different order, will be real-
ised as a single H tone on either the syllable itself or the next one, ac-
cording to the tone shift rules. In the case of an underlying complex tone
of the L + H type, the L part will be realised as a downstep relative to any
high preceding, e.g.

\[(1) \quad /nı́ wā-á-hūR-á/ -->
   /nı́ wāhūRā/ -->
   [ŋwāhūRā]
   'they bought (today)'
\]

The downstepped H on [-hūR-] represents both the L and H parts of the phon-
ologically complex tone on /wā-/. Again it is impossible to go deeper into the rules of vowel coalescence
in this paper, but it should be emphasised that the coalescence of any two

\(^3\)In contemporary OM, surface length is not phonemic, but Raum's descrip-
tion seems to imply that it was a century ago.
vowels does not automatically result in a *phonologically long* vowel bearing
two tone segments, e.g.,

\[(2) \quad /-lą-à#/ \rightarrow /-ląyá#/ \rightarrow [-ląyá#] ' (to) eat'\]

in contrast to

\[(3) \quad /á-am-à-wu-úkl/ \rightarrow
/amęłyá wu-úkl/ \rightarrow
[amęlyá wu-úk]...\]

'he has eaten honey'

Had we considered the result of the coalescence of /lą-/ and /à/ to be a
phonologically long vowel, the result would have been *-/ląyá/ and the exam­
ple */amęłyá wu-úkl/ > *[amęlyá wu-úk]...], which is wrong. Note that the
downstep H on [-kl] again represents both H and L segments of the complex
tone on /wu-ú/. In summary, phonologically long vowels can arise from the following cases
of coalescence:

\[(4) a. \quad /a + e/ \rightarrow /e:/, \ e.g.,
/wa-è-kè-kà-à pfó/ \rightarrow
/wèkèkàà pfó/ \rightarrow
[økøkøa pfó]
'they don't usually stay/live'\]

\[b. \quad /a+o/ \rightarrow /o:/, \ e.g.,
/wà-òsè/ \rightarrow /wòsè/ \rightarrow [wòsè] 'all (class 2)'\]

\[c. \quad /u+a/ \rightarrow /o:/, \ e.g.,
/-wú-àh-w-à/ \rightarrow /wòhò/ \rightarrow [...wòho] 'be killed'\]

\[d. \quad /u+e/ \rightarrow /o:/, \ e.g.,
/sù-à/ \rightarrow /sò/ \rightarrow [sò...] 'we'\]

Phonologically long vowels are also to be found before nasal clusters in at
least one case

\[(5) \quad /wa-ndù/ \rightarrow /wàndù/ \rightarrow [wàndù]\^4 'people'\]

\[^4 For the H on the nominal prefix, see 3.1.2. below.\]
to which the following can probably be equated

(6) /wá:-ná/ \rightarrow /wáná/ \rightarrow [wána] 'four (cl. 2)\textsuperscript{5}

b. Predictable, but not at all clear, is the downstep associated with
certain morphemes, e.g., the negative copular /cf/. Any H directly follow-
ing /cf/ will be downstepped, e.g.,

(7) /cf N-búrù pfó/ \rightarrow
[cf mbúrù pfó] and not
\*[cf mbúrù pfó]

'it isn't a goat'

/cf wá-hènù pfó/ \rightarrow [cf wáhènù pfó]\textsuperscript{6}

We haven't investigated this behaviour, nor have we an explanation for it.
Further investigation may show that this downstep is a lexical feature of
the morphemes in question (cf. the third underlying tone in Kikuyu) or that
it is morphosyntactic.

c. Unpredictable downstep, which sometimes appears in certain verbal
forms, but not regularly, even with the same speaker. We have chosen to
ignore such cases at present and have selected all our examples from unam-
busious utterances.

The OM phonemic inventory comprises /i,e,a,o,u,p,t,k,h,b,d,s,ʃ,pf,ts,c
(affricate, not stop), w (with two allophones, [β] before l,e, and [w] befo-
a,o,u),γ,l,r (trill),R (retroflex),m,n,ny,ŋ/.

2. Tone Shift

OM, like other Bantu languages in East Africa, has a tone shift, which
means that PB tones are realised on the syllable immediately following that
for which they are posited in PB. In other words, the phonetic tone on an
syllable will always to some extent depend on the underlying tone of the pre-
vious syllable. Cf. the following simple example

(8) /m-Rl l-á wá-súngù cf l-mú ná l-á wá-cákà pfó/

\textsuperscript{5}For the lowering of /ná/, see 3.3. below.

\textsuperscript{6}See note 4.
which will be heard as
[mRi ya wasungū ci ìmu ná ya wacaká pfó]
'villages of Europeans are not same as (those) of Chagas not.'

The only exception to this rule is to be found in connection with phonologically long vowels. As mentioned above, H + H and L + L behave exactly like single H and L respectively, e.g.,

(9) /á-á-hùR-à pfó/ →
/áhùRà pfó/ →
[ahùRà pfó]
'he did not buy (today)'

L + H gives a H on the following syllable, which will then be downstepped if immediately preceded by another H. Cf. the example given above as (1) (/nì wà-á-hùR-á/ → /nì wàhùRà/ → [nyáhùRà] ). H + L gives a H which does not shift and remains on the syllable itself, the following syllable will then bear a low tone:

(10) /tsí:-ná/ → /tsínà/ → [tsína] 'four (cl. 10)'
/á-á-mè-wú-àh-w-à/ → /àmèwòhò/ → [amèwòho] 'he has been killed'

The central fact of the shift raises the question of what happens sentence-initially and -finally.

2.2. Sentence initial position

2.2.1. /nì + verb. Verbs naturally often occur in sentence-initial position and many are preceded by /nì/7 which is realised as [nyi] or as a variety of assimilated nasals, or as total assimilation to the following consonant, thereby lengthening it, or as zero. Examples follow:

(11) a. /nì/ → [ny]
/nì ò-á-ké-àmb-üy-à m-kà ù-àkò/ →
/nì òkèàmbúyà mkà òkò/ →
[nyòkèàmbuya mkà òkò]
'are you looking at my wife (by any chance)_YES2
b. /nǐ/ → [n]
   /nǐ  à-kǘnd-ì wà-sùngù m-nú/ →
   [nákundí wasungú mnũ]
   'he likes Europeans a lot'

c. /nǐ/ → [CC]
   /nǐ lu-lé-hùR-à mà-Rùhú/ →
   [llùlehùRa màRuhú]
   'we bought bananas (before today)'

d. /nǐ/ → [φ]
   /nǐ wà-è-kè-hènd-à/ →
   /nǐ wèkèhèndā/ →
   [βékehèndā]
   'they usually go'

2.2.2. ní + X + verb. The preceding paragraph implies that /nǐ/ is an integral part of many verb forms. Nevertheless, it need not necessarily precede the verb immediately, but may often appear in sentence-initial position separated by a number of other items from the verb. The phonetics are the same as 2.2.1. Examples:

(12) a. /nǐ kíkí ò-á-mè-hùR-á/ →
   /nǐ kíkí òmèhùRá/ →
   [kíkí òmùhùRá]
   'what have you bought?' or

b. /nǐ ò-á-mè-hùR-á kíkí/ → [nómùhùRá kíkí]

c. /nǐ njòfù tšì-á-hènd-à m-ːndàn-íń/ →
   /nǐ njòfù tšahèndá ndànín/ →
   [nyí njófu tšahèndá ndenýín]
   'it is that the elephants went to the garden (today)'

2.2.3. ní + complement. Another variant of this occurs in the various phonetic shapes of the answer to questions such as 'Who are they?'

