On the Origin of Tonal Classes in Kinande Noun Stems

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<td>As Published</td>
<td></td>
</tr>
<tr>
<td>Publisher</td>
<td>Dept. of Linguistics and the African Studies Center, University of California, Los Angeles</td>
</tr>
<tr>
<td>Version</td>
<td>Author's final manuscript</td>
</tr>
<tr>
<td>Accessed</td>
<td>Wed Mar 16 08:35:08 EDT 2016</td>
</tr>
<tr>
<td>Citable Link</td>
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On the Origin of Tonal Classes in Kinande Noun Stems

This paper investigates the Proto-Bantu origins of the principal tonal classes in Kinande nonderived mono- and disyllabic nominal stems. The ternary H vs. L vs. 0 distinction in the final syllable of the current language is traced back to a binary H vs. L contrast in Proto Bantu on the basis of two strata of reconstruction: first, a shallow one based on c. 200 PB cognates shared with the closely related Lacustrine languages Runyankore, Haya, and Jita and second, a deeper one based on c. 100 PB cognates shared with the more distantly related Congolese languages Tembo, Luba, and Lingala. A chronology of tone changes is postulated in which different sequencing of the same changes as well as alternative phonologizations of ambiguous phonetic structures play a key role.

Keywords Kinande, Proto Bantu, tonal reconstruction, ternary contrast

1. Introduction

In one of the first investigations of the tonology of the Bantu language Kinande (D-42), Hyman (1990) isolated the six contrasting tone patterns of (1) for disyllabic noun stems. They arise principally from a process shifting a high tone (H) one syllable to the left. In addition, to account for the contrast between the stable H of e-ki-hānde vs. the alternating H of e-ki-ryâtu, the phrase-medial form appearing before the modifier ki-r̄to ‘heavy’ is taken as underlying and a process that attaches HL% boundary tones to the penultimate and final syllables of the phrase-final form is proposed. Words like e-ki-tsungu and e-ki-koba that block the attachment of the HL% are assigned an underlying final low tone (L). As seen in (1b), this structure prevents the H% from

1 There are actually a few additional minor patterns; see section 5. As a representative of the tonal class of e-ki-hānde ‘piece of cloth’ Hyman (1990) designates e-ki-tābu ‘book’ a Swahili loan ultimately from Arabic.
reaching the penult by the ban on crossing autosegmental association lines. Kinande thus presents an underlying ternary /H-L-0/ contrast on the final syllable of disyllabic stems in this analysis.

(1) a. citation | medial | gloss | lexical | type
---|---|---|---|---
e-ki-ryátu | e-ki-ryatu kí-říto | 'shoe' | /ryatu/ | /00/
e-ki-tsungu | e-ki-tsungu kí-říto | 'potato' | /tsungù/ | /0L/
e-kí-rímu | e-kí-rímu kí-říto | 'spirit' | /římu/ | /H0/
e-kí-koba | e-kí-koba kí-říto | 'rope' | /kóbà/ | /HL/
e-ki-hánde | e-ki-hánde kí-říto | 'cloth' | /tabú/ | /0H/
e-kí-sáka | e-kí-sáka kí-říto | 'branch' | /sáká/ | /HH/

b. e-ki-ryátu | e-ki-tsungu
\ | \ 
H-L | L | H-L %
/e-ki-rímu/ = e-ki-rímu | /e-ki-kóbà/ = e-kí-koba
\ | \ 
H L | L | H-L%

Given that Proto-Bantu (PB) nouns are reconstructed with four contrasting tonal shapes /HH, HL, LH, LL/ by Greenberg (1948) and Guthrie (1967), the question of the diachronic origin of the Kinande stem classes arises. The goal of this paper is to shed light on this matter. The paper has three parts. First, we report the results of an analysis of c. 200 cognates shared between Kinande and several closely related Lacustrine languages based on the material in recently published lexicons of substantial (over 1,000 entries) size for Runyankore (Kaji 2004), Haya (Kaji 2000), and E-24, 25 Jita (Downing 1996 Ukewere dialect and Kagaya 2005 Mrangi dialect)—see Appendix A for the complete list. Second, we explore the origin of the contrast between the final L of /kóbà/ vs. the 0 of /římu/ based on the material in the lexicons for the more distantly related Congolese languages Tembo (Kaji 1986, 1992), Luba (Yukawa 1992), and
Lingala (Kaji 1992), in order to evaluate the hypothesis of Meeussen (1976) that Kinande /HL/ corresponds to PB HH while Kinande /H0/ corresponds to PB HL—see Appendix B. Third, we consider the implications of this result with respect to the presumed chronology of tonal changes that must have occurred in the development of Kinande from Proto-Bantu. Finally, we note various extensions of the /L/ vs. /0/ contrast in the contemporary Kinande lexicon.

2. Preliminaries

In Kinande the attachment of the boundary H% to the penultimate syllable of the stem neutralizes the contrast with an underlying /HL/ stem. Thus, on the basis of the citation form, one cannot predict if the H on the penult will disappear (or shift), as in e-ki-ryátu, e-ki-ryatu kí-říto 'shoe', or remain attached to that syllable (as in e-ki-hánde, e-ki-hánde kí-říto) as the phrasal context is altered. This surface ambiguity is at the basis of several lexical realignments discussed below. In order to substantiate the assertion that there is no phonetic difference between the two forms, we recorded and analyzed a sample of two repetitions of ten stems each from the two classes with the help of our consultant. No discernible difference in either peak height, alignment, or syllable duration was observed: cf. the normalized F0 contours over the last two syllables (employing a Praat script from Xu (2007)) in (2).

(2)
As a purely notational convenience, we follow Mutaka (1994) in transcribing the H% with the umlaut sign (thus, e-ki-ryātu ‘shoe’ vs. e-ki-hānde ‘cloth’). As seen in (2), there is no phonetic difference between these two structurally different tones.

Simplex (nonderived) nominals come in two basic varieties in Kinande: monosyllabic and disyllabic. As in most other Bantu languages, the latter class outnumbers the former by a considerable degree and indicates that CVCV is the canonical stem shape for nominals. In our hand count of the reconstructed nominal stems in Guthrie (1971), we find c. 998 disyllables vs. c. 111 monosyllables. As far as the disyllabic tonal classes of Proto-Bantu are concerned, they occur in the order /HL/ > /LL/ > /LH/ > /HH/ with the frequencies shown in the table below in (3a). For monosyllables, H outnumbers L. For purpose of comparison we show the Proto-Bantu reflexes that have survived into Kinande in (3b). The relative proportions are comparable to those in (3a) and provide some confidence that the inherited vocabulary more or less faithfully reflects the Proto-Bantu source with no obvious skewing.

