

ACCENT MODIFICATION RULES IN LUGANDA

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Most analyses of Luganda treat it as a tone language. Recent studies also show that it has features which seem to make it possible to characterize it as a "pitch accent language". Further, McCawley [1970] suggests that languages may have a pitch accent system up to some point in the ordering of its rules and thereafter have a tonal system: the claim is also made that Luganda is a tone language starting from a very early point in the ordering of its rules. This claim is re-examined and the nature of various accent modification rules in Luganda are investigated. It is concluded that McCawley's claim is acceptable only when one is accounting for pitch in words. Furthermore, it is shown that Luganda has several processes which modify accent thus postponing the stage at which the language ceases to be a pitch accent language to become a tone language.

1. Introduction

Previous studies of Luganda prosody<sup>1</sup> have generally been made with the assumption that Luganda is a "tone language" which, according to Pike [1948:3], is "a language having lexically significant, contrastive, but relative pitch on each syllable." Thus Luganda is a tone language since, according to the above definition, the acoustic difference between each of the pairs of words given in (1), where pitch is indicated by profile, is purely one of pitch:

- (1) i. (a)  $\overline{\text{ku}}\text{bala}$  'to count'  
(b)  $\text{ku}\overline{\text{ba}}\text{la}$  'to bear fruit'  
ii. (a)  $\text{ku}\overline{\text{wola}}$  'to lend money'  
(b)  $\text{ku}\overline{\text{wo}}\text{la}$  'to cool'  
iii. (a)  $\text{n}\overline{\text{ja}}\text{la}$  'hunger'  
(b)  $\text{n}\overline{\text{ja}}\text{la}$  'nails/claws'

In the above examples an initial segment with a low pitch is followed, in the case of (a) of each pair, by high pitch throughout, while in the case

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<sup>1</sup>See in particular Meeussen [1965, 1966]; Cole [1967]; and Stevick [1969a, 1969b].

of (b) of each pair, the initial low pitched segment is followed first by a high pitched segment and then by a low pitched segment.

More recent studies<sup>2</sup> on the other hand, using criteria other than the shape of the informational nature of the acoustic signal in characterizing the prosodic system of the language, have shown that Luganda possesses features that would seem to make it possible to characterize it as a "pitch accent language". The decision to characterize Luganda in this way rests, first of all, on a consideration of the kind of information that is needed, with respect to pitch, by the underlying lexical representations of morphemes in the language. McCawley [1964] says that if the underlying form of each morpheme in a language requires at most the specification of some pitch phenomenon, for example the location of a high pitch or a drop in pitch, then the language being considered has a pitch accent system. Such a language would be quite different from one where the morphemes would require an underlying representation in which each syllable must be specified for underlying pitch. So that in a pitch accent language the information which must be recorded in the dictionary is at most the location of some "accented" syllable. Such information may, of course, be even less than the marking of the accent--information as to which syllable is accented may be indicated indirectly by a morphological feature; or no information at all may need marking in languages where accent is totally predictable. In these cases a rule will then be utilized to mark some syllable as accented on the basis of other information in the dictionary entry.<sup>3</sup>

The second key factor in deciding whether or not a language has a pitch accent system derives from a consideration of the type of rule or

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<sup>2</sup>Particularly Heny [1970]; McCawley [1970] and Kalema [1974].

<sup>3</sup>Languages where accent or prominence patterns can be related to pitch distinctions in one vowel of each word and where, as a result, the surface manifestation of pitch can be accounted for in a very general way, have been reported in other related Bantu languages: (Safwa) Voorhoeve [1973]; (Kinga) Schadeberg [1973]; (Haya) Byarushengo, and Hyman, and Tenenbaum [1976]; (Kinyarwanda) Kimenyi [1976].

rules that are needed to derive a phonetic representation given the information relating to pitch that is contained in the underlying representations. Thus if among the rules modifying accent are accent reduction rules with the effect of inserting accent on some syllable while reducing all other accents in the domain of that rule by one degree, this would mean that the language being considered, while it may or may not be partially tonal, has a pitch accent system at some stage in the derivation of its surface pitch. McCawley [1964] had classified languages according to their phonological rule systems into tonal languages, as those in which rules that do assimilations and dissimilations on pitch levels are to be found, and pitch accent languages, where accent reduction rules operate. McCawley [1970:529], in citing examples of languages incorporating both types of rule systems, however, dismisses the earlier classification and admits that it is impossible to make such a classification non-arbitrarily. Nevertheless, McCawley adds, "it will be possible to speak of a language as having a pitch accent system up to some point in the ordering of its rules and having a tonal system from that point onwards in the rules. Languages could then be classified according to how early in their grammars the point occurred at which they became tone languages". In the same study McCawley puts forward the view that Luganda is a tone language starting from a very early point in the ordering of its rules.