(13) a. [nyí wàcakã]

b. [òwàcakã] all from /nī wà-cákã/

c. [wwàcakã]
   'they are Chagas'

d. [wàcakã]
where the underlying form contains /nǐ/, the copular equivalent to 'be'. There is much to be said about whether this /nǐ/ is the same as the stabiliser /nǐ/ which precedes verbs, but in OM at least, they are identical in their tonal and segmental forms.

2.2.4. nǐ + person/class + [prefix + adj. stem]. Sentences such as

(14) a. [wá watutū] 'they (are) small'
   b. [nji mtutu] 'I (am) small'
   c. [nâ mtutu] 'he (is) small'
   d. [mfú mieji] 'it (is) tall (tree, cl. 3)'

contain an initial phonetic high tone, deriving from underlying /nǐ/, which is visible in the last two examples. The corresponding negative forms show an initial phonetic low tone, as negatives in OM do not take initial /nǐ/, but the person marker is now phonologically high, as can be seen in

(15) a. [wa watutu pfô] 'they (are) small not'
   b. [nji mtutu pfô] 'I (am) small not'
   c. [a mtutu pfô] 'he (is) small not'
   d. [fu mieji pfô] 'it (is) tall not'

It seems that these forms are actually shortened (not coalesced) forms of the copular /-i-/ (cf. Raum [1964:111-15]): in other dialects this ī is realised as Ỉı). The full forms, /wāl/, etc., are to be heard in the relative, e.g.,

(16) /i-wò wá-l wá-fô-l.../ →
    [iwò waí wafóy...]
    'those that are many...'

The difference between positive and negative can be explained as follows:

(17) a. /nǐ ā(Ŷ) mtutu/ → [nâ mtutû]
   b. /ā(Ŷ) mtutu pfô/ → [a mtutu pfô]

Compare the behaviour of the present tense A2 which is extremely similar (cf. 3.5. below).

2.2.5. Nouns in isolation. All nouns in isolation (citation forms) are preceded by a phonologically high tone. This is realised on the prefix, e.g.,
In classes 9/10, the class prefix is either a non-syllabic nasal as in 
/N-kukú/ → [ŋgúkú] 'chicken', or zero, as in 
/N-tümö/ → [tümö] 'market'. The prefix for class 5 is /l/, which never appears in some nouns and only 
onionally in others. So in these three classes and occasionally in others 
where the initial syllable is not tone bearing, the first syllable of the 
stem will carry a high tone and any following H will normally be downstepped, 
as in

(19) a. ′ + Ñ-kúkú/ → [ŋgúkú] 'chicken'
    b. ′ + [l]-rǐná/ → [rǐná] 'hole'

The downstep in (19a) can be explained here by the lowering influence of the 
I class prefix, which is not realised segmentally.

2.2.6. Elsewhere. All other sentence-initial syllables will be phonetically 
low.

2.3. Sentence-final position. The final phonetic syllable will have to bear 
the tone transferred to it from the previous syllable plus its own tone. The 
following rules operate:

(22) a. ′ + CV#/ → [CV#], e.g.,
   /hùR-á mà-Ñ-kúkú/ →
   [huRa mágukú]
   'buy big chickens'

b. ′ + CV#/ → [CV#], e.g.,
   /hùR-á mà-Rùhú/ →
   [huRa máRuhú]
   'buy bananas'

c. ′ + CV#/ → [CV#], e.g.,
   /hùR-á mà-kúmbi/ →
   [huRa mákumbi]
   'buy hoes'
4. Adjustments at positions other than sentence boundary. When a verb form with /nɪ/, realised as any of the phonetic forms given in 2.2.1. above, is preceded in a sentence by a phonological H, this H very often does not shift entirely but remains on its own syllable in the form of a rise, followed by a short pause, e.g.,

23) /ɨ-hɛ̀hɔ li-ngi li-tutu nili-a-funj-ik-á/ →
   /ɨhɛ̀hɔ lìngi lìtutu níliyáfunjiká/ →
   [ɨheho lìngi lìtutu níliyáfunjiká]
   'another small tooth is broken'

This behaviour which, although very frequent, is apparently optional, can be attributed to a reluctance to have three underlying tones represented on one syllable.

1. Syntactic Categories

The aforediscussed are general phenomena, whereas now we consider what happens in individual sentence constituents—nouns, other elements of the P, verbs, and particles.

4. Nouns. Given that there are only two phonological tones, and that each syllable has to be tone bearing, there are theoretically two possible patterns for mono-syllables, four for disyllables, etc., e.g.,

24) Monosyllables

- a. /m-Rl/ → [mRl] 'homestead' L
- b. /m-dľ/ → [mď] 'medicine' H

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8See note 4.
9For this change of tone in the verb stem, see 3.4.7. below.
(25) Disyllables

a. /ˈm-hɛnʊ/ → [mˈhɛnʊ] 'stranger'\(^{10}\) LL
b. /kɪ-nʊŋʊ/ → [kɪnʊŋʊ] 'pot' LH
c. /ɔ-wɔkɔ/ → [ɔwɔkɔ] 'arm' HL
d. /ɔ-dɛndɛ/ → [ɔdɛndɛ] 'leg' HH

We will not deal here with nominal stems of three or more syllables.

3.1.1. Nominal prefixes. With the exception of 3.1.2. nominal prefixes are low for all classes and are as follows: classes 1, 3, 4 /m/, class 2 /wa/, class 5 /(l)/, class 6 /mɛ/, class 7 /kɛ/, class 8 /ʃl/, classes 9, 10 /n/, class 11 /ŋ/, (class 12 /kɛ/), class 14 /wʊ/, classes 15, 17 /kʊ/, class 16 /hæ/.

3.1.2. Mhenu-rule. Many noun stems have only low tones and in all such cases a high phonetic tone appears on the stem initial syllable, indicating that the phonological tone from the prefix must be high. This we have called the *mhenu rule* as it first came to our attention when *mhenu* 'stranger' was said in isolation. Expecting *[mˈhɛnʊ], following 3.1.1., we found instead:

(26) a. [mˈhɛnʊ] from /′ + m-hɛnʊ/, similarly
b. [mɬɪ] from /′ + m-ɬɪ/ 'homestead'

This rule applies apparently to nouns of any syllable length, provided only all the stem tones are low, and to all noun classes. But, and it is a rather large but, it only applies in certain environments--nouns in isolation, nouns in initial position as subject immediately followed by a verb, and nouns in any function immediately followed by demonstratives, /-ɔsɛ/ 'all', and by numerals bigger than six, which latter are best treated as nouns as they show no form of agreement with the antecedent noun. Nouns in citation form have already been illustrated, examples of some of the others are:

(27) a. Noun + demonstrative (as subject)

/wa-hɛnʊ wʌˈlɪ ˈm-ɛ mɛ c-ə/ →
/waˈhɛnʊ wʌˈlɪ wʌmɛca/ →
[waˈhɛnʊ wʌˈlɪ wʌmɛca]\(^{11}\)

'those strangers have come'

\(^{10}\)See note 4.

\(^{11}\)For the change of tone of /wʌˈlɪ/, see 3.3. below.
b. Noun + demonstrative (as object)
/ni nj1-kúnd-1 wá-hènù wá-lyá/ →
[Njíkundí wahénu walyá]
'I like those strangers'

c. Noun + nominal numeral
/wá-hènù l-kúmì wà-á-mè-c-à/ →
[Wahénu ikumí waméca]
'ten strangers have come'

Here is a set of environments where the rule does not work—when the noun is followed by numerals from one to six ("real numerals"), possessives, adjectives, verbs in relative form\(^{12}\), genitive particle (-a), locative suffix -ini), -ngi 'other', and subject nominals deriving from the verbs of embedded sentences (e.g., 'to tell the truth is good'). Examples:

\(^{12}\) Due to the rather large number of inconsistencies in our data, it might be more correct to say that the mhenu-rule seems to be optional in the case of relatives.

