What we can learn about the tonology of Kisongo Maasai from borrowings

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1. Introduction

In this squib, I examine what happens when Swahili nouns (Bantu, Niger Congo), which have penultimate stress, are integrated into the tonal system of Kisongo Maasai (Eastern Nilotic, Nilo-Saharan).[1] This squib is a first timid step towards understanding the quite opaque tonal system of Maasai.

1.1. Maasai nominal tones

Tone in Maasai spells out Case (nominative versus non-nominative), and possibly number. Tonal patterns are also involved in the ubiquitous agreement patterns (agreement in case and number). The tonal system of nouns is quite complex, and, as far as I know, has not been analyzed phonologically. Maasai nouns are described as belonging to four tonal classes in Tucker and Mpaayei (1955), based in large part on the form of the nominative, and on accusative (i.e. non-nominative) nominative correspondences. Each tonal class is divided into several subclasses, a further classification of the surface forms of the accusatives[2].

(1)   Tonal classes of Tucker and Mpaayei (1955). (lower case refers to surface tones)

Tonal class 1:   Acc: initial spreading high   Nom: lows and final high
                 $[_{Case}$ h * (h)   l*   h$]_{Case}$

Tonal class 2:   Acc:penultimate or final high   Nom: initial high followed by lows
                        h   ]   Nom: [h   l
                        l h]
                        l h]

Tonal class 3: Acc varies (6 subclasses)   Nom: [h   l
                                                      or: add H prefix to accusative pattern

Tonal class 4: Acc and nominative are identical
                        Acc: [h l   Nom: [h l

All case forms surface with at least one high tone. Accusatives show more variation than nominatives. When there is a single high tone, high tones like initial, penultimate and final positions. Tonal classes are often different for singulars and plurals (see Koopman 2000a for the pairings and some statistics of the 510 nouns found in Tucker and Mpaayei 1955). The tonal classes of Kisongo Maasai match Tucker and Mpaayei's quite closely.

Most (but not all) subclasses seem to be represented, and there are some slight lexical differences. Overall though, it is close enough to serve as background for this squib.

1.2. Tonal agreement.

There is extensive agreement in Maasai for Case, gender and number. Agreement for Case and number are realized as tonal patterns. In relative clauses and possessive constructions agreement patterns are as follows (see Koopman, 2000b, appendix for paradigms).

(2)   *Relative clauses:*
        alayénì   ò   lò
        boy.acc   ms.sg.acc go
        '(I saw) the boy who will go'

(3)   Properties:
        Linear order: NP -Y - TP (Y is a ' relative' complementizer/pronoun)

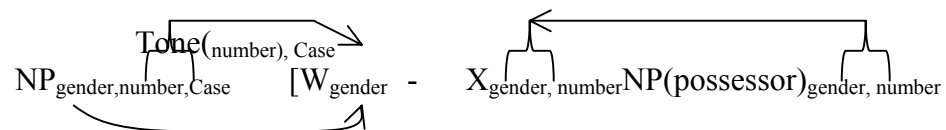   *Spell-out of Y depends on gender, number and Case of head N:*
           ms: o (*sg*) /oo (*pl*)
           fem: na, (*sg*), naa(*pl*)
           nom: h(sg)   hl (pl)
           acc   l (sg)   lh (pl)

(4)   *Possessive constructions:*
        oldíà   l-   á   layénì
             dog   ms-   sg.ms boy
          'a/the boy's dog'

(5)   Properties:
        Linear order: possessed W-X possessor: (W and X are fused heads)

        $\text{Tone}_{\text{(number), Case}}$

        $NP_{\text{gender,number,Case}}$ $[W_{\text{gender}}$ - $X_{\text{gender, number}}NP(\text{possessor})_{\text{gender, number}}$

        X agrees with possessor in gender and number
                X is a short vowel for singular possessors (o (ms), ɛ(fem))
                    and a long vowel for plural possessors (oo).
        W agrees with possessed in gender, and Case (W is [l] (ms)/ [zero] (fem)

        Tonal patterns:
        Possessed NP is Acc/Nom, and possessor is singular: h
        Possessed is nominative and possessor is plural: hl
        Possessed is accusative and possessor is pural[3]:   lh