The aim of this paper is to investigate the nature of the various processes or rules that modify accent in Luganda. During the course of the investigation it will be shown that McCawley's conclusion regarding the stage at which Luganda becomes a tone language may be acceptable only when one is accounting for pitch in words. If one is dealing with stretches longer than the word, one finds that, apart from the "one very early accent reduction rule"<sup>4</sup> mentioned by McCawley, Luganda has other processes that modify accent, thus postponing the stage at which the language ceases to be a pitch accent one to become a tone language.

<sup>4</sup>Of this rule, McCawley [1970:529] further says, "as far as I know, the rule which deaccents a noun before a possessive is the only accent reduction rule Luganda has".

## 2. Accent Assignment

Talking about Luganda verb-words, Heny [1970:175] says that "there is just one fall in tone from high to low in each surface verb-word. Once the position of this drop in tone is fixed, the tone of the other syllables can be determined." This means that provided an initial marking is made to the word form, the pitches of certain segments, both before and after the accented segment, need not be determined individually syllable by syllable, but rather they may be predicted by rules: after the accented segment, everything is low pitched,<sup>5</sup> while everything up to the accented segment is high pitched except for certain segments occurring initially, and are themselves not accented and are specified as low pitched either in the dictionary or by rules; where in a word there is no accented segment, everything is high pitched except for the initial mora<sup>6</sup> which is always low. The accented segment is identified with the high pitch in a high-low pitch sequence in the pitch profiles and will be indicated informally elsewhere by an acute mark (´). In this paper, we will not dwell specifically on how this initial marking to a

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<sup>5</sup>This pitch profile is possible only when "sentence" intonation is used. With this type of intonation, for example, items such as *liiso* 'eye', *ekibegabega* 'shoulder', *obumanyirivu* 'expertise' would have the following pitch transcriptions respectively:  $\overline{li}i\ so$ ,  $\underline{eki}[\underline{be}]g\underline{abega}$ ,  $\underline{obu}[\underline{ma}]\underline{nyirivu}$ . In making their pitch transcriptions, the majority of past studies in Luganda have marked items using a "list" intonation which means that the list of items quoted above would be transcribed as follows: *li i so*, *eki be gabe ga*, *obu ma nyili vu*. The use of sentence intonation is reserved for items with the potential of occurring as fully independent utterances while list intonation is used when the item involved forms part of a list of other items to be enumerated. Indeed going through a list of items with an informant, as most transcribers of Luganda pitch no doubt have done, automatically conditions the informant to render his answers with the type of intonation most appropriate for the task at hand: enumerating a list of items, actions, etc. Since in Luganda even individual words may form complete sentences on their own, it seems more appropriate that the type of pitch transcription based on a sentence intonation should be used, sentence intonation thus being regarded as the most neutral type of intonation. Accordingly all words and phrases in this paper have been transcribed on the basis of their sentence intonation.

<sup>6</sup>A mora is a unit of phonological distance defined in loose terms by McCawley [1968:58] as "something of which a long syllable consists of two and a short syllable consists of one". In Luganda each mora would therefore consist of either a consonant or a glide followed by a vowel, or a vowel alone, or a syllabic consonant.

Luganda word is accomplished<sup>7</sup> since the rules being considered, although they depend on the presence of the accent in a word, will operate irrespective of how the accent is assigned in the first place.