38) a. Numerals
/
\begin{verbatim}
\text{ni-nj1-fc-1 m-hènù ū-mú tūtū/} →
\end{verbatim}
[\text{njîcî mhenu umu tûpu}]
'I know only one stranger'

b. Possessive
/
\begin{verbatim}
\text{m-Rî l-adû ni-f l m-cā/} →
\end{verbatim}
[mRî yadû nî mcã]
'our homesteads are nice'

c. Adjective
/
\begin{verbatim}
wà-hènù wà-īwú wà-á-mè-c-à/ →
\end{verbatim}
[wahénu waiwú waméca]
'black strangers have come'

d. Verbs in relative form
/
\begin{verbatim}
\text{ni-ā-fc-1 wà-hènù wà-fó-ī m-nú/} →
\end{verbatim}
[nàícî wahénu wafóy mnû]
'he knows strangers (who are) very many'
e. Genitive particles

/ni-njí-künd-i ṉ-ɲàmà 1-à ṉ-kúkú/ →

[njíkündí nyama ya ngrundú]
'I like chicken meat'

f. Locative

/m-èhè ní-à-ì-ê-pê-ì-à m-èdà-ìnì fù-ŋànn-ì/ →

[mhènu nálepfìa medenàl fùghàny]
'the stranger died in the big river'

g. -ngí 'other'

/lí-hèhò lí-ngí lí-tútú ní-ìí-à-fùunj-ìk-à/ →

[iheho língí lítutú lyáfùunjìkà] (cf. 2.4.)
'another small tooth is broken'

h. Nouns deriving from embedded verbs

/ì-hùRà mà-Rùhú ní nà-ìcâ/ →

[ihuRà maruhú nécâ]
'to buy bananas is good'

cf. in isolation [huRà] from /i-hùR-à/ 'to buy', class 5

3.1.3. Irregular nouns. A few disyllabic noun stems behave irregularly. Most of these are probably loans, and they could be fitted into the general pattern by postulating a complex tone: e.g., [côndî] 'sheep' which always keeps a H on [-cônd-], whatever the context, and does not follow the mhent-rule, could be explained as /i-côndî/. In the same way, the word [kítë] 'dog' is always [...kítë...] in context, e.g.,

(29) [kítë kitutû kyákapô]
'a little dog was beaten (today)!

The underlying form could be written */kî-tâ/ although there is no justification for a complex tone in this position. Note that while in OM the stem is /-te/ (sg. kîte, pl. jîte), in other Chaga dialects /-kîtë/ is the stem (generally in class 5/6).

A more difficult case is posed by [póRà] or [póRà] 'egg' for which we would have to posit the form */l-póRë/. It is probably best to consider this an irregular loanword.
2. **Adjectives.** Adjectives behave as nouns in that they can all have the one patterns described above and they take the same set of prefixes (except n cl. 9/10 where the prefix can be either /N-/ or /njì-/).

30) a. /nì-njì-wòd-è N-gùò njì-tùtù/ →
   [njìwòdè nguò njìtùtù]
   'I have small/few clothes'

b. /nì-njì-wòd-è N-gùò njì-fìfì/ →
   [njìwòdè nguò njìfìfì]
   'I have white clothes'

c. /nì-njì-wòd-è N-gùò njì-iwù/ →
   [njìwòdè nguò njìiwù]
   'I have black clothes'

d. /nì-njì-wòd-è N-gùò njì-àngù/ →
   [njìwòdè nguò njìàngù]
   'I have light clothes'

There are certain words which are translated by adjectives in a European language, or in Swahili, but they behave in all ways as verbs in a relative clause, which is indicated both by the shape of their prefixes and by their tonal behaviour. Such words are /-nánl/ 'big', /-fól/ 'many', etc.

3.3. **Other elements of NP.** Besides adjectives with nominal prefixes, there is another set of stems which follow the noun in the NP but do not behave like adjectives as they have a distinctive set of prefixes. These are: numerals from 1 to 6, /-ose/ 'all', /-ngí/ 'other', /-lyá/ 'that', possessives, interrogatives like /-ínga/ 'how many'. They are prefixed by class 1 /-l/-, class 2 /wá/-, class 3 /fú/-, classes 4,9 /í/-, class 5 /lí/-, classes 6,16 /há/-, class 7 /kí/-, class 8 /jí/-, class 10 /tá/-, class 11 /lí/-, class 14 /wú/-, classes 15,17 /kú/-.

So classes 1,4,9 have L prefixes, all the others are H. These stems can be classified according to their tonal behaviour as follows: /-RándáRù/ 'six' always has an underlying H on the first stem syllable whatever the tone of the prefix, e.g.,

(1) a. cl.2 /wá-ndù wá-RándáRù/ → [wandu waRándáRu] 'six people'
   b. cl.4 /m-ódà l-RándáRù/ → [meda lRandáRu] 'six rivers'
The other numerals (/m-ù/ 'one', /wí/ 'two', /RáRù/ 'three', /ná/ 'four', /tάnù/ 'five'), the demonstrative /l-ýá/ 'that', and /ngí/ 'other' exhibit tonal polarity. If the class prefix preceding the stem carries an underlying L (i.e., in classes 1, 4, 9), then the stem itself will be H. If the underlying tone of the prefix is H (as in the other classes), then the stem will be low. Examples:

(32) a. cl.1 /m-ndù ʊ-mú/ →
[mndu umú]
'one person'

b. cl.3 /m-Rí fú-mú/ →
/mRí fúmú/ →
[mRí fumú]
'one homestead'

c. cl.4 /m-Rí l-wí/ →
[mRí lβý]
'two homesteads'

d. cl.2 /wá-ndù wá-wí/ →
/wándu wáwí/ →
[wandu wáβí]
'two people'

e. cl.9 /N-búRú l-ngí/ →
[mburú lŋgí]
'another goat'

f. cl.10 /N-búRú t síngí/ →
/mbúRú t síngí/ →
[mburú t síngí]
'other goats'

g. cl.4 /m-édá l- :ná/ →
[meda iná]
'four rivers'

h. cl.2 /wá-áná wá- :ná/ →
/wáná wáná/ →
[wáná wáná]
'four children'
tional polarity is also to be found with verb stems (cf. 3.4.7. below) and also applies to the locative suffix /-ini/, and to the shorter demonstrative series (not dealt with here). From the situation obtaining in verb stems it is best to assume that the underlying tone of the stems is H, which turns to I after a H prefix (rather than a basic L which is raised after a L prefix).