1.3. Summary of tonal agreement patterns.

As we will see below, the fact that singular and plural nominative and accusative agreements occur with certain tonological patterns is important for understanding the tonology of borrowings:[4]

(6)   plural accusative: lh
        plural nominative: hl

(7)   *relative clauses:*   *possessive constructions*
        nom singular: h   nom sing :   h
        accusative singular: l   acc sing   h

1.4. Swahili and Maasai nouns compared.

Swahili is a noun class language, with a noun class prefix expressing both noun class and number. Masculine and feminine gender do not play a role in the Bantu noun class system, and Case in Swahili is not overtly marked. There are no nominal suffixes in Swahili. The Maasai noun is lexically specified for gender (masculine or feminine). The noun is followed by a number suffix, and Case is marked by tone. The Maasai noun is preceded by a kind of article (al/ar/Ol,il,En, in) that agrees in number and gender with the head noun. This article is separable and does not participate in the tonal alternations. The information relevant to the spell-out of the citation form of Maasai and Swahili nouns is presented below (see Koopman 2000b for the internal structure of the Maasai 'noun').

(8)   Maasai: $[_{\text{number,gender}}\ [_{\text{Case}}\ [[_{\text{N}}\quad]\ \text{Num}]_{\text{Case}}]\ ]$
        Swahili   noun class/ number $[_{\text{N}}\quad]$

2. Borrowings from Swahili

Swahili loanwords pattern according to number of syllables (bisyllabic or multisyllabic). Multisyllabic nouns divide into two classes (Matondo, 20000). In the tables below, unmarked syllables are pronounced with a low tone. Falling tones are indicated in the usual way.)

2.1.Pattern 1: Bisyllabic borrowings

(9)   Table 1. Bisyllabic borrowings.

		Swahili	Plural		Gloss
Acc.	Nom.		Acc.	Nom.	
ɛnjúma	ɛnjúmâ	chu̱ma	ɪnjúmaɪ	ɪnjúmáɪ	Iron
alʃáti	alʃáfi	sha̱ti	ɪltʃátii	ɪltʃátii	Shirt
ɛsímʊ	ɛsímʊ̂	Si̱mu	ɪsímʊɪ	ɪsímʊ́ɪ	Phone
ɛntʃúlɛ	ntʃúlê	ʃu̱lɛ	ɪʃúlɛɪ	ɪʃúlɛ́ɪ	School
ɛmésa	ɛmésâ	mɛ̱za	ɪmésaɪ	ɪmésáɪ	Table
ɔlɔ́rɪ	ɔlɔ́rɪ̂	Lo̱ri	ɪlɔ́rɪɪ	ɪlɔ́rɪ̂	Lorry
ɛmbítʃa	ɛmbítʃâ	Pi̱cha	ɪmbítʃaɪ	ɪmbítʃáɪ	Picture

The Swahili forms are preceded by the Maasai article which covaries with gender (masculine/feminine) and number (plural). The Swahili forms have a zero noun class marker, but where it can be determined, Swahili nouns are borrowed with their overt class marker (see table 2, (10)). The correspondence between Swahili penultimate stress and a surface lhl pattern in the accusative is straightforward, and expected. The Maasai accusative is used in a large number of environments, including citation forms. Nominatives are restricted to subjects of tensed clauses and objects of the unique P. singular and plural accusative have the same tonal patterns. The nominative form seems to be related to the accusative by the addition of an initial high. All case forms have a high tone on the penultimate. These borrowings fit into a (maybe surprisingly small) subclass of Tucker and Mpaayei's tonal class 3a[5].

2.2. Pattern 2. Multisyllabic 1.

Multisyllabic borrowings split into two classes. The majority of borrowed nouns follow the pattern below (Matondo 2000)

(10)   Table 2: Multisyllabic 1.