(3)  a. Proto-Bantu tonal classes (Guthrie 1967)

<table>
<thead>
<tr>
<th></th>
<th>HL</th>
<th>LL</th>
<th>LH</th>
<th>HH</th>
<th>Total</th>
<th>H</th>
<th>L</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>344</td>
<td>315</td>
<td>192</td>
<td>147</td>
<td>998</td>
<td>77</td>
<td>34</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>.34</td>
<td>.31</td>
<td>.19</td>
<td>.15</td>
<td>.69</td>
<td>.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b. Proto-Bantu reflexes in Kinande

<table>
<thead>
<tr>
<th></th>
<th>HL</th>
<th>LL</th>
<th>LH</th>
<th>HH</th>
<th>Total</th>
<th>H</th>
<th>L</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>78</td>
<td>52</td>
<td>28</td>
<td>24</td>
<td>182</td>
<td>14</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>.42</td>
<td>.29</td>
<td>.15</td>
<td>.13</td>
<td>.58</td>
<td>.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. PB Reflexes in Kinande and Lacustrine Bantu
We now turn to the reflexes of the PB tonal classes in our c. 200 word Kinande corpus, starting with the disyllabic stems.

3.1 HL

The corpus contains c. 80 PB HL stems from Guthrie (1967) that have reflexes in Kinande. Over three-quarters are matched by cognates in Runyankore, Jita, or Haya. The regular Kinande correspondence is with a H on the syllable preceding the stem: 72/80. A few examples are shown below in (4). The first group comprises /H0/ stems that host the Kinande H% boundary tone and the second /HL/ stems which repel it. As we see, both classes regularly correspond to H0 stems in Runyankore, Haya, and Jita and to HL in the Guthrie reconstruction, posing an intriguing problem as to the origin of this apparent tonal split. We return to this puzzle in section 3.4. (Aside from the umlaut sign, our transcriptions are faithful to the source.)

(4) Reflexes of PB HL stems

<table>
<thead>
<tr>
<th>PB</th>
<th>gloss</th>
<th>Kinande</th>
<th>Runyankore</th>
<th>Haya</th>
<th>Jita</th>
</tr>
</thead>
<tbody>
<tr>
<td>gúta</td>
<td>oil</td>
<td>amágúta</td>
<td>amajúta</td>
<td>amajúta</td>
<td>li-fú:ta</td>
</tr>
<tr>
<td>cúkà</td>
<td>hoe</td>
<td>eyísíka</td>
<td>efúka</td>
<td>enfúka</td>
<td>i:n-súka</td>
</tr>
<tr>
<td>píni</td>
<td>hoe handle</td>
<td>omúhíni</td>
<td>omuhíni</td>
<td>omuñi</td>
<td></td>
</tr>
<tr>
<td>dími</td>
<td>tongue</td>
<td>olúlìmi</td>
<td>orurími</td>
<td>olulími</td>
<td>olu-lími</td>
</tr>
<tr>
<td>káta</td>
<td>headpad</td>
<td>èngáta</td>
<td>engáta</td>
<td>engáta</td>
<td>i:n-gáta</td>
</tr>
<tr>
<td>yúmà</td>
<td>iron</td>
<td>ékyúma</td>
<td>ekyô:ma</td>
<td>ekyô:ma</td>
<td></td>
</tr>
<tr>
<td>yánà</td>
<td>child</td>
<td>ómwána</td>
<td></td>
<td></td>
<td>omw-á:na</td>
</tr>
<tr>
<td>káda</td>
<td>charcoal</td>
<td>èrjkāla</td>
<td>i:kára</td>
<td>eikára</td>
<td>li-kára</td>
</tr>
<tr>
<td>kidà</td>
<td>tail</td>
<td>omúkîra</td>
<td>omúkîra</td>
<td>omukîra</td>
<td>omu-kîra</td>
</tr>
<tr>
<td>kúbà</td>
<td>chest</td>
<td>ekikúba</td>
<td>ekifúba</td>
<td>ekifüba</td>
<td>eci-füBa</td>
</tr>
<tr>
<td>táma</td>
<td>cheek</td>
<td>èrítëma</td>
<td>i:táma</td>
<td>eítâma</td>
<td>li-táma</td>
</tr>
<tr>
<td>kóbà</td>
<td>animal skin</td>
<td>ekikôba</td>
<td>ekikôba</td>
<td>ekikôba</td>
<td></td>
</tr>
<tr>
<td>pémbè</td>
<td>horn</td>
<td>erìhémbe</td>
<td>i:hémbe</td>
<td>eiyêmbe</td>
<td>li-yémbe</td>
</tr>
<tr>
<td>kókò</td>
<td>chicken</td>
<td>èngoko</td>
<td>enkóko</td>
<td>enkóko</td>
<td>i:n-kóko</td>
</tr>
<tr>
<td>púngù</td>
<td>eagle</td>
<td>ekùhùngu</td>
<td>empù:ngu</td>
<td>ekiùngu</td>
<td></td>
</tr>
</tbody>
</table>
tánda  bed (for wood)  ekítanda  ekitánda  ekitânda  eci-tânda
tádà  granary  ekítara  ekitára  eci-tára
búmbà  clay  eĺźumba  i:bůmba  eibůmba  li-Bůmba
kúmù  medicine man  omúkùmù  omufúmu  omufùmu
píðà  pus  erjíhìra  ama:ì:ra
tégò  trap  ekétego  omu-tégo

Thus, Kinande has retracted the H one syllable to the left on to the noun class prefix. If the latter
lacks a vowel or has had its vowel devocalized before a vowel-initial stem then the H appears on
the pre-prefix, as in é-n-gäta ‘headpad’ and ó-mw-änä ‘child’. While one might wish to interpret
the retraction as a response to crowding by the boundary H%, the fact that it regularly occurs in
/HL/ stems that block the attachment of H% indicates that there is no direct connection between
these two hallmarks of the Kinande language.

We now turn to the exceptions to the regular correspondence. First, a handful of PB HL
items appear with the toneless /00/ reflex in Kinande.

(5) /00/ reflexes of PB HL stems

<table>
<thead>
<tr>
<th>PB gloss</th>
<th>Kinande</th>
<th>Runyankore</th>
<th>Haya</th>
<th>Jita</th>
</tr>
</thead>
<tbody>
<tr>
<td>kókò</td>
<td>crust</td>
<td>olukóko</td>
<td></td>
<td>oBu-kóko</td>
</tr>
<tr>
<td>kúmù</td>
<td>ten</td>
<td>erjíkúmù</td>
<td>i:kúmi</td>
<td>eikúmi</td>
</tr>
<tr>
<td>tétè</td>
<td>reed</td>
<td>ekitetè</td>
<td>omutéte</td>
<td>omwi-téte</td>
</tr>
</tbody>
</table>

Seven items appear in the e-ki-hânde class (6). The first five are plausibly loans from
penultimate-stress Swahili.² (The bh of omubhângå is a digraph indicating that the consonant is a
stop; single b denotes a fricative intervocally.)