The possessives (/-ako/ 'my', /-apfo/ 'your (sg.)', /-ake/ 'his, her', -adu/ 'our', /-anu/ 'your (pl.)', /-awo/ 'their' (cf. Raum [1964:80-81] table), and /-inga/ 'how many', offer a variant of this tonal polarity rule, which in their case might be better known as "tone reversal." Depending on the tone of the class prefix, they vary between -CVCV (cl.1,4,9), and -CVCV all other classes), e.g.,

(33) a. cl.1 /m-ánà ù-àkê/ →
/mànà òkê/ →
[manà okê]
'his child'

b. cl.2 /wà-ánà wá-àkê/ →
/wànà wákê/ →
[wànà wakê]
'his children'
c. cl.3 /m-Ri fú-anú/ →
/m-Ri fonú/ →
[mRi fonú]
'your homestead'

d. cl.4 /m-Ri l-ànú/ →
/m-Ri yànú/ →
[mRi yànú]
'your homesteads'

e. cl.16 /ní hà-ndú hà-ìngá ò-lé-mà-f-sk-à/ →
/ní hàndù hìngá òlèmèjìkà/ →
[nyi hàndu hìngá òlèmèjìkà]
'how many places have you already been to?'

f. cl.4 /ní m-Ri l-ìngá ò-lé-mà-f-sk-à/ →
/ní m-Ri ìngá òlèmèjìkà/ →
[nyi mRì ìngá òlèmèjìkà]
'how many homesteads have you already been to?'

Although the underlying form of /-òsè/ 'all' was given in (4) above as
/-òsè/, for the sake of simplification, this is probably incorrect. The
surface forms of classes 1, 4, 9 are identical to the other classes, so

34) a. cl.2 [wandu wòsè] 'all people'
b. cl.4 [mRì yòsè] 'all homesteads'

Since the underlying tone of the class markers /wá-/ and /l-/ are known to
be different, the high tone must be part of the stem, and we are thus led to
the probable solution /-òsè/ → /-òsè/ → [...òsè]. The lengthening of the
vowel /-ò-/ could be attributed to disappearing nasal (cf. the PB form *-òò-

Note that there is no tonal polarity here.

3.4. Verbs. Verbs have the structure

35) (nì) + class + tense + (object) + stem + tense
person

We use a system of referring to tense similar to that devised by Whiteley
[1960], that is, of using "tense" to refer to both tense and aspect, of re-
garding tense in this sense as consisting of a pre- and post-stem morpheme,
and of giving the pre-stem morpheme a number and the post-stem a letter, so that any "tense" will be referred to by both number and letter, e.g., A1, A2, B3, etc. Post-stem morphemes, for the purposes of this study, are /-a/ (A: neutral), /-e/ (B: subjunctive), /-ie/ (C: perfective), and /-i, -e/ (D), which latter needs some explanation. There are a number of defective verbs whose post-stem vowel is never /-a/, but either /-i/ or /-e/, e.g., /wóde/ 'have', presumably connected to /-wód-/ 'have', or /-ic1/ 'know'. In addition, there are some regular verbs, which have forms ending in these vowels, forms which in general have perfective or stative meaning, but not always, e.g. [nj(wo)ti] 'I see' (from [i(wona)] 'to see'). Raum [1964:141] feels that such forms are simply allomorphs of /-ie/ but since we are not sure about the semantics nor particularly the phonology of such a relationship, we have preferred to treat them separately. In any case, both /-ie/ and /-i, -e/ can be used with the same verb with different meanings.

Pre-stem morphemes are more numerous and the main ones are listed in 3.4.4. below. We have omitted a few less common markers, and it should be mentioned that these pre-stem morphemes can be combined in a bewildering variety of ways, up to four in a sequence (cf. Raum [1964:116-45]). Actually, Raum gives about 70 different forms of which only ten are characterised by a single morpheme, the others having two or more.

3.4.1. /-la-/ negative marker. Not all these morphemes have the same status, however. For example, the secondary negative marker /-la-/ can never be used by itself and can only be the initial morpheme in the sequence, immediately following the SM. The consecutive tense marker /-ka/, which cannot be used in the negative, is never preceded by another tense marker. The past tense markers /-s-/ and /-le-/ are never preceded by any tense marker other than /-la-/ etc.

For each tense, then, we will adopt the following descriptive conventions: a capital letter (A,B,C,D) indicates the suffixes /-a/, /-e/, /-ie/, /-i, -e/ respectively. A numeral indicates a given pre-stem marker (see list below). Complex tense markers are indicated by a combination of numerals (e.g. A 3+10, etc.). For each tense marker there exist three possible theoretical forms, as indicated by the small letters:

(36) a. /ni-SM-TM-stem-suffix/
b. /SM-TM-stem-suffix/\(^{13}\)
c. /SM-la-TM-stem-suffix/

Form (36c) appears mainly in secondary negatives which will not be dealt with here except in the case of tenses which do not have a primary negative. Primary negatives consist of form (36b) accompanied in sentence final position by /pfó/, or sometimes /nʃ/, e.g.,

(37) [njiléhúRa məRuhu pfó] or [njiléhúRa məRuhu nyʃ] 'I didn't buy bananas

In other Chaga dialects, additional negative markers exist beside some form of /pfó/\(^{14}\).

3.4.2. /nʃ/ stabiliser. The form /nʃ/, which is phonologically high, is often referred to as a "stabiliser". Its appearance varies from dialect to dialect in Chaga. In OM it seldom cooccurs with negatives, and is usually, although not always, present in positive tenses. It carries a strong sense of affirmation. It is almost always realised before a vowel (2sg. no-, 3sg. na-), but less often before consonants (cf. 2.2.1.).

3.4.3. Person/class markers (SM). SM's in OM are not distinguished from each other tonally nor do they have a basic tone. In any one tense, therefore, they all behave identically. They are /nji-/ 'I', /o-/ 'you (sg.)', /a-/ '3sg.', /lø-/ 'we', /m-/ 'you (pl.)', /wa-/ '3pl.', the rest being segmentally identical to the prefixes of 3.3.\(^{15}\).

3.4.4. Pre-stem tense markers. The TM which can be used by themselves are the following (with their numerical references): /-s-/ 1, /-(1)-/ 2, /-s/- 3 /-lé-/ 4, /-wè-/ 5, /-eçi-/ 6, /-è-/ 7, /-kə-/ 8, /-kà-/ 9\(^{16}\). The only other morpheme we will deal with is /-mà-/ 10, which is not found by itself but frequently occurs in combination.

\(^{13}\)Note that the difference between (36a) and (36b) is not just the presence or absence of /nʃ/, but also the tone of the SM as well as of the suffix in certain cases.

\(^{14}\)See Nurse and Philippson [forthcoming].

\(^{15}\)A few tenses have a slightly different set of prefixes. They are discussed under each individual tense.

\(^{16}\)Those morphemes not marked for tone exhibit tone reversal.
The justification for considering /-eci-/ as a single morpheme and not /e + ci/ is primarily tonal, as will be seen below.

3.4.5. **Object markers.** These are segmentally the same as the SMs of 3.4.3 except /-kù-/'2sg.', /-m-/'3sg', plus /-kú-/'reflexive'. /-njì-/, /kù-/, /-m-/ are L, all the others high.