Singular		Swahili	Plural		Gloss
Acc	Nom		Acc	Nom	
arkalámu	arkálamu	kalamu	irkalamuní	irkálamuní	pen
ɛmbaɪsɪkélɪ	ɛmbáɪsɪkelɪ	Baisikeli	ɪmbaɪsɪkɛlɪní	ɪmbáɪsɪkɛlɪní	bicycle
aldarása	aldárasa	darasa	ildarasaní	ildárasaní	class
ɛŋgɪkɔ́mbɛ	ɛŋgíkɔmbɛ	kikombe	ɪŋgɪkɔmbɛní	ɪŋgíkɔmbɛní	cup
ɔrsʊrpálɛ	ɔrsʊ́rpalɛ	suruali	ɪrsʊrpalɛní	ɪrsʊ́rpalɛní	pants
ɛŋgardási	ɛŋgárdasi	Karatasi	ɪŋgardasɪní	ɪŋgárdasɪní	paper
ɛmbɪkɪpíki	ɛmbíkɪpɪki	pikipiki	ɪmbɪkɪpɪkiní	ɪmbíkɪpɪkiní	motorcycle

The singular accusative surfaces with penultimate H, and follows the Swahili penultimate stress pattern. However, this pattern differs from pattern 1 in that none of the other inflectional forms have a penultimate High. Nominatives carry an initial high, plurals a final high. Nominatives seem to involve addition of an initial high tone. The tonal class in the plural is different from the tonal class in the singular. (class 2 singular, class 3 plural).

2.3. Pattern 3: Multisyllables 2.

(11)   **Table 3: Multisyllables 2.**

Singular		Swahili	Plural		Gloss
Acc	Nom		Acc	Nom	
arkáraní	arkaraní	karani	ilkaraní	ilkáraní	clerk
armálîmú	armalimú	mwalimu *Arabic:* mu9allim	irmalimuní	irmálimuní	teacher
aldákîtárî	aldakitarí	daktari *English*: doctor	ildakitariní	ildákitariní	doctor

None of the forms in this pattern reflect the Swahili penultimate stress pattern: all syllables bear high tones in the accusative, and high is final for nominatives singular, but initial and final for nominative plural. Note that the pattern in 3 is not dependent on a gender distinction: feminine animate nouns show the same pattern (ɛldákîtárî 'a female doctor (acc)). These borrowings go in Tucker and Mpaayei' s tonal class 1 in the singular, but in tonal class 3 for plurals. Matondo points out that this pattern is reserved to [+animate] Ns[6].
        The question arises why these nouns are not integrated in the l h l surface tonal pattern, as is the case for mulitsyllabic 1. Why are they assigned to a different tonal class? There are two basic possibilities: either there is some historical explanation based on the path through which these nouns have been borrowed into Maasai, or there is an explanation internal to Maasai. The lack of correspondence with Swahili could be explained for example if these forms would have been borrowed faithfully from some other language, say from say Arabic or even English. It is very likely however that these are indeed borrowed from Swahili. Leston Buel (personal communication) points out that even if *karani* or *dakitari* came directly from Arabic, they would not have initial, but penultimate stress. Swahili *mwalimu* comes from Arabic *mu9allim*, which should have had stress on the penultimate, i.e. on a̲: this syllable also carries a high tone in the Maasai accusative, but the form in Maasai is neither mwálimu, nor mwálîmu (as might be expected if the borrowings are faithful to both Swahili and Arabic). Both forms are wellformed accusatives. Note however that the Maasai form corresponds very closely to the Swahili one, with the simplification of *mw* to *ma*. Thus, the fit with Swahili is simply better than the one with Arabic. If it has been borrowed from Swahili, it had penultimate stress. *Dakitari* could be a direct borrowing from English: this could explain the high tone on the first syllable, but not the high pattern throughout. Indeed, we would expect

borrowings from English to have a hll pattern, which is a attested accusative pattern in Maasai. And again, the Maasai form is very close to the Swahili one (same vowel, Maasi has o/O), and Swahili therefore seems to be the most likely source[7].