### 3. Accent Shift

One process that has been overlooked by those studies which have characterized Luganda as being, at least partially, a pitch accent language, is one which involves the shifting of the accented segment from its original position in a word to a new position in environments larger than the word. The process of accent shift, for example, occurs when an accented noun is followed by one of the following post-positional genitive pronouns: -ange 'my', -affe 'our', -ammwe 'your' (plural), -abwe 'their'. Let us consider the examples in (2):

(2) <u>Original accent</u>	<u>Accent shift</u>	<u>Pitch profile</u>
kutúú <sup>8</sup> 'ear'	kutuú kwaange	ku tuú kwaange 'my ear'
kibiináá 'class'	kibiináá kyaange	ki biinaa kyaange 'my class'
kibónerezo 'punishment'	kibonerezó kyammwe	ki bonerezo kyammwe 'your punishment'
ekibégabega <sup>9</sup> 'shoulder'	ekibegabegá kyaange	eki begabega kyaange 'my shoulder'
obutúkuvu 'holiness'	obutukuvú bwaffe	obu tukuvu bwaffe 'our holiness'

<sup>7</sup>This is a complex subject. Preliminary attempts to deal with it have been made by Heny [1970] and Kalema [1974] and also in my paper "On accent assignment in Luganda" (in preparation).

<sup>8</sup>Certain orthographic conventions regulating the non-doubling of vowels in certain contexts are deliberately ignored in this paper, representing long vowels in all contexts by doubled vowels. This facilitates, among other things, the marking of gliding pitches as sequences of level pitches distributed over the two vowels involved.

<sup>9</sup>This and similar items quoted with an initial vowel in this paper belong to the traditional Tone Class C in which if the noun or adjective stem is preceded by a CV-type class prefix, the presence or absence of the initial vowel leads to a change in pitch pattern, viz. eki|be|gabega as opposed to kibe|qa|bega, obu|fu|kuvu as opposed to butu|ku|vu. In all other cases, the presence or non-presence of the initial vowel does not alter the pitch profile, hence our decision to exclude it in this case.

In all the above examples the original accent of the word is shifted from its original position to the very last mora before the genitive pronoun.

There are, however, certain exceptions to this general process. The first exception is found in the case of stems which are made up of two syllables with the structure CVCV. When such stems are followed by any of the post-positional genitive pronouns, the accent does not shift from its original position as the items in (3) illustrate:

(3)	<u>Original accent</u>	<u>Accent shift</u>	<u>Pitch profile</u>
	mukázi	mukázi waange	mu[ka]zi waange
	'wife'		'my wife'
	bifúba	bifúba byaabwe	bi[fu]ba byaabwe
	'chests'		'their chests'
	emigúgu	emigúgu gyammwe	emi[gu]gu gyammwe
	'luggage'		'your luggage'
	omuwála	omuwála waange	omu[wa]la waange
	'girl'		'my girl'

The second case involving no accentual shift is found among nouns of foreign origin. In Luganda, nouns of foreign origin seem to sub-divide themselves accentually into two categories depending on the type of structure the accented syllable has. In all cases, it is the last but one syllable that is accented with the accent being inserted on the first mora where the affected syllable consists of a geminate vowel cluster or on the only vowel of a syllable with no geminate vowel cluster. This categorization is also reflected once such nouns are placed before the genitive pronouns under consideration: there is accentual shift in all those items originally accented on the first mora of a geminate vowel cluster and no accentual shift in items accented on the last but one vowel of syllables with no geminate vowel cluster as the examples in (4a) and (4b) illustrate respectively:

(4)	<u>Original accent</u>	<u>Accent shift</u>	<u>Pitch profile</u>
a.	bapuliísi	< (English: bapuliisí bammwe	ba[puliisi]bammwe
	'policeman'	police)	'your policeman'

(4) cont.

kitaambáala < (Swahili: kitaambaalá kyaffe	ki taambaala kyaffe
'table cloth' kitambaa)	'our table cloth'
mapapaáli < (Swahili: mapapaalí gaabwe	ma paapaali gaabwe
'pawpaws' mapapayi)	'their pawpaws'
b. baserikále < (Swahili: baserikále baffe	ba serika le baffe
'soldiers' serikali	'our soldiers'
'government')	
mabalúwa < (Swahili: mabalúwa gaange	ma balu wa gaange
'letters' barua)	'my letters'
bulaangíti < (Swahili: bulaangíti zaabwe	bu laangi ti zaabwe
'blankets' bulanketi)	'their blankets'

Thus, apart from these exceptions which would have to be marked as exceptional to the rule to accent shift, we need a rule of accent shift such that before a genitive pronoun, accented nouns have their accents shifted from their original positions on to the very last mora of the stem. Before attempting to formulate this rule in more formal terms, let us examine another process that modifies accent in Luganda phrases.