3.4.6. **Verb stems.** Verb stems may of course be mono- or poly-syllabic. Monosyllabic stems are either L or H phonologically, e.g.,

\[
\begin{array}{ll}
\text{(37) } & \text{High} & \text{Low} \\
/-káp-/ & 'hit' & /-hùR-/ 'buy' \\
/-dém-/ & 'cultivate' & /-hènd- 'go' \\
/-Rùnd-/ & 'work' & /-sèk- 'laugh' \\
\end{array}
\]

A few stems have an underlying long vowel, e.g.,

\[
\begin{array}{ll}
\text{(38) } & /-wàh-/ 'kill', /-kòy-/ 'meet', etc. \\
\end{array}
\]

Polysyllables behave in a similar way—however many syllables a stem has, it is only the first which is distinctive in that it may be H or L, the following syllables being all L. This is true whether the stem consists of root + extension or whether it is a real polysyllable, e.g.,

\[
\begin{array}{ll}
\text{(39) } & \text{High} & \text{Low} \\
/-íc-ùR-/ & 'fill' & /-làm-ì- 'be heavy' \\
/-káp-àn-/ & 'fight' & /-hòR-òk- 'stand' \\
/-fòrèw-/ & 'beg' & /-hàdìm- 'forget' \\
\end{array}
\]

3.4.7. **Tonal polarity.** It may be seen in 3.3.4 that several of the pre-stem TMs end in a H. Similarly most of the object markers listed in 3.4.5 are H. When H's from either of these two series immediately precede a H in the first syllable of the verb stem, then the latter is realised as L. That is, the H-L contrast in verb stems is neutralised after a preceding H, e.g.,

\[
\begin{array}{ll}
\text{(40) a. } & \text{L } /nì-njì-łó-hùR-à/ \rightarrow [njì]lehùRà] 'I bought' \\
& \text{b. } H /nì-njì-łó-káp-à/ \rightarrow /nì njìlékápà/ \rightarrow [njìlékápà] 'I hit' \\
\end{array}
\]

When the tense or object marker is L it does not affect what follows, e.g.,
This phenomenon is clearly related to that of sec. 3.3. Descriptions of such by languages, e.g., Whiteley's [1960, 1962] work on Kamba and Gusii, employ the notion of Imposed Pattern to explain such tense patterns which were not the single sum of individual lexical tones, but in OM this proves unnecessary as neutralisation of verb tones can be explained by a general phonological rule.

3.5. Tenses. Following are the most important individual tenses.

3.5.1. Tense A2. The present continuous, general present tense consists of a positive form:

\[(43)\quad \text{A2a } /nI-SM-{{(1)}-stem}\{ (1)-stem\} \rightarrow \]

a. \[/nI-njI-{(1)}-{(1)}-{hUR-a maRuh}/ \rightarrow \]
\[\{nIhURa maRuh\} \]
'I am buying bananas'

b. \[/nI-{(1)}-{(1)}-{kap-a ma-ana}/ \rightarrow \]
\[\{nakapa mana\} \]
'he is hitting the child'

and a negative form:

\[(44)\quad \text{A2b } /SM-{{(1)}-stem}\{ (1)-stem\} \rightarrow \]

a. \[/ni-{(1)}-{(1)}-{hUR-a ma-Ruhu pf/o}/ \rightarrow \]
\[\{nihURa maRuhu pf\} \]
'I am not buying bananas'

b. \[/a-{(1)}-{(1)}-{kap-a ma-ana pf/o}/ \rightarrow \]
\[\{akapa mana pf\} \]
'he is not hitting the child'
The surface forms of this tense have changed since Raum's time since he gives them as njiikapa, aihiRa, etc. (cf. Raum [1964:116]). The neighbouring, very similar, Vunjo dialect retains the old forms. Even in OM, permuted forms of the same tense still have the TM */i-/*, e.g.,

\[(15) \> \text{nyi ikapá njií} \> 'it is hitting I am'\]

Compare the analysis presented in 2.2.4. above, which applies here also. The second */-i-/* is of course the infinitive prefix which explains its change of tone, according to the mhenu-rule (3.1.2.).

3.5.2. Tense A3. This tense, the recent past, consists of the positive form:

\[(16) \> \text{A3a} \> /ni-SM-á-stem-á/ \]
\[/ni-lù-á-hùR-á mà-Rùhú/ →
\[/ni lùhùRá màRùhú/ →
\[/11 hôRá màRùhú] \>
\[\text{'we bought bananas (today)'}\]

and the negative:

\[(17) \> \text{A3b} \> /SM-á-stem-á/ \]
\[/lù-á-hùR-á mà-Rùhú pfó/ →
\[/lùhùRá màRùhú pfó\]
\[\text{'we didn't buy bananas (today)'}\]

3.5.3. Tense A4. The non-recent past has both a positive form:

\[(18) \> \text{A4a} \> /ni-SM-lé-stem-á/ \]
\[/í-cò ni-lù-lé-hènd-à mà-càmì/ →
\[/i-cò lùlehènda macàmì\]
\[\text{'the day before yesterday we went to Machame'}\]

and a negative:

\[(19) \> \text{A4b} \> /SM-lé-stem-á/ \]
\[/njí-lé-n-kòy-á kàní kú-ákè pfó/ →
\[/njílèn-kòya kàní kokè pfó\]
\[\text{'I didn't find him at home'}\]

3.5.4. Tense A5. This tense, the past continuous, also consists of a positive form:
and a negative:

(51) A5b /SIM-wè-stem-à/
/njí-wè-hùR-à mà-Rùhú pfó/ →
[njijêhuRa maRuhu pfó]
'I wasn't buying bananas'

3.5.5. Tense A6. This is the future; it has both a positive form:

(52) A6a /nî-SIM-ècl-stem-à/
/nê-gàmá nî-è-ècl-hùR-à mà-Rùhú/ →
[ngama nócîhûRa maRuhû]
'will you buy bananas tomorrow?'

and a negative:

(53) A6b /SIM-ècl-stem-à/ 
/njî-ècl-èm-wí-à pfó/ →
[njiceńmbiá pfó]
'I won't tell him'

We write /-eci-/ as a single morpheme to avoid giving the impression that the first syllable is identical to the /-è-/ morpheme (see A7 below). As can be seen from above, /-eci-/ displays tonal assimilation to the tone of the SIM, which is never the case with /-è-/ (cf. for instance tense A7+8 below).

3.5.6. Tense A7. This tense, the imperfective, is found only in dependent clauses. This is one of the few tenses characterised by a slightly different SIM series: the 2sg. is /ku-/ instead of /o-/; and 3sg. /ka-/ instead of /a-/. Tense A7a does not exist. But (54) is attested:

(54) A7b /SIM-è-èstêm-à/ 
/ní-njî-le-kù-wón-à kú-è-déd-à nà wà:ndû wà-wí/ →
/ní njîlékûwûnà kòdêdà nà wàndû wàwí/ →
[njîlékûwonà kòdêdà na wandu waâf] 
'I saw you talking to two people'
3.5.7. **Tense A9.** The *past consecutive/conditional* tense is found only in dependent clauses. This tense has an irregular combination of SM and TM in the three singular forms: 1sg. */ŋịka-/, 2sg. */kọ-/, and not */oka-/, */kuka-/, and 3sg. */kà-/, not */aκa-/, or */kaka-/. Furthermore, these three SMs do not carry a H, whereas all the other SMs do in this tense. Tense A9a does not exist, but A9b does:

(55) **A9b** /SM (except 1/2/3sg. SM)-kà-stem-à/

a. /mà:pfuwe hà-kà-sàny-à hà--ndò hà-mù/ →
   
   [mapfuwe hakàkusànya hando hambù]
   
   'and the baboons got together in one place'

b. /mà:pfuwe hà-kà-sàny-à hà--ndò hà-mù/ →
   
   [mapfuwe hakàkusànya hando hambù]
   
   'and the baboons got together in one place'

3.5.8. **Tense A7+8.** This is the *habitual* and it consists of two forms: the first, the positive:

(56) **A7+8a** /nì-SM-è-ké-stem-à/

/mà:kungà nì-hà-è-ké-kà-à m-Rìngà-nì/ →

/mà:kungà nì hèkèkà màmìngènì/ →

[makungà hékekàa màmìngènì]

'eels live in water'

and the second, negative:

(57) **A7+8b** /SM-è-ké-stem-à/

/jì-lèhe jì-è-ké-1d-à kù-fùl nà N-ùmbà pfò/ →

/jì-lèhe jìèkèda kùfùl nà mìmbà pfò/ →

[jìlèhe jìèkèda kufùl na mba pfò]