² It is interesting that as far as the Kinande citation form is concerned, the penultimate stress of
Swahili would be compatible with either the phonologically stable high of e-ki-hânde or the
boundary H% of e-ki-ryätu. Kinande systematically takes the first option, showing a dispreference
for alternating H. Runyankore makes a similar choice in its adaptation of Swahili (and English)
loans. For example, in our hand count of the first fifty loans in Kaji’s (2007) lexicon, we find
Finally, three PB HL stems gîmù 'monkey', tâdì 'iron ore', and pâcà 'axe' have Kinande reflexes with a double H: éngîma, erîtalé, émbâsa. Most lack cognates in the closely related Runyankore, Haya, and Jita.

3.2 LL

The corpus contains 51 Kinande stems that reconstruct as PB LL. Forty have the expected development as /00/ e-ki-ryàtu (N = 32) or /0L/ e-ki-tsàngu (N = 8). A few examples are cited below in (7), with cognates from Runyankore, Haya, and Jita, which also show this regular development. It manifests the frequently made observation that L tones tend to be inert in Bantu languages.

(7) /00/ and /0L/ reflexes of PB LL stems

<table>
<thead>
<tr>
<th>PB</th>
<th>gloss</th>
<th>Kinande</th>
<th>Runyankore</th>
<th>Haya</th>
<th>Jita</th>
</tr>
</thead>
<tbody>
<tr>
<td>mèdò</td>
<td>gullet</td>
<td>omumëro</td>
<td>omumiro</td>
<td>omumiro</td>
<td>li-miro</td>
</tr>
<tr>
<td>gômà</td>
<td>drum</td>
<td>engôma</td>
<td>engoma</td>
<td>engoma</td>
<td>i:n-goma</td>
</tr>
<tr>
<td>gûdù</td>
<td>leg</td>
<td>okugülu</td>
<td>okuguru</td>
<td>okuguru</td>
<td>oku-guru</td>
</tr>
<tr>
<td>nàmà</td>
<td>muscle,meat</td>
<td>enyâma</td>
<td>enyama</td>
<td>eñama</td>
<td>ì-ñama</td>
</tr>
</tbody>
</table>

only a handful of items in the alternating class (marked with an umlaut). The vast majority are adapted with the stable accent: embarâ:si < Sw farasi 'horse', engamîra < Sw ngamìa 'camel', but kâ:wa (cf. kâ:wa yangye 'my coffee') < Sw kahawa 'coffee'.
The items in (8) have been reclassified into the *e-ki-hânde* class, suggesting that they have been reanalyzed on the basis of the ambiguous citation form. The first five are shared with the Kavutirwakí (1978) dictionary. The last two are the tone patterns assigned by our consultant; the dictionary retains the etymologically expected *enyo:ndo* and *enzógu*.

In this lexical restructuring we see that the stems have been reclassified on the basis of the ambiguous isolation form with a penultimate high tone. Thus, the smaller *e-ki-hânde* class attracts items from the larger *e-ki-ryátu* class in addition to being the repository of Swahili loans. The reason presumably is that this tonal class is phonologically stable (no alternation).³

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³ A similar phenomenon appears in Russian where loans systematically join the fixed accent class. The alternating (mobile) class is much smaller (c. 2% of the native Russian lexicon) and so the preference for the fixed class is ambiguous between frequency and stability. The Kinande data suggest that the stable phonological form is the deciding factor.
Our corpus contains 28 reflexes of the PB LH class. It has a more varied outcome compared to PB HL and LL. Eleven items are reflected as the fixed penultimate H of e-ki-hände, with a retraction of the final H. Several are matched by a Runyankore or Haya cognate whose final accent in phrase-medial position directly mirrors the PB form. Jita is most faithful to PB since it lacks the retraction of the H that is found in the phrase-final forms of Runyankore and Haya.

(9) stable /HL/ reflexes of PB LH stems

<table>
<thead>
<tr>
<th>PB</th>
<th>gloss</th>
<th>Kinande</th>
<th>Runyankore</th>
<th>Haya</th>
<th>Jita</th>
</tr>
</thead>
<tbody>
<tr>
<td>nùngú</td>
<td>pot</td>
<td>enyùngu</td>
<td>enyu:ngu</td>
<td>eñúngu</td>
<td>i:-ñú:ngú</td>
</tr>
<tr>
<td>jójá</td>
<td>body hair</td>
<td>olwéya</td>
<td>orwo:ya</td>
<td>omwó:ya</td>
<td></td>
</tr>
<tr>
<td>pàndé</td>
<td>piece of cloth</td>
<td>ekihände</td>
<td>olupánde</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yíná</td>
<td>hole</td>
<td>ekyýna</td>
<td>omwi:na</td>
<td>eki:na</td>
<td>el-i:nà</td>
</tr>
<tr>
<td>yòngó</td>
<td>brain</td>
<td>obóngo</td>
<td>obwôngko</td>
<td>obwôngo</td>
<td>omwo:ngó</td>
</tr>
<tr>
<td>dùmbí</td>
<td>long rain</td>
<td>omùlùmbí</td>
<td>omuju:mbi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gùàdì</td>
<td>partridge</td>
<td>engwáli</td>
<td>i:n-kwa:rê</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yùmbá</td>
<td>house</td>
<td>enyu:mbá</td>
<td>énju</td>
<td>i:-ñú:mbá</td>
<td></td>
</tr>
<tr>
<td>dòngó</td>
<td>mud</td>
<td>obudóngo</td>
<td>obudó:ngo</td>
<td>obudongo</td>
<td></td>
</tr>
</tbody>
</table>

Six Kinande items in the class of PB LH reflexes display the double-H of e-ki-sáka ‘branch’ (10). Several of the Runyankore or Haya cognates belong to the phrasally alternating class (marked here with an umlaut) that reflects their LH provenance.