This leaves us with a puzzle: how did the Swahili penultimate stress pattern come to correspond to the Maasai all high pattern? And why does it seem to be restricted to [+animate] nouns? Pending further research, I would like to speculate that it is due to the feature [+animate]. [+animate] nouns go in the high tone accusative class. This resembles noun class system, which is potentially interesting. Maasai is typologically not a noun class language, but a gender one (masculine/feminine), yet at some level noun class may play a role. I suspect from my work on singular plural correspondences that there are definite "remnants" of a former noun class system. Bringing in noun class might be useful in determining the (so far chaotic) laws that govern the distribution of number allomorphs.

3. Towards an analysis

The surface patterns on borrowings are summarized in the table below.

	Singular		Plural	
	Acc	Nom	Acc	Nom

1.disyllabic	hl
	
	σ σ
		h hl
		
		σ σ
			hl
			
			σ σ
			       +i
				h hl
				
				σ σ
				       +i

2.multisyllabic	l h l
	
	σ σ σ
		h l l
		
		σ σ σ
			l l l h
			
			σ σ σ σ
			        ni
				h l l h
				
				σ σ σ σ
				        ni

3.multisyllabic [+animate]	h h h
	
	σ σ σ
		l l h
		
		σ σ σ
			l l l h
			
			σ σ σ σ
			        ni
				h l l h
				
				σ σ σ σ
				        ni

From this table, the following generalization emerge:
- the form of the Maasai accusative is based on the surface tonal pattern of Swahili, except for [+animate] nouns.
- the plural suffix is spelled out as -i for disyllabic and -ni for multisyllabic N stems.
- the plural tonal patterns vary with syllable structure (pattern 1versus pattern 2 and 3) the tonal patterns of the plural forms are identical in patterns 2 and 3.
- there are three distinct singular accusative and three singular nominative patterns.

I will look at these in turn, and try to provide a basic analysis for these patterns. As discussed, there are no clear overall correlations with Tucker and Mpaaye's tonal classes (pattern 1 falls in class 3a for singular and plural, pattern 2 in class 2 for singulars and class 3 in tonal class 1 for singular and 3 for plural). I will try to analyze these tonal

patterns in different ways, connecting them with the general productive tonal agreement patterns described in section 1.3.

3.1. The spell-out of the plural suffix.

Matondo (2000) shows that the form of the plural suffix for loanwords is predictable from the syllable structure. This not only holds true for existing loanwords, but also for non-sense words:

(12)   -i for disyllabic nouns
          -ni for multisyllabic nouns

The spell-out of Number thus depends on the syllable structure of the stem it attaches to[8]:

(13)   -i   coocurs with disyllabics
         -ni   elsewhere

3.2. Tonal patterns in the plural.

Consider the plural patterns, which are identical for pattern 2 and 3, but different for pattern 1. The difference is sensitive to syllable structure, not to lexical differences.

Plural	
Acc	Nom
l hl	h hl
σ σ	σ σ
+i	+i
l l l h	h l l h
σ σ σ σ	σ σ σ σ
ni	ni
l l l h	h l l h
σ σ σ σ	σ σ σ σ
ni	ni

We can relate all plurals to the a same process of plural formation, if we can account for the surface form of bisyllabics. Bisyllabics have a hl on the final syllable in the accusative and nominative plural,, whereas the others have a final h.
If we suppose that the high is really final in bisyllabic cases as well, the patterns could be reduced to a singular plural pattern:

(14)   the surface l hl pattern on disyllables is derived from an underlying l l h pattern

Given (14), we can attribute the following phonological properties to the " atoms" that make up the plural forms:

(15)　Plural:　　　　　　　H suffix　[ni, i, 0]
　　　　Accusative plural:　L prefix[9]
　　　　Nominative plural :　H L prefix.
　　　　root/stem is toneless.

In this analysis,　the final high tone is attributed to plural. Hence all plural forms end with a high tone. To ensure that accusative L and plural coocur, we state that accusative L selects for Plural [+H].　This is a particular case of the general selection (Case selects for Number (Koopman, 2000b). Nominative plural is HL to yield a hl surface pattern (some H prefixes will spread as we will see below).　 In this analysis, the general plural agreement patterns (accusative plural (lh) and nominative plural (hl)) emerge .