'birds don't usually pass near the house'

3.5.9. **Tense A3+10.** This tense, a *perfective*, presents several difficulties. It is the only tense in which form (a) is not normally used to express statements, but only questions. Furthermore there are two (b) forms (here called (b') and (b'')), distinguished by the tone of the suffix. Thirdly, the (a) and the (b'') forms, ending in /-a/, seem to regularly (?) lower the H of H stems, so that there is no distinction in form between H and L stems. Since
these are the only forms of their kind it is hazardous to generalise but may a supplementary rule should be introduced stating that a H verbal suffix causes a lowering of a preceding H stem—all the other tenses having a H suffix also have a H pre-stem morpheme which causes a lowering of the stem to e anyway, so it is impossible to check:

(58) A3+10a /n1-SM-á-mà- \{i-stem-\} á/
    /pàpà ní-á-mà-1-jínj-á N-gùwè/ →
    /pàpà ní ǎmèsínjá ngùwè/ →
    [papá námèjínja ngùbá]
    'has Father slaughtered a goat?'

(59) A3+10b' /SM-á-mà- \{i-stem-\} á/
    /á-á-mà-1-hènd-à m-èdà-iní/ →
    /ǎmèhènda mèdèn]/ →
    [amèhènda medenyl]
    'he has gone to the river'

(60) A3+10b'' /SM-á-mà- \{i-stem-\} á/
    /N-pfúb\^17 1-á-mà-1-káp-á pfó/ →
    /mpfúo yámèkápà pfó/ →
    [mpfuò yamèkapa pfó]
    'it hasn't rained yet'

3.5.10. Tense A4+10. The past perfective has only:

(61) A4+10a /nī-SEM-1è-mà- \{i-stem-\} á/
    /nī-ò-1è-mà-1-jk-á mà-càmî/ →
    /nī òleméʃLkà màcàmî/ →
    [nyòleméʃLka macàmî]
    'have you ever been to Machame?'

The negative counterpart, A4+10b, does not exist.

\^17Also heard as [mvuo].
3.5.11. Tense B1. The subjunctive, consists of a form which only occurs in dependent clauses:

(62) B1a /nį-S mù-stem-è/
    /nį-nįl-kűnd-ì nį-ò-hůR-è mā-Růhů/ →
    [nįkundì nóhuRe maRuhu]
    'I want you to buy bananas'

and a form used, for example, to make requests:

(63) B1b
    /nį-hěnd-è sè/ → [nįhěndì sè] 'am I to go again?'

and a negative with the suffix /-e/ displaying tone reversal:

(64) B1c /sM-lè-
    {stèm-è}
    /stèm-è
    a. /ő-lè-hůR-è mā-Růhů ínù/ →
    [olůhuRe maRuhu ínu]
      'don't buy bananas today'
    b. /ő-lè-Růnd-è kû-dí sè pfó/ →
    [olůRundé kudi sé pfó]
      'don't work like this again'

3.5.12. Tense B4+10. This tense is the negative of A4+10; it also attests one reversal:

(65) B4+10b /sM-lè- má-
    {₁-stèm-è
    ₁-stèm-è
    a. /nį-lè-mā-fįk-è ḷpfó pfó/ →
    /nįlėmėfiko ḷpfó pfó/ →
    [nįlėmėfiko ḷpfó pfó]
      'I haven't been there yet'
    b. /nįlè-mā-ì-wôn-è è-m-nàwè měbicô ì-dì pfó/ →
    /nįlėměwôné èndu měbicô ìdí pfó/ →
    [nįlėměwôné èndu měbicô ìdí pfó]
      'I have never seen such a bad man'

3.5.13. Tense B4+10. This tense, a perfective (cf. 3.5.9.), has a suffix /-ê/. In OM/Chaga, which, as in most other Bantu languages in E. Africa, has many allomorphs; these are not presented here:
(66) Cla /nǐ-SÚ-stem-ìè/
/ň-mbè nĩ-1-ìè mà-háčè hà-wí/ →
/ňmbè nǐ jāyè màháčè hàwí/ →
[āmbè jaè maháčè hàwí] 'the cow has given birth to two calves'

This tense also attests a negative:

(67) Clb /SÚ-stem-ìè/
/ā-hùR-ìè mà-Rùhù pfō/ →
[ahúRIé maRuRu pfó] 'he hasn't bought bananas'

3.5.14. Tense Dl. For the meaning of this tense cf. 3.4. above. Both positive and negative forms exist:

(68) Dla /nǐ-SÚ-stem-ì/
/nǐ-njì-kùnd-ì ń-yàmà 1-à ń-bùrù m-nú/ →
[njìkundí nyama ya mburu mnú] 'I like goat meat very much'

(69) Dlb /SÚ-stem-ì/
/njìwón-ì kl-wànjà kì-ákè mà-térù nì/ →
/njìwónì klwànjà kyákè màtérù ní/ →
[njìwóni klwanjà kyáke materú ní] 'I don't see Materu's house plot'

REFERENCES


APPENDIX 1—Tone patterns of monosyllabic noun stems

<table>
<thead>
<tr>
<th>HIGH</th>
<th>LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>ṃáká/ 'wife'</td>
<td>/mːndò/ 'person'</td>
</tr>
<tr>
<td>ṃdí/ 'medicine'</td>
<td>/mːl/ 'root'</td>
</tr>
<tr>
<td>ṃdó/ 'head'</td>
<td>/mːl/ 'homestead'</td>
</tr>
<tr>
<td>ṃfí/ 'arrow'</td>
<td>/mːʃɑ/ 'thorn'</td>
</tr>
<tr>
<td>ṃsó/ 'flour'</td>
<td></td>
</tr>
<tr>
<td>ߊ́fú/ 'ashes'</td>
<td>/ɭːhɔ/ 'stone'</td>
</tr>
<tr>
<td>ɭRá/ 'leaf'</td>
<td>/ɭːndò/ 'animal'</td>
</tr>
<tr>
<td>ɭÚ/ 'voice'</td>
<td></td>
</tr>
<tr>
<td>ṃdá/ 'spittle'</td>
<td></td>
</tr>
<tr>
<td>ɭlďí/ 'stool, chair'</td>
<td>/kːːndò/ 'thing'</td>
</tr>
<tr>
<td>ɭłkú/ 'thousand'</td>
<td>/kːpfí/ 'wasp'</td>
</tr>
<tr>
<td>ɭłó/ 'night'</td>
<td></td>
</tr>
<tr>
<td>ɭldá/ 'war'</td>
<td>class 8</td>
</tr>
<tr>
<td>ɭndá/ 'louse'</td>
<td>class 9</td>
</tr>
<tr>
<td>ɭndí/ 'knee'</td>
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</tr>
<tr>
<td>ɭkú/ 'firewood'</td>
<td></td>
</tr>
<tr>
<td>ɭrɒ/ 'side'</td>
<td></td>
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<tr>
<td>ɭwudá/ 'bow'</td>
<td>class 14</td>
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<tr>
<td>ɭwükú/ 'old age'</td>
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<tr>
<td>ɭkúdú/ 'ear'</td>
<td>class 15</td>
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<tr>
<td></td>
<td>class 16</td>
</tr>
<tr>
<td></td>
<td>class 17</td>
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</table>

As these tables represent an intermediate stage of derivation, they will be seen to contain certain elements (e.g. /z,j/) not mentioned in sec. 1.
APPENDIX 2—Tone patterns of disyllabic noun stems (first syllable high)