(10) double-H reflexes of PB LH

<table>
<thead>
<tr>
<th>PB</th>
<th>gloss</th>
<th>Kinande</th>
<th>Runyankore</th>
<th>Haya</th>
<th>Jita</th>
</tr>
</thead>
<tbody>
<tr>
<td>càkà</td>
<td>bush</td>
<td>ekìsàka</td>
<td>ekishàka</td>
<td>eki:sa</td>
<td>li-sákà</td>
</tr>
<tr>
<td>cìcì</td>
<td>vein</td>
<td>omú:šà</td>
<td>omúsi</td>
<td>omúsi</td>
<td></td>
</tr>
<tr>
<td>pàpà</td>
<td>wing</td>
<td>eki:pàpa</td>
<td>eipápa</td>
<td>eipápa</td>
<td>li-BaBà</td>
</tr>
<tr>
<td>pùkà</td>
<td>insect</td>
<td>ekì:húka</td>
<td>ekì:húka</td>
<td>eki:ka</td>
<td></td>
</tr>
<tr>
<td>tìkì</td>
<td>stump</td>
<td>ekì:šìki</td>
<td>ekì:šìki</td>
<td>eci:sìki</td>
<td></td>
</tr>
<tr>
<td>yàti</td>
<td>grass</td>
<td>obùnyàtsì</td>
<td>orunyà:nsì</td>
<td>aka:ña:nsì</td>
<td>li-ñásì</td>
</tr>
</tbody>
</table>
The Kinande stems in this tone-doubling class all have a voiceless medial consonant—a property that distinguishes them from the *e-ki-hánde* set in (9). Another one, pointed out by both SAL reviewers, is that the initial syllable of the stem in the items of (9) either begins with a glide or is followed by an NC cluster—both common (compensatory) lengthening sites in Bantu, as evidenced by the forms in Runyankore and Jita.

Two possible reconstructions of the single vs. double-high retraction seen in (9) vs. (10) present themselves. If voicing is the critical factor we may posit a spreading of the word-final H to the preceding syllable that is blocked by an intervening voiced consonant. This is followed by the general H retraction that affected HL stems as well. The steps in (11) show this scenario.

(11) /ki-búga/ /ki-sáká/ /ki-pándé/

-------- ki-sáká -------- final spreading

ki-buga kí-sáka ki-pánde general H retraction

Under the alternative interpretation shown in (12) the second mora of the lengthened vowel is the target of final H spreading. Then more general retraction shifts Hs one mora to the left. Finally, long vowels are merged with short ones.

(12) /ki-búga/ /ki-sáká/ /ki-pándé/

-------- -------- ki-paándé lengthening

-------- ki-sáká ki-paándé final spreading

ki-buga ki-sáka ki-páánde general retraction

-------- -------- ki-pánde vowel shortening
Both alternatives seem plausible on general grounds. They predict different outcomes for stems whose medial consonant is a plain voiced one with no glide onset. Under the first we expect a single H tone analogous to *ekihánde* while the second predicts doubling in the manner of *ekísáka*. Our corpus contains three possible stems of this shape, which are listed below. The Kinande reflexes are unfortunately varied and hence inconclusive. For ‘buffalo’ *embögo* is the tonal assignment offered by our consultant. The Mutaka and Kavutirwaki dictionary lists *embögo* as well as *émbógo*.

(13)  

<table>
<thead>
<tr>
<th>PB</th>
<th>Kinande</th>
</tr>
</thead>
<tbody>
<tr>
<td>pàd¿</td>
<td>embüli</td>
</tr>
<tr>
<td>gòd¿</td>
<td>omúgóle</td>
</tr>
<tr>
<td>bògö</td>
<td>embögo</td>
</tr>
<tr>
<td></td>
<td>émbógo</td>
</tr>
<tr>
<td></td>
<td>embögo</td>
</tr>
</tbody>
</table>

The four PB LH stems in (14) have joined the toneless class in Kinande and for the most part in Runyankore, Haya and Jita as well.

(14)  

<table>
<thead>
<tr>
<th>PB</th>
<th>gloss</th>
<th>Kinande</th>
<th>Runyankore</th>
<th>Haya</th>
<th>Jita</th>
</tr>
</thead>
<tbody>
<tr>
<td>nòn¿</td>
<td>bird</td>
<td>enyonyu</td>
<td>ekiñonyi</td>
<td>ekiñoñi</td>
<td>i:-ñoñi</td>
</tr>
<tr>
<td>bògö</td>
<td>buffalo</td>
<td>embögo</td>
<td>embogo</td>
<td>embógo</td>
<td>i:m-bogò</td>
</tr>
<tr>
<td>pàd¿</td>
<td>ant</td>
<td>embéli</td>
<td>empazi</td>
<td>obwa:zi</td>
<td>i:m-paji</td>
</tr>
<tr>
<td>yèndá</td>
<td>nine</td>
<td>omwënda</td>
<td>omwenda</td>
<td>omwenda</td>
<td></td>
</tr>
</tbody>
</table>

4 The majority of the Runyankore forms in (9) have a long vowel and also have no high tone. This might reflect a dispreference for rising tones *enyú:ngu* and final peaks *enyu:ngá* at the cost of deletion of the H.
We conclude that for the PB LH class, the H is retracted from its etymological position as either a single (9) or double (10) peak. The split is based on either the voicing category of the medial consonant or the length of the preceding vowel. Another important reflex of this class is that it resists the attachment of the H% on the final syllable. As we shall see, this behavior is distinct from the monosyllabic H. That is, while PB dó gives e-kí-rō ‘night’, enyángu ‘pot’ < nàngá and o-mú-sísa ‘vein’ < cćá block the H%.

3.4 PB HL vs. HH and the Kinande /H0/ vs. /HL/ contrast

In a paper important to our topic, Meeussen (1976) called attention to certain inaccuracies in Guthrie’s PB tonal reconstructions, especially with regard to the lexical items belonging to the PB HL and HH classes. Based on material in Greenberg (1948) and his own research, Meeussen proposed for example that Guthrie’s HL reconstructions for kadi ‘woman’ and kingo ‘neck’ be replaced with HH while Guthrie’s HH for kíge ‘eyebrow’ be replaced by HL. More significantly for our purposes, in the course of his discussion Meeussen states that PB HH is reflected as Kinande H-LL while PB HL is Kinande H-HL. In other words, the apparent puzzling split of Guthrie’s HL class into Kinande stems such as o-mú-lúme ‘man’ with a final /0/ that accepts the boundary tone vs. stems such as o-mú-kali ‘woman’ with a final /L/ that repels it can actually be traced back to the /HL/ vs. /HH/ distinction in Proto-Bantu.