A sample analysis for multisyllabic nouns:

(16)　a.　　　L　　　　　　　　H

　　　　　　　[$_{accCase}$ [σ σ σ] ni $_{Num}$]]

　　　　　　　Attach from left to right:
　　b.　　　L　　　　　　　H
　　　　　　　　　　　　　　　　 |
　　　　　　　[$_{accCase}$ [σ σ σ] ni $_{Num}$]]

(17)　a.　　　HL　　　　　　　　H

　　　　　　　[$_{nomCase}$ [σ σ σ] ni $_{Num}$]]

　　　　　　　Attach from left to right:
　　b.　　　H L　　　　　　H
　　　　　　　　　　　　　　　　 |
　　　　　　　[$_{accCase}$ [σ σ σ] ni $_{Num}$]]

For disyllabic nouns,　there must be a process that yields l hl instead of llh. This surfacy "tonal metathesis" should be tied to the incorporation of i into the preceding syllable.
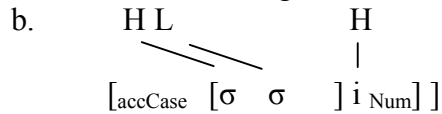
A sample derivation (acc plural):
(18)　a.　　　L　　　　　　　　H

　　　　　　　[$_{accCase}$ [σ σ　　　] i $_{Num}$]]

　　　　　　　Attach from left to right
　　b.　　　L　　　　　　H
　　　　　　　　　　　　　　　 |
　　　　　　　[$_{accCase}$ [σ σ　　] i $_{Num}$]]

c.   integrate i into syllable
d.   LH on short syllable is intrepreted phonetically as hl[10].

Nominative plural:

(19)   a.   HL   H

        [accCase [σ σ   ] i Num]]

        Attach from left to right
        b.   H L   H
                                          |
                [accCase [σ   σ   ] i Num]]
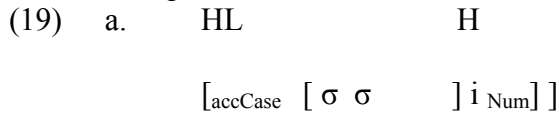
        c.   integrate i into syllable
        d.   + spell out LH on short syllable as hl

This analysis has the pleasing feature that the borrowed roots/stems themselves are toneless; tones follow entirely from the phonology of the morphosyntactic categories (case and plural). The spell-out for tone is different for bisllaybics nouns, a distinction which we independently know spell-out in Maasai to be senstitive to. For plural formation of these borrowed nouns, it does not matter which tonal pattern singular borrowings receive, their plurals all fall in the same class, and are entirely predictable. It seems that the Maasai speaker has ample evidence for these tonal patterns in the form of ubiquitous tonal agreement patterns.

3.3. Tonal patterns in the singular.

The patterns on singular nouns are more complex.

		Singular
	Acc	Nom
1. disyllabic	hl σ σ	h hl σ σ
2. multisyllabic	l h l σ σ σ	h l l σ σ σ
3. multisyllabic [+animate]	h h h σ σ σ	l l h σ σ σ

3.3.1.Singular: pattern 3.

The multisyllabic pattern 3 belongs to a different tonal class than 1 and 2. The surface forms of this class can be accounted for as follows:

(20)   + animate → singular accusative: H prefix
                     singular nominative: L prefix H suffix.
   stems are toneless

In contrast with plural, singular number does not have a unique tonal realization

In the accusative forms, the H prefix will spread and yield a high toned pattern
throughout; the L prefix will do so as well, and the H suffix will attach to the final
syllable:

(21)   H   L   H

        [_{acc}[σ σ   σ] [_{sg}]]   [_{nom} [σ σ   σ] [_{sg}]]

Attach from left to right   Attach from left to right:

        H   L   H

        [_{acc}[σ σ   σ] [_{sg}]]   [_{nom} [σ σ   σ] [_{sg}]]
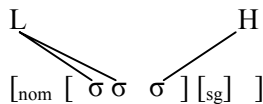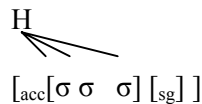
3.3.2. Singular: pattern 1 and pattern 2.