<table>
<thead>
<tr>
<th>HIGH-HIGH</th>
<th>HIGH-LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>class 1</td>
<td></td>
</tr>
<tr>
<td>/mànà/</td>
<td>'child'</td>
</tr>
<tr>
<td>/ǹdémì/</td>
<td>'farmer'</td>
</tr>
<tr>
<td>/mìmì/</td>
<td>'singer'</td>
</tr>
<tr>
<td>/mìwì/</td>
<td>'thief'</td>
</tr>
<tr>
<td>/mìfìsì/</td>
<td>'cowherd'</td>
</tr>
<tr>
<td>/ǹRùndì/</td>
<td>'worker'</td>
</tr>
<tr>
<td>/mìsàcà/</td>
<td>'brother'</td>
</tr>
<tr>
<td>/msìngù/</td>
<td>'European'</td>
</tr>
<tr>
<td>class 2</td>
<td></td>
</tr>
<tr>
<td>/waRùmù/</td>
<td>'spirits of dead'</td>
</tr>
<tr>
<td>class 3</td>
<td></td>
</tr>
<tr>
<td>/màkà/</td>
<td>'year'</td>
</tr>
<tr>
<td>/ǹbàRì/</td>
<td>'sunlight'</td>
</tr>
<tr>
<td>/mèrl/</td>
<td>'moon'</td>
</tr>
<tr>
<td>/ǹhàsì/</td>
<td>'tail'</td>
</tr>
<tr>
<td>/ǹkònù/</td>
<td>'day'</td>
</tr>
<tr>
<td>/ǹnìjà/</td>
<td>'corpse'</td>
</tr>
<tr>
<td>/mòdò/</td>
<td>'fire'</td>
</tr>
<tr>
<td>/ǹrìmà/</td>
<td>'soul'</td>
</tr>
<tr>
<td>/ǹRásà/</td>
<td>'boundary'</td>
</tr>
<tr>
<td>/mRìngà/</td>
<td>'water'</td>
</tr>
<tr>
<td>/mìsàRì/</td>
<td>'slope'</td>
</tr>
<tr>
<td>/mìtsìrl/</td>
<td>'soot'</td>
</tr>
<tr>
<td>/mìtsù/</td>
<td>(from /ǹ-útsù/) 'smoke'</td>
</tr>
<tr>
<td>class 5</td>
<td></td>
</tr>
<tr>
<td>/lìntrl/</td>
<td>'forest'</td>
</tr>
<tr>
<td>/dìmà/</td>
<td>'liver'</td>
</tr>
<tr>
<td>/lìfù/</td>
<td>'bone'</td>
</tr>
<tr>
<td>/kàl/</td>
<td>'roof'</td>
</tr>
<tr>
<td>/kòmbè/</td>
<td>'shoulder'</td>
</tr>
<tr>
<td>/lòmì/</td>
<td>'ten'</td>
</tr>
<tr>
<td>/lìkùngù/</td>
<td>'fish'</td>
</tr>
<tr>
<td>/lìpfùmù/</td>
<td>'spear'</td>
</tr>
<tr>
<td>/lìpfùwè/</td>
<td>'baboon'</td>
</tr>
<tr>
<td>Category</td>
<td>Sample Words</td>
</tr>
<tr>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>class 6</td>
<td>/màfúdà/ 'oil', /màkàà̤/ 'charcoal', / màrúwà/ 'milk'</td>
</tr>
<tr>
<td>/kyélyá/</td>
<td>'food' class 7 /kl̩ímbò/ 'song', /kl̩línjè̤/ 'shadow', /kl̩warì̤/ 'clan', /kyàdu/ 'shoe'</td>
</tr>
<tr>
<td>/mbéù/</td>
<td>'seed' class 9 /mbúrù/ 'goat'</td>
</tr>
<tr>
<td>/ɔ̱gúkù/</td>
<td>'chicken' /mpfúò/ 'rain', /ɔ̱gímà̤/ 'monkey', /ɔ̱gòò/ 'heart', /ɔ̱gúRù/ 'tortoise'</td>
</tr>
<tr>
<td>/njókà/</td>
<td>'snake', /njúkÌ̤/ 'bee', /nzìngò/ 'neck'</td>
</tr>
<tr>
<td>/sàmù/</td>
<td>'blood'</td>
</tr>
<tr>
<td>/sònù/</td>
<td>'shame', /tèrÌ̤/ 'earth'</td>
</tr>
<tr>
<td>/òdùndè/</td>
<td>'leg' class 11 / ócàà/ 'fingernail'</td>
</tr>
<tr>
<td>/òcúl/</td>
<td>'hair'</td>
</tr>
<tr>
<td>/òlùmÌ̤/</td>
<td>'tongue'</td>
</tr>
<tr>
<td>/òmbè̤/ (from /òmbè̤/)</td>
<td>'horn'</td>
</tr>
<tr>
<td>/brúsù/</td>
<td>'string'</td>
</tr>
<tr>
<td>/owèrÌ̤/</td>
<td>'feather'</td>
</tr>
<tr>
<td>/òwìnÌ̤/</td>
<td>'speed'</td>
</tr>
<tr>
<td>/òwòkò/</td>
<td>'arm'</td>
</tr>
<tr>
<td>class 14</td>
<td>/wùkÌ̤/ (from /wù-úkl/) 'honey'</td>
</tr>
</tbody>
</table>
APPENDIX 3--Tone patterns of disyllabic noun stems (first syllable low)

<table>
<thead>
<tr>
<th>LOW-LOW</th>
<th>LOW-HIGH</th>
</tr>
</thead>
</table>
| /mɛli:/ 'subchief' class 1 | /mɛrangí/ 'chief'
| /mɛrì:/ 'nurse'      | /mɛroá/ 'young woman'
| /mɛnɛnù/ 'stranger' | /mɛnɔrɔ/ '(young) man'
| /mɛsɔɾi/ 'noble'     | /pɛpá/ 'father'
| /mɛdɔ/ 'river' class 3 | /mɔdú/ 'beehive'
| /mɛfɪɾi/ 'day (24 hours)' | /mɔndú/ '(law) case'
| /mɛhɔndá/ 'burden'   | /mɛrɛwá/ 'banana rope'
| /mɛhɔmá/ 'cow'       |                 |
| /mɛhɔngɔ/ 'back'     |                 |
| /mɛndá/ 'garden'     |                 |
| /məhɔ́ðɔ/ 'stem of banana tree' |                 |
| /mɔngɔ/ 'door'       |                 |
| /mɛlɔká/ 'heat'      |                 |
| /lɛmbè/ 'mango' class 5 | /lɛkɪ́l/ 'tree'
| /lɛhànà/ 'hundred'   | /lɛpɔ́l/ 'cloud'
| /lɛhɔ́hɔ/ 'tooth'    | /rɛná/ 'hole'
| /tɛmɔ/ 'game'        | /lɛɾʊmú/ 'leopard'
|                 | /lɪRhú/ 'banana'
|                 | /lɪRʊngú/ 'hole'
|                 | /lɪsɔká/ 'ax'
| /kɪkumbí/ 'granary' class 7 | /kɪhàmbá/ 'field'
| /kɪmɪnýo/ 'finger'   | /kɪhɔ́wò/ /kɪwɔ́hɔ/ 'rope'
| /kɪtərà/ 'bed'       | /kɪlɛhɛ/ 'bird'
|                 | /kɪnʊŋú/ 'pot'
|                 | /kɪRʊmí/ 'fame'
|                 | /kɪyɔ́jú/ 'knife'
| /mbùdɔ/ 'nose' class 9 | /mbɔ́hó/ 'buffalo'
| /nmbè/ (from /N-umbè/) 'cattle' | /nmbá/ (from /N-umbá/) 'house'
| /ndɛwá/ 'pool'       | /ndɛu/ 'stomach'
| /ngàwò/ 'shield'     | /ngàmá/ 'tomorrow'
| /ŋɔl/ 'rope'         | /njɔnɔ́/ 'skin'
| /ŋuò/ 'clothes'      | /nʊmá/ 'behind'
| /ŋuowé/ 'pig'        | /tʊmó/ 'market' |
**APPENDIX 4—Verb stems**