In an effort to determine the viability of Meeussen’s reconstructions as the basis for the Kinande o-mú-lúme vs. o-mú-kali contrast, we constructed a corpus of c. 100 Kinande cognates drawn principally from lexicons of the reversing languages Chi-Luba (Yukawa 1992) and Tembo (Kaji 1996) as well as Lingala (Kaji 1992). These are so-called “clear” languages in which the PB four-way tonal distinction is preserved and differ from Lacustrine languages such as Runyankore, Haya, and Jita which have merged HH and HL (Philippson 1998). In the reversing languages, PB H and L appear to have interchanged so that PB HH is reflected as LL and PB HL as LH. See Appendix B for the corpus.
Here are the results. We find a regular correspondence (28/29) between Kinande /H0/ = H-H%0 and PB HL (reflected as LH in the reversing languages). Some examples appear below, showing the Guthrie reconstruction. These correspondences suggest that PB yáda ‘fingernail’ and dámú ‘sister-in-law’ should be reassigned to the HL class.

(15)

<table>
<thead>
<tr>
<th>PB gloss</th>
<th>Kinande</th>
<th>Tembo</th>
<th>Luba</th>
<th>Lingala</th>
</tr>
</thead>
<tbody>
<tr>
<td>dümè man</td>
<td>omüümé</td>
<td>múlumé</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dimi tongue</td>
<td>oluliimi</td>
<td>lúdimi</td>
<td>lolémo</td>
<td></td>
</tr>
<tr>
<td>támà cheek</td>
<td>eritéma</td>
<td>dítamá</td>
<td>litáma</td>
<td></td>
</tr>
<tr>
<td>bëédè breast</td>
<td>eribère</td>
<td>dibeelé</td>
<td>libélè</td>
<td></td>
</tr>
<tr>
<td>yáda fingernail</td>
<td>ékyäla</td>
<td>lwáalá</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kúpà bone</td>
<td>erjikija</td>
<td>múfuwà</td>
<td>mokúwa</td>
<td></td>
</tr>
<tr>
<td>kídà tail</td>
<td>omükirà</td>
<td>múkilá</td>
<td>mokíla</td>
<td></td>
</tr>
<tr>
<td>cukà hoe</td>
<td>eyísiku</td>
<td>nkasú</td>
<td></td>
<td></td>
</tr>
<tr>
<td>káda charcoal</td>
<td>erjikila</td>
<td>díkalá</td>
<td>likíla</td>
<td></td>
</tr>
<tr>
<td>bùdà rain</td>
<td>émbùla</td>
<td>mvulá</td>
<td>mbúla</td>
<td></td>
</tr>
<tr>
<td>yótà thirst</td>
<td>ényota</td>
<td>nyootá</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jókà snake</td>
<td>énzóka</td>
<td>nyoká</td>
<td>nyóka</td>
<td></td>
</tr>
<tr>
<td>tükù day</td>
<td>obútükù</td>
<td>dítukú</td>
<td></td>
<td></td>
</tr>
<tr>
<td>yánà child</td>
<td>ómwâna</td>
<td>mwâaná</td>
<td>moâna</td>
<td></td>
</tr>
<tr>
<td>néné bigness</td>
<td>obûnëne</td>
<td>mú-néné</td>
<td>monénè</td>
<td></td>
</tr>
<tr>
<td>dámú sister-in-law</td>
<td>omûlâmù</td>
<td>múlamù</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the smaller PB HH class, we have 17/23 correspondences between Kinande /HL/ = H-0L and PB HH (reflected as LL in Luba and Tembo). The forms marked M in the table below are Meeussen’s (1976) alternative reconstructions to Guthrie’s HL. The correspondences suggest that bumba ‘clay’ should be reconstructed as HH. The last two items are anomalous. Kinande olúhala is consistent with PB HH while the Tembo and Luba reflexes suggest PB HL, which should yield olúhala in Kinande. Luba dípasá is consistent with Guthrie’s HL reconstruction but should give omúhása in Kinande.

(16)

<table>
<thead>
<tr>
<th>PB gloss</th>
<th>Kinande</th>
<th>Tembo</th>
<th>Luba</th>
<th>Lingala</th>
<th>Mongo</th>
</tr>
</thead>
<tbody>
<tr>
<td>kádji(M) woman</td>
<td>omúkalî</td>
<td>mûkaji</td>
<td>moâsí</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bumbà clay</td>
<td>eríbumba</td>
<td>lûpeamba</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
We conclude that Meeussen’s reconstructions are correct and that the source of the Kinande /H0/ vs. /HL/ contrast is PB HL vs. HH.

3.5 Monosyllables

Our corpus contains 24 stems that can be traced back to monosyllables in the Guthrie PB reconstruction: 17 reconstruct as H and 9 as L. The PB H stems appear in Kinande with the H on the preceding prefix, reflecting the retraction also seen in the disyllabic /LH/ stems. Most also allow the attachment of the H% boundary tone. Nine stems can be traced back to PB L. They have /0/ reflexes in Kinande that allow attachment of the H% boundary tone.5 We include CVV

5 Aside from ekïndu monosyllabic stems do not permit the H% boundary tone to associate to the prefix. Working within the framework of Lexical Phonology where word-level phonology precedes phrase-level phonology, Mutaka (1994) postulates an underlying long vowel for the
stems where the first vocoid is realized as a glide and the resultant CGV syllable counts as a single tone-bearing unit. The umlaut indicates Runyakore and Haya stems whose H alternates with phrase-medial forms in which it appears on the stem in its etymological position.

(17)