At first blush, singular nouns in pattern 1 and pattern 2 fall into two different tonal
classes depending on their syllable structure:

(22)   First pass:
        Bisyllabics:
        a.   singular accusative   HL suffix
        b.   singular nominative   H prefix   HL suffix
        c.   stems are toneless

(23)   Multisyllabics:
        a.   singular accusative : L prefix   HL suffix
        b.   singular nominative: HL prefix
        c.   stems are toneless

This analysis raises many questions, however. Why would the singular nominative vary
so dramatically with syllable structure? Why would the selection of nominative singular
allomorphs be sensitive to syllable structure? This analysis does not capture the intuition
that these two patterns are fundamentally the same, with apparent surface differences
falling out from the number of syllables.
I would like to outline the basic idea for a unified analysis below, but leave its
justification for future research.
Let us return to the basic general agreement patterns in the singular:

(24)   accusative singular   L   (relative clauses) or H (possessive)
         nominative singular: H

We have seen that the [+animate] class has a H prefix in the singular accusative, and a
high tone suffix in the nominative (coocurring with a L prefix; alternatively, the low tone
prefix here is a default tone). The forms in (23) take a L prefix in the accusative. Based on
the general agreement patterns, we expect to find a H nominative affix in this class,
which we see appear as a prefix in the forms in (22c). This suggests that accusative is a L
prefix and nominative a H prefix in this class. If this is correct, all underlined tones in
(22) and (23) must be accounted for in some different way.

(25)   disyllabics:
         a.   singular accusative   L [hl]
         b.   singular nominative   H [hl]
         c.   stems are toneless

         multisyllabics:
         d.   singular accusative : L [hl]
         e.   singular nominative: H [l
         f.   stems are toneless

I would like to suggest that the underlined tones reflect the metrical system, not the tonal
one, and that both interact in Maasai to yield surface tonal patterns.
Recall that there are no surface low toned nouns in Maasai. Yet, if there is a low toned
accusative prefix, and if nouns themselves can lack tonal properties, low toned nouns are
expected to exist on general grounds. Instead, all lexical nouns must carry some high
tone. Suppose that a high tone is unavailable, because neither the stem nor the functional
categories provides one. We can see stress kick in as a last resort, leading to a
penultimate hl pattern in (25 a and d). For the particular paradigm under discussion, this
analysis would have the following properties:

(26)   a. low prefixed singular accusatives trigger penultimate stress assignment on
            toneless nouns.
         b. a stressed syllable (*) is associated with a hl surface pattern, regardless of
            whether it is associated with a H or a L tone .
         c. H prefixed singular nominative cooccurs with initial stress
         d. Tones on the tonal tier do not spread beyond a stressed syllable *

(26a) yields the hl penultimate pattern in the accusative, but not in the nominative which
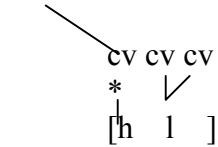requires additional adjustment (see below). (26 b and c) yield a surface hl pattern.

(27)   Multisyllabic:

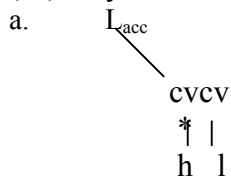a.   L_{acc}   low prefix (accusative singular)

          cv cv cv
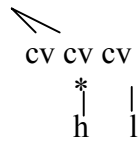
             * | penultimate stress
             h l   Surface form: lhl

b.   H_{nom}   High prefix (nominative singular)

              cv cv cv

            * V
          [h l]

(28) Bisyllabic Nouns:

a.   L_{acc}

          cvcv

         * |
         h l

The corresponding nominative pattern needs some additional readjustment, since the surface pattern here is h hl, not the expected hl. I would like to suggest that this follows from obligatory stress shift in this particular environment. Because of the syllable structure, penultimate syllable and initial syllable coincide. Nominatives do not like hl with H on the penultimate and l on the final syllable. We can take this to be the source of the problem, causing stress to move over to the only other possible syllable:

(29)   Move stress to final syllable.

    H_{nom}

      cvcv

    * *
     [h l]
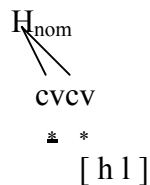
This analysis retains the idea that an initial HL nominative pattern is due to both stress and a high toned nominative prefix. Both have surface effects in bisyllabic nouns, due to stress shift. With multisyllabic nouns, the High toned prefix and the hl stress fall on the same syllable, resulting in conflation between tone and stress, yielding surface opacity.