<table>
<thead>
<tr>
<th>LOW</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>/-àmbuya/ 'look at'</td>
<td>/-âadanya/ 'listen'</td>
</tr>
<tr>
<td>/-àtsa/ 'light fire'</td>
<td>/-àpfamia/ 'smell' (trans.)</td>
</tr>
<tr>
<td>/-cà/ 'come'</td>
<td>/-dâhia/ 'draw water'</td>
</tr>
<tr>
<td>/-hàdima/ 'forget'</td>
<td>/-dâmia/ 'sit'</td>
</tr>
<tr>
<td>/-hàmba/ 'say'</td>
<td>/-dêda/ 'talk'</td>
</tr>
<tr>
<td>/-hènda/ 'go'</td>
<td>/-dêka/ 'get lost'</td>
</tr>
<tr>
<td>/-hèja/ 'try'</td>
<td>/-dêma/ 'cultivate'</td>
</tr>
<tr>
<td>/-hèRoKa/ 'stand'</td>
<td>/-dîca/ 'run'</td>
</tr>
<tr>
<td>/-hùRa/ 'buy'</td>
<td>/-dûma/ 'send'</td>
</tr>
<tr>
<td>/-làhuDa/ 'be satiated'</td>
<td>/-dûo/ 'take away'</td>
</tr>
<tr>
<td>/-kùmba/ 'throw,sell'</td>
<td>/-dûmbuo/ 'cut'</td>
</tr>
<tr>
<td>/-lìa/ 'cry'</td>
<td>/-ênde/ 'bring'</td>
</tr>
<tr>
<td>/-mànya/ 'know'</td>
<td>/-fâna/ 'resemble'</td>
</tr>
<tr>
<td>/-màa/ 'finish'</td>
<td>/-fîhira/ 'cry'</td>
</tr>
<tr>
<td>/-màrlsa/ 'finish'</td>
<td>/-fòya/ 'be numerous'</td>
</tr>
<tr>
<td>/-pfüla/ 'look for'</td>
<td>/-fûna/ 'drive away,chase'</td>
</tr>
<tr>
<td>/-rûnduka/ 'fly'</td>
<td>/-fûnja/ 'break'</td>
</tr>
<tr>
<td>/-Rìka/ 'hide'</td>
<td>/-ìco/ 'hear'</td>
</tr>
<tr>
<td>/-sàanja/ 'wash' (trans.)</td>
<td>/-ìcuRa/ 'fill'</td>
</tr>
<tr>
<td>/-sèka/ 'laugh'</td>
<td>/-ìda/ 'pass'</td>
</tr>
</tbody>
</table>
Appendix 4 (cont.)

<table>
<thead>
<tr>
<th>LOW</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>/-dīka/</td>
<td>'arrive'</td>
</tr>
<tr>
<td>/-tēma/</td>
<td>'play'</td>
</tr>
<tr>
<td>/-dima/</td>
<td>'be able to'</td>
</tr>
<tr>
<td>/-tīla/</td>
<td>'be white'</td>
</tr>
<tr>
<td>/-ūmba/</td>
<td>'sing'</td>
</tr>
<tr>
<td>/-īwa/</td>
<td>'steal'</td>
</tr>
<tr>
<td>/-kāanga/</td>
<td>'fly, roast'</td>
</tr>
<tr>
<td>/-kāpa/</td>
<td>'hit'</td>
</tr>
<tr>
<td>/-kōRa/</td>
<td>'cook'</td>
</tr>
<tr>
<td>/-kūdīka/</td>
<td>'carry'</td>
</tr>
<tr>
<td>/-kúo/</td>
<td>'get big'</td>
</tr>
<tr>
<td>/-kūre/</td>
<td>'come out'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HIGH</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>/-kūsanya/</td>
<td>'gather (of crowd)'</td>
</tr>
<tr>
<td>/-kūsRa/</td>
<td>'think'</td>
</tr>
<tr>
<td>/-lāa/</td>
<td>'sleep'</td>
</tr>
<tr>
<td>/-lāsa/</td>
<td>'shoot'</td>
</tr>
<tr>
<td>/-tīs/</td>
<td>'herd'</td>
</tr>
<tr>
<td>/-lódia/</td>
<td>'dream'</td>
</tr>
<tr>
<td>/-lōRa/</td>
<td>'show'</td>
</tr>
<tr>
<td>/-lūo/</td>
<td>'be sick'</td>
</tr>
<tr>
<td>/-līya/</td>
<td>'eat'</td>
</tr>
<tr>
<td>/-mānya/</td>
<td>'cut'</td>
</tr>
<tr>
<td>/-nyō/</td>
<td>'drink'</td>
</tr>
<tr>
<td>/-gāna/</td>
<td>'be big'</td>
</tr>
<tr>
<td>/-ōloka/</td>
<td>'fall'</td>
</tr>
<tr>
<td>/-ōngoya/</td>
<td>'talk'</td>
</tr>
<tr>
<td>/-pāRa/</td>
<td>'break in pieces'</td>
</tr>
<tr>
<td>/-pfā/</td>
<td>'die'</td>
</tr>
<tr>
<td>/-pūsuo/</td>
<td>'pour'</td>
</tr>
<tr>
<td>/-rūma/</td>
<td>'insult'</td>
</tr>
<tr>
<td>/-Rāa/</td>
<td>'wear'</td>
</tr>
<tr>
<td>/-sāmbuo/</td>
<td>'harvest'</td>
</tr>
<tr>
<td>/-slā/</td>
<td>'finish' (intrans.)</td>
</tr>
<tr>
<td>/-sūma/</td>
<td>'dig'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HIGH</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>/-jīna/</td>
<td>'dance'</td>
</tr>
<tr>
<td>/-jīnga/</td>
<td>'close'</td>
</tr>
<tr>
<td>/-tāa/</td>
<td>'pay'</td>
</tr>
<tr>
<td>/-tērewa/</td>
<td>'ask for'</td>
</tr>
<tr>
<td>/-ūma/</td>
<td>'dry'</td>
</tr>
<tr>
<td>/-ūmba/</td>
<td>'make pots'</td>
</tr>
<tr>
<td>/-wāda/</td>
<td>'get'</td>
</tr>
<tr>
<td>/-wāwa/</td>
<td>'hurt'</td>
</tr>
<tr>
<td>/-wēsa/</td>
<td>'ask'</td>
</tr>
<tr>
<td>/-wīa/</td>
<td>'tell'</td>
</tr>
<tr>
<td>/-wīka/</td>
<td>'put'</td>
</tr>
<tr>
<td>/-wōna/</td>
<td>'see'</td>
</tr>
<tr>
<td>/-wūka/</td>
<td>'come out'</td>
</tr>
<tr>
<td>/-wūta/</td>
<td>'take out'</td>
</tr>
<tr>
<td>/-wūya/</td>
<td>'return' (intrans.)</td>
</tr>
</tbody>
</table>