<table>
<thead>
<tr>
<th>PB</th>
<th>gloss</th>
<th>Kinande</th>
<th>Luba</th>
<th>Lingala</th>
<th>Runyakore</th>
<th>Haya</th>
<th>Jita</th>
</tr>
</thead>
<tbody>
<tr>
<td>cú</td>
<td>face</td>
<td>obúsö</td>
<td></td>
<td></td>
<td>obüso</td>
<td>obüso</td>
<td>oBu-su</td>
</tr>
<tr>
<td>tú</td>
<td>ear</td>
<td>okütı</td>
<td>dıcu</td>
<td>litöi</td>
<td>okütu</td>
<td>okütwi</td>
<td>oku-twí</td>
</tr>
<tr>
<td>dó</td>
<td>night</td>
<td>ekırö</td>
<td>dılolo</td>
<td>butú</td>
<td>ekíro</td>
<td>ekíro</td>
<td></td>
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<tr>
<td>tá</td>
<td>bow</td>
<td>obútä</td>
<td></td>
<td></td>
<td>obuta</td>
<td>akäta</td>
<td></td>
</tr>
<tr>
<td>bju</td>
<td>excrement</td>
<td>amábí</td>
<td>tůufi</td>
<td>amázi</td>
<td>amázi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kú</td>
<td>dead person</td>
<td>omůků̥</td>
<td>omůfu</td>
<td>omůfu</td>
<td>omufů</td>
<td></td>
<td></td>
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<tr>
<td>ké</td>
<td>smallness</td>
<td>obůkě</td>
<td>bůkěse</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>já</td>
<td>outside</td>
<td>eyỳhyä</td>
<td></td>
<td></td>
<td>a:njá</td>
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<td></td>
</tr>
<tr>
<td>dũi</td>
<td>knee</td>
<td>eř́wũ̄</td>
<td></td>
<td></td>
<td>okṹu</td>
<td>okṹwi</td>
<td></td>
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<tr>
<td>dũo</td>
<td>food</td>
<td>akáłyö</td>
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<td></td>
<td>ekyókúrya</td>
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<td></td>
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<tr>
<td>cúé</td>
<td>fish</td>
<td>ektswě</td>
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<td>ekyá:půyään</td>
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<tr>
<td>bũ</td>
<td>badness</td>
<td>obůbi</td>
<td>bũbi</td>
<td>obůbi</td>
<td>obůbi</td>
<td>oBu-Bũ ṹ</td>
<td></td>
</tr>
<tr>
<td>bũ</td>
<td>ash</td>
<td>eř́bũ̄</td>
<td>bũtu</td>
<td></td>
<td>oBu-Bũ ṹ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tũ</td>
<td>tree</td>
<td>omúti</td>
<td>múci</td>
<td>omuti</td>
<td>omúti</td>
<td>li-tụ̃̍</td>
<td></td>
</tr>
<tr>
<td>dũ</td>
<td>sleepiness</td>
<td>otuolo</td>
<td></td>
<td>otũro</td>
<td>otũlo</td>
<td>i:n-tirů</td>
<td></td>
</tr>
<tr>
<td>dã</td>
<td>louse</td>
<td>énda</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>i:n-dã</td>
</tr>
<tr>
<td>cé</td>
<td>father</td>
<td>īse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cuá</td>
<td>termite</td>
<td>omúswa</td>
<td>nswa</td>
<td></td>
<td>omushwa</td>
<td>omushwa</td>
<td>oMu-swá</td>
</tr>
<tr>
<td>me</td>
<td>dew</td>
<td>ekimë</td>
<td>dímë</td>
<td></td>
<td>orume</td>
<td>olume</td>
<td>eci-me</td>
</tr>
<tr>
<td>dã</td>
<td>intestine</td>
<td>olulṹ</td>
<td></td>
<td></td>
<td>oruра</td>
<td>amala</td>
<td>oBu-la</td>
</tr>
<tr>
<td>tũ</td>
<td>cloud</td>
<td>ektṹ</td>
<td></td>
<td></td>
<td>ekicú</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ntũ</td>
<td>thing, person</td>
<td>ekuándu</td>
<td>múńtu</td>
<td></td>
<td>ekuintu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ji</td>
<td>village</td>
<td>omůyü</td>
<td></td>
<td></td>
<td>omůji</td>
<td></td>
<td>eci-jṹi</td>
</tr>
<tr>
<td>buẽ</td>
<td>stone</td>
<td>eř́bwũ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>li-Bui</td>
</tr>
<tr>
<td>gã</td>
<td>crack</td>
<td>ekɨgã</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pũ</td>
<td>pit of</td>
<td>ekɨhũ̄</td>
<td>cĩfu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

root so that the H% associates to the phonological penult. The more plausible alternative is to allow the phrase-level phonology access to the word-internal structure. See Odden (1996) for other examples in which phrasal phonology is sensitive to the prefix-stem parse in Bantu.
The following table summarizes the regular developments of the PB tonal classes in Kinande. Five of the six subtypes for disyllabic stems in the Hyman typology of (1) have been traced. The /0L/ class represented by *e-ki-tsungu* ‘potato’ remains to be accounted for. See section 5.

(18)

<table>
<thead>
<tr>
<th>PB</th>
<th>example</th>
<th>Kinande</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL</td>
<td>dúmè</td>
<td>o-mú-lümé</td>
<td>man</td>
</tr>
<tr>
<td>HH</td>
<td>kádı</td>
<td>o-mú-kalı</td>
<td>woman</td>
</tr>
<tr>
<td>LL</td>
<td>mèdò</td>
<td>o-mu-méro</td>
<td>gullet</td>
</tr>
<tr>
<td>LH</td>
<td>dúmbé</td>
<td>o-mù-límbí</td>
<td>long rain</td>
</tr>
<tr>
<td>LH</td>
<td>pùká</td>
<td>e-ki-húka</td>
<td>insect</td>
</tr>
<tr>
<td>H</td>
<td>tú</td>
<td>o-kú-tö</td>
<td>ear</td>
</tr>
<tr>
<td>L</td>
<td>mè</td>
<td>e-ki-mè</td>
<td>dew</td>
</tr>
</tbody>
</table>

4. Chronology

In many Eastern Bantu languages the PB H vs. L contrast was reinterpreted as H vs. 0 (Clements & Goldsmith 1984). This restructuring helps to explain the long distance displacement of H tones found in such languages as Digo (Kisseberth 1984) and Chizigula (Kenstowicz & Kisseberth 1990) as well as rhythmic alternations of H such as those found in Kinyarwanda (Rialland 1985). With a syllable’s L reanalyzed as 0, it no longer blocks the drift of H nor buffers adjacent Hs, which tend to keep a respectable distance from one another. A major motivation for the reanalysis and switch to an accentual system was the merger of the HH class with HL. The result was an inventory of tonal contours with just one H peak, which could be reanalyzed as the
“head” governing a domain or stretch of toneless syllables. The verb had the potential for an accentual interpretation already in PB since the H vs. L contrast was restricted to the initial syllable.

We may account for the difference between Kinande vs. the Lacustrine languages Runyankore, Haya, and Jita by assuming different chronologies in the HH > HL and L > 0 changes, as shown in (19). In the Lacustrine languages HH > HL occurred before the reanalysis of L as 0 so that any trace of a distinction between the PB HH vs. HL stem classes was eliminated. In Kinande, on the other hand, L > 0 occurred first with the subsequent HH > HL (perhaps via an intermediate H!H) producing the three-way H vs. L vs. 0 contrast on the final syllable that is the basis of the o-

(19)  

<table>
<thead>
<tr>
<th></th>
<th>Lacustrine Bantu</th>
<th></th>
<th>Kinande</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>HL</td>
<td>HH</td>
<td>LH</td>
</tr>
<tr>
<td>HH &gt; HL</td>
<td>--</td>
<td>HL</td>
<td>--</td>
</tr>
<tr>
<td>L &gt; 0</td>
<td>H0</td>
<td>H0</td>
<td>0H</td>
</tr>
<tr>
<td>surface</td>
<td>H0</td>
<td>H0</td>
<td>0H</td>
</tr>
</tbody>
</table>

The Kinande split of the PB LH class into LH vs. HH on the basis of either the voicing of the medial consonant or the postulated vowel length (recall (9) vs. (10)) allows us to pinpoint the H
retraction of PB LH as later in the chronology. The development of the double H must have occurred after HH > HL. Otherwise PB pöká ‘insect’ would have joined HH kádl and should appear as Kinande e-ki-huka instead of the attested e-ki-húka. On the other hand, it must have preceded H-retraction to account for the fact that both H’s are shifted leftward in e-ki-húka as well as to ensure that the medial consonant that conditions the split still separates the two stem syllables. As a result of the split of the PB LH class, Kinande had five tonal categories for disyllabic stems (H0, HL, 0H, HH, 00) in contrast to just three for Lacustrine Bantu (H0, 0H, 00).