#### 4. Accent Reduction

Consider first the genitive phrases in (5) in which the possessing noun is separated from the possessed noun by a genitive particle -a :

(5) <u>Original accent</u>	<u>Accent reduction</u>	<u>Pitch profile</u>
kikópo ; mukázi 'cup' 'woman'	kikopo kyaa mukázi	ki kopo kyaa muka zi 'the woman's cup'
musáwo ; baserikále 'doctor' 'soldiers'	musawo waa baserikále	mu sawo waa baserika le 'the soldiers' doctor'
migugúu ; bagolée 'baggage' 'brides'	migugu gyaa bagolée	mi gugu gyaa bagole e 'the brides' baggage'
lupaláza ; njúu 'verandah' 'house'	lupalaza lwaa njúu	lu balaza lwaa nju u 'the house's verandah'

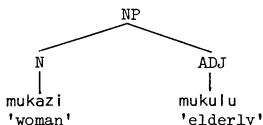
In (5), in spite of the fact that each of the constituent nouns in the genitive phrases is accented, only one accent--the right-most accent--is manifested. The same phenomenon is observable in "compound nouns" as illustrated in (6):

(o)	<u>Original accent</u>	<u>Accent reduction</u>	<u>Pitch profile</u>
	mukázi ; mukúlu 'woman' 'elderly'	mukazi mukúlu	<u>mu</u> kazi muku <u>lu</u> 'elderly woman'
	líiso ; ddéne 'eye' 'big'	liiso ddéne	liiso dde <u>ne</u> 'God'
	mafúta ; míngi 'goods' 'many'	mafuta míngi	<u>ma</u> futa mii <u>ngi</u> 'wealthy person'
	mutwée ; munéne 'head' 'big'	mutwe munéne	<u>mu</u> twe mune <u>ne</u> 'stubborn person'

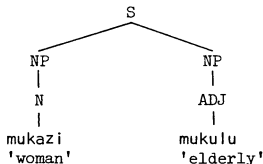
### 5. The Role of Syntax in Accent Modification

It is possible to assume that the accentual modification processes, that we have dealt with, will operate irrespective of syntactic environment. This, however, is not quite the case. In Luganda there is, for example, a distinction between mukazi mukulu 'elderly woman' and mukazi mukulu 'the woman is old'. In both cases, we have exactly the same elementary constituents. There is, however, a difference in the way in which these constituents are combined which is reflected in the different surface structures in (7):

(7) a.



b.



In (7a) where both the noun and adjective belong to the category "Noun Phrase" the phonological rules must yield a surface pitch contour in which there is only one accented segment: mukazi mukulu; while in (7b) where both constituents belong to the category "Sentence" the phonological rules



must give a surface pitch contour in which there are two accented segments:  $\underline{\text{mu}}\underline{\text{ka}}\underline{\text{zi}}\underline{\text{mu}}\underline{\text{ku}}\underline{\text{lu}}$ . In fact all the examples quoted so far portray this same dependence on syntax with regard to accentual modification with the genitive constructions in section 3 having the post-positional genitive element accented on the first mora, once the constituents Noun and Genitive Pronoun both belong to the category Sentence. So, the process of accent shift and accent reduction seem to operate only when the constituents involved both come under the immediate domination of the category Noun Phrase.

## 6. Nature of the Rules

6.1. Accent reduction. In order to account for the state of affairs in (5) and (6) it is possible to assume that each item goes through the accent assignment processes with the result that each item would contain one primary accent. If, at this stage, we have a rule in the grammar with the effect of reducing the accent on the first item from primary to secondary, then we should end up with noun phrases manifesting both primary and secondary accents--primary accent being situated on the second accented segment and secondary accent being located on the first accented segment as in (8) where primary accent is marked as 1 and secondary accent as 2:

- (8) a.  $\underline{\text{mu}}\underline{\text{k}}^2\underline{\text{a}}\underline{\text{zi}}\underline{\text{mu}}\underline{\text{k}}^1\underline{\text{u}}$  'elderly woman'  
 b.  $\underline{\text{ki}}\underline{\text{k}}^2\underline{\text{o}}\underline{\text{p}}\underline{\text{o}}\underline{\text{kyaa}}\underline{\text{m}}^1\underline{\text{u}}\underline{\text{k}}^1\underline{\text{a}}\underline{\text{zi}}$  'the woman's cup'

If accent placement is one that places primary accent rather than weakening accent, and if the following convention is adopted: "when primary accent is placed in a certain position, then all other accents in the string under consideration at that point are automatically weakened by one", then the rule of accent reduction could be formulated as follows:

- (9) Assign primary accent to a primary-accented mora in the context  
 $\overset{1}{\text{M}} \dots \text{---} \dots ] \text{NP}$

(In this rule  $\overset{1}{\text{M}}$  stands for a mora with primary accent and the dash indicates the position of the segment to which the rule applies.)