4. Conclusion.

Borrowings from Swahili into Kisongo Maasai show tonal behavior that is interesting on its own. The borrowings also provides initial insights into the understanding of the phonological properties of Maasai tones, a welcome result. I have presented a decomposition of the tonal system on the borrowings, attributing properties to the structural players that are involved. The tones of borrowings are closely linked to the

general tonal agreement patterns in Maasai, with borrowing falling in a single plural pattern, and a high tone suffix asssociated with plurality.

(30)   plural accusative: l(h)
        plural nominative: hl

In the singular, borrowings fall in two classes, depending on whether they are animate or not. Animate singulars have a H tone prefix in accusatives and a L prefix High suffix in the nominative. All other borrowings have a L tone prefix in the accusative, and a H tone prefix in the nominative. Again, it seems that the tones on borrowings are linked to the tones that appear in general agreement patterns.

(31)   *relative clauses:*   *possessive constructions*
        nom singular: h   nom sing :   h
        accusative singular: l   acc sing   h

The borrowed nouns themselves can be analyzed as being toneless, i.e. tone is entirely predictable from the morphosyntactic categories Case and number. I have finally suggested that additional surface tones in the accusative and nominative are due to an interaction with the metrical system.

    The present analysis should provide a stepping stone for further tonal analysis of Maasai nouns and verbs: surface tones should result from the interaction of morphosyntactic tones, tonal properties of individual lexical items, and the interaction of stress. Moreoever, as we see from borrowings, it is important to distinguish between bisyllables and multisyllables. Hopefully, armed with this ammunition, we can arrive in the future at a better understanding of the tonology in Maasai.

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Footnotes:

[1] The data reported here have been gathered during a two quarter field methods course at UCLA in 1999/2000 and Matondo 2000. I would like to thank our language consultant

[2] This classification should be rethought.

[3] Note that the case and plural features do not come from the same source. The phonology does not seem to care: it will spell out nominative plural, accusative plural in the same way regardless of the source of these features.

[4] Similar patterns also appear to be involved in clitics and subject verb agreement. The analytical work in this area remains to be done.

[5] More precisely, tonal class 3a. Based on the tables in Koopman (2000) only 14% (17/123) of the nouns in class 3 have both singular and plurals in class 3a. The total number of singulars in class 3a is around 40 % (63/158).

[6] At this point, I do not have sufficient data to decide if the pattern is sensitive to [+human], or [+animate]. I also have no information at this point about how borrowings from English with initial stress are integrated in Maasai.

[7] Of course, other ways cannot be excluded (borrowings from a different Maasai dialect). An interesting possibility would be that these forms were initially borrowed from English (leading to initial h), with later readjustment to penultimate stress from Swahili (adding penultimate high). This is plausible since Swahili is the dominant other language for Maasai speakers.

[8] For many, but not all nouns, the suffix spells out plural. For some basic plurals, it spells out singular. For example, some fruits are borrowed as basic plurals, and therefore take the number suffix in the singular.

ar-matʃúŋgwạ-i	iṛ -matʃúŋgwa	chungwa -orange
sg.ms orange-i	pl.ms- orange	
ar- maɛ́mbɛ-ɩ	ɪr-maɛ́mbɛ	embe - mango
sg.ms- mango-i	pl. mango	

Note that the singular here is spelled out as –i, not as –ni, as we would expect. This suggests ma- should be analyzed as some kind of prefix, and that the nominal root is analyzed as bisyllabic. This is further confirmed by the tonal patterns in the plural (pattern 1) ɪr-maɛ́mbɛ̂ 'mangos' (nominative).

[9] Most probably, the accusative plural is a L prefix and a High suffix because of the general lh agreement patterns. This requires an additional deletion rule simplifying HH on the tonal tier to H, presumably for OCP reasons.

[10] Note that there is no rising tone on syllables containing diphthongs in Maasai. There are no problems with a lh rise on long vowels.