Subsequently, Kinande as well as Runyankore and Haya (but not Jita) retract H from the final syllable. Poletto (1998) treats the phenomenon as crowding by a L boundary tone; see Hyman and Byarushengo (1984) for a different interpretation. In Runyankore and Haya the retraction occurs at the end of a phrase and leads to regular alternation between a phrase-final retracted form and a phrase-medial form with accent on the final syllable. In Runyankore retraction produces surface merger with the original H0 (<HL) class if the penult is short. If the penult is long the contrast is realized as Fall vs. H. Haya maintains the contrast as Fall vs. H for both long and short syllables.

(20) Runyankore (Kaji 2004)

<table>
<thead>
<tr>
<th></th>
<th>pause</th>
<th>my N</th>
</tr>
</thead>
<tbody>
<tr>
<td>H0</td>
<td>e-ki-sígye kyangye</td>
<td>‘eyelid’</td>
</tr>
<tr>
<td></td>
<td>e-ki-ró:to kyangye</td>
<td>‘dream’</td>
</tr>
<tr>
<td>0H</td>
<td>e-ki-túgu kyangye</td>
<td>‘liver’</td>
</tr>
<tr>
<td></td>
<td>e-ki-kó:ko kyangye</td>
<td>‘animal’</td>
</tr>
</tbody>
</table>

Haya (Kaji 2000)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H0</td>
<td>e-ki-fúba kyange</td>
<td>‘chest’</td>
</tr>
<tr>
<td></td>
<td>e-ki-kó:na kyange</td>
<td>‘crow’</td>
</tr>
<tr>
<td>0H</td>
<td>e-ki-géle kyange</td>
<td>‘sole of foot’</td>
</tr>
</tbody>
</table>
In Kinande the retraction of the PB final H differs from Lacustrine Bantu in a number of respects, suggesting that it was probably a separate development. First, the language eliminated the PB vowel length contrast (while retaining the [± ATR] contrast for high vowels). Thus, a surface contrast in short vs. long syllables was not available to express the distinction between original and retracted H’s. There are other differences as well. First, retraction in Kinande does not result in phrasal alternations: a PB LH stem like pândé ‘piece of cloth’ from (9) appears as e-ki-hände with a stable H. In contrast PB püká ‘insect’ alternates in Runyankore (ekihúka, ekihúká kyangé ‘my insect’) and Haya (ekiúká, ekiuká kyangé). Second, in Kinande all stem H tones retracted—not just those on the final syllable—presumably to allow more comfortable phonetic expression of the larger range of tonal classes. The noun class prefixes were all toneless in PB and offered a tempting Lebensraum for the more crowded stem inventory. As shown below, the H retraction allowed a system of surface tonal contrasts to emerge in which there is just a binary opposition for any of the three positions (final, penult, antepenult) in exchange for the earlier (underlying) three-way contrast on final syllables.

(21) early 0-HL 0-H0 0-0H 0-HH 0-00
H retraction H-0L H-00 0-HL H-HL ----
surface tonal oppositions
antepenult: H vs. 0
penult: H vs. 0
final: L vs. 0

Another point worth making concerns the limited distribution of the L in the reconstruction of (21). It is restricted to occur in the context: H__#. This phonotactic restriction helps to
explain another puzzling asymmetry in Kinande tonal development. In the wake of retraction of the final H, the Kinande system of contrasts allowed two alternative interpretations of the final syllable’s nonhigh pitch: /L/ or /0/. There is an interesting difference between the monosyllables and disyllables here. For the LH disyllables with PB cognates, 14/15 chose /HL/, which blocks the H%, as in e-ki-hánde. But monosyllables such as o-kú-tü < PB tú ‘ear’ chose /H0/ at a 13/17 rate. This difference between the monosyllables and disyllables presumably reflects the fact that the /HL/ structures in the disyllabic stems originate from PB HH. Under a minimal generalization learner (Albright & Hayes 2002) such factors as the location of the morpheme junctures could be taken into account in the transmission and reconstruction of the grammar from one generation to the next so that the phonotactic constraint that restricts L to the H_# context could include the tautomorphemic factor as well. If this property is factored into the phonotactic restriction then a /L/ analysis for the monosyllables would be precluded. However, it should be noted that we still lack an explanation for the uniform /L/ choice for the disyllables since in principle both /HL/ < HH and /H0/ < HL analyses were available. The former preserves an association line, albeit one that is linked to a different tone. If faithfulness to association lines governs input-output relations then this might be a reason to prefer /HL/ over /H0/. The Optimal Domains Model of autosegmental phonology (Cassimjee and Kisseberth 1998) in which a feature is accompanied by a domain or span indicating its scope offers another possible interpretation in which two domains are combined into a single one so that (H)(H) > (H 0) is distinct from (H) 0.

Upon the completion of H retraction and in the absence of any alternations between the penult and final syllable for the e-ki-hánde class, we assume that the inventory of tonal classes was restructured, as indicated in (22). The Kinande disyllabic tonal classes deployed a surface L vs. 0 contrast in final position and a ternary H vs. floating H vs. 0 contrast initially.

(22) PB

<table>
<thead>
<tr>
<th>Kinande</th>
<th>/H0/</th>
<th>/HL/</th>
<th>/HH/</th>
<th>/LH/</th>
<th>/LL/</th>
</tr>
</thead>
</table>

20
The phonotactic constraint restricting L to the H_# context is a relatively complex one since it is composed of three terms and crucially refers to both a left-hand and right-hand context (cf. the model of constraint induction in Hayes and Wilson (2008) where constraints are preferentially restricted to two terms). Furthermore, a stem’s specification as /L/ or /0/ could not be predicted on the basis of phrase-medial contexts such as preadjectival (recall 1). As we will now see, both of these factors played a role in the evolution of the system to its current state.

5. Extensions

The discussion to this point has been restricted to the portion of the Kinande lexicon for which PB cognates are available. This of course is a small fraction of the current lexicon—one that managed to survive many cycles of transmission from one generation of Kinande speakers to the next. What is the inventory and population of the tonal classes in the current language? Here we are indebted to Jones (2007) who classified the nouns (and verbs) in the Kavutirwaki (1978) lexicon with respect to their tonal patterns. In (23) we have reorganized his tabulation of the data according to the PB origin of the tonal classes and our postulated reconstruction. Hyman and Valinande (1985) find a similar distribution for a sample of c. 225 disyllabic noun stems, indicated in the last column of (23).

<table>
<thead>
<tr>
<th>(23) PB</th>
<th>example</th>
<th>gloss</th>
<th>size</th>
<th>representation</th>
<th>dictionary class</th>
<th>H&amp;V</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL</td>
<td>o-mū-lūme</td>
<td>man</td>
<td>181</td>
<td>/h0/</td>
<td>B</td>
<td>52</td>
</tr>
<tr>
<td>HH</td>
<td>o-mū-kāli</td>
<td>wife</td>
<td>221</td>
<td>/h1L/</td>
<td>D</td>
<td>50</td>
</tr>
<tr>
<td>LL</td>
<td>e-m-bēba</td>
<td>rat</td>
<td>298</td>
<td>/00/</td>
<td>A</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>o-mu-genda</td>
<td>moon</td>
<td>76</td>
<td>/0L/</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>LH</td>
<td>e-ki-hānde</td>
<td>piece</td>
<td>48</td>
<td>/HL/</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>e-ki-dōngō</td>
<td>wall</td>
<td>20</td>
<td>/H0/</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>é-m-bāsa</td>
<td>axe</td>
<td>64</td>
<td>/h1HL/</td>
<td>C</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>o-mū-kēkā</td>
<td>mat</td>
<td>8</td>
<td>/h1H0/</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
We make several observations with regard to (23). First, the o-mú-kalì class originating from PB HH with the final /L/ has increased considerably to even surpass the o-mú-liùme class containing descendants of PB HL. This is a rather dramatic change since according to the count in (3) the HH class was the smallest in PB. It reflects at least in part the ambiguity of the phrase-medial forms (cf. o-mú-kalì mu-rìto vs. o-mú-liùme mu-rìto). If a lexical item is first encountered in this context, the Kinande learner must guess whether or not the stem blocks the H% attachment and hence has an underlying final /L/. A more evenly balanced distribution across the two classes would be a natural outcome of this ambiguous state of affairs.

The second observation is that the /L/ vs. /0/ contrast has spread to each of the other classes so that now every tonal category is cross-classified with respect to the dual phonological interpretation of the final syllable—a type of feature economy (Clements 2003). But in each case, the class that represents the original development in our reconstruction outnumbers the innovating class to which the 0/L contrast has been extended. As a result, the PB LL > 00 now has a /0L/ counterpart—the presumed origin of the e-ki-tsungu class from (1). This development indicates that the postulated phonotactic restricting L to the H_# context in the reconstruction of (22) has been simplified by dropping the initial term. Moreover, the PB LH class which originally had almost exclusively final /L/ that blocks the H% boundary tone has now gained /0/ counterparts too. This is true for both the double H from voiceless medial consonants like o-mú-kékä as well as the single H from voiced medials like e-ki-dôngö.

The third observation is that the voicing of the medial consonant that originally defined membership in the double-high e-ki-säka vs. single-high e-ki-hände reflexes of the PB LH class continues to play a role in the extension of the class. In (24) we indicate the distribution of voicing categories for the medial consonant that are known to bias the tone to H or L cross-linguistically or specifically in Bantu, where ND (D = voiced) often acts as a depressor (Downing 2009). The data indicate a strong bias for the e-ki-säka class with double H to contain a medial
voiceless consonant while the е-ки-гāнде class contains a disproportionate number of ND. This difference is statistically significant: chi square = 63.810, df=1, p=.0001 (two-tailed).

(24)  
<table>
<thead>
<tr>
<th>T</th>
<th>R</th>
<th>D</th>
<th>ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>34</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>1</td>
<td>34</td>
</tr>
</tbody>
</table>

T = voiceless, R = sonorant
D = voiced, ND = prenasal voiced

This finding suggests that the voicing or compensatory lengthening contributed by the medial consonant that originally defined membership in the two classes continues to play a role.6

Finally, the /L/ vs. /0/ contrast has also been extended to the monosyllables, dropping the tautomorphemic restriction in the postulated original state of (22). Once again both terms of the contrast have been extended so that the PB H class now has a final /L/ counterpart to the original /0/ and the PB L class now has a /L/ counterpart to the original /0/. As with the disyllables, the extensions are smaller than the original classes.

(25)  
<table>
<thead>
<tr>
<th>PB</th>
<th>example</th>
<th>gloss</th>
<th>size</th>
<th>representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>e-ři-bũ</td>
<td>ash</td>
<td>32</td>
<td>/[^{1}]0/</td>
</tr>
<tr>
<td></td>
<td>o-bũ-swa</td>
<td>white mushroom</td>
<td>9</td>
<td>/[^{1}]L/</td>
</tr>
<tr>
<td>L</td>
<td>e-ři-bwę</td>
<td>stone</td>
<td>24</td>
<td>/0/</td>
</tr>
<tr>
<td></td>
<td>o-bu-do</td>
<td>mushroom</td>
<td>2</td>
<td>/L/</td>
</tr>
</tbody>
</table>

6. Summary and Conclusions

This paper has traced the Proto-Bantu origin and development of the six contrasting Kinande tonal classes of disyllabic nominal stems in (1) on the basis of two cognate sets. First,
comparison with several closely related Lacustrine languages shows that the six classes originate from a HL, LH, LL contrast. Second, a deeper comparison with several Congolese languages suggests that the puzzling split of the HL class with respect to the presence or absence of a H% boundary tone can actually be traced to a HH vs. HL contrast in Proto-Bantu, confirming a hypothesis in Meeussen (1976). We proposed a chronology of tonal changes leading to a reconstructed state with a ternary H vs. L vs. 0 contrast on the final syllable and a phonotactic constraint restricting the L tone to the context H__#. The current Kinande lexicon has extended the ternary contrast by dropping the H restriction. Various lexical items have changed their tonal class affiliation based on alternative analyses of ambiguous phrase medial or phrase-final forms.

The research reported here depends entirely on the availability of large and accurate lexicons such as Yukawa (1992), Kaji (1986, 1992, 2000, 2004), and Kagaya (2005). The construction of such lexical materials for a greater variety of languages is an urgent task for Bantu linguistics and will help to put the reconstructions by such pioneers as Greenberg, Guthrie, and Meeussen on a more solid footing.

References


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