Rule (9) would assign primary accent to a primary-accented mora which is preceded by another primary-accented mora in a Noun Phrase. By the convention that we stated above, the effect of this rule would be to weaken the other accents in the string to which the rule applies. Thus, the accents in (8a) would be derived as follows:

(10)		mukazi	mukulu	
	1.	1	1	Original Accents
	2.	2	1	Accent Reduction rule

An approach such as the above, however, makes claims about Luganda phrases that cannot be fully substantiated, namely that the phrases such as the ones under investigation have segments with different degrees of stress. As far as we can tell, no distinction in degrees of stress exist in these phrases. What seems to be the case though is that once the pitch rises on the first accented segment, it remains high on all subsequent segments until after the right-most accented segment when it drops to low. This means in effect that it would be a misrepresentation to continue assigning numerical values to our accented segments. Rather than having a rule such as (9), where primary accent is inserted on a particular segment with the effect of reducing the accent on all other segments in the stretch, the type of accent reduction rule that would be more appropriate for Luganda would be one which has the effect of making one element of a phrase predominant by eliminating the accentual phenomena elsewhere in the stretch to which it applies. The accent reduction rule may be formulated verbally as follows:

(11) Delete the left-most accent in the context of        .....  $\acute{M}$  ..... ]<sub>NP</sub>

Thus, instead of the derivation (10) we would have the derivation (12) for the phrase mukazi mukulu :

(12)	1.	mukazi	mukulu	
	1.	mukázi	mukúlu	Original Accents
	2.	mukazi	mukúlu	Accent Reduction rule

In fact, the accent reduction rule deletes not just the first accent in a Noun Phrase but all accents occurring before the last accented segment in a stretch to which the rule applies. Furthermore, the accent reduction



made to operate before the accent reduction rule, then we would have a stage in our derivation when we have two accent morae on the noun before the genitive element.

(15) Assign accent on the final mora of a noun in the context

$$\acute{M} \dots \text{---} \#1 ] \text{GEN} ] \text{NP}$$

(where  $\acute{M}$  stands for an accent mora and the dash indicates the position of the item to which the rule applies)

If, at this stage, the accent reduction rule is made to operate, then we would end up with only one accent as shown in (16) in accounting for the accent in the phrase mapaapaaligaabwe 'their pawpaws':

- (16)           mapaapaali gaabwe
- |                      |                       |
|----------------------|-----------------------|
| 1. mapaapáali gaabwe | Original Accents      |
| 2. mapaapáalí gaabwe | Accent Shift rule     |
| 3. mapaapáalí gaabwe | Accent Reduction rule |

## 7. Pitch Assignment

All the processes that we have dealt with in this paper are concerned only with accent and, although they affect pitch in the end, this is only indirectly. Both the accent shift and accent reduction rules are earlier operations in the grammar in comparison with pitch or tonal assignment processes which apply once the processes involving accent assignment and accent modification have operated. These are not the concern of this paper. Nevertheless, an outline of what they are is essential if only to clarify how one moves from the accent modification processes to the actual pitch contours in our phrases.

Pitch assignment rules required in the production of surface pitch in Luganda fall roughly into three categories, applying in the order given here: a) rules that insert pitch on particular segments of words or phrases, b) pitch spreading rules, and c) intonational rules. Prior to the application of these rules, we need a rule or convention that automatically assigns high pitch to any segment specified as [+Accented]. Thus in deriving the pitch contour in the phrase mapaapaaligaabwe the pitch assignment rules will utilize, as their input, the output of (16) as

illustrated in (17). The rules in the first category will insert low pitch on the initial syllable(s) of certain word forms utilizing both phonological and morphological information of the segments involved. In this case the class prefix is specified as low. Once the initial low syllable is specified, pitch spreading rules apply specifying as high everything after the initial low up to the accented segment as high and as low everything after the accented segment. At this stage everything in the phrase has been specified for pitch, as being high or low. Finally the third group of rules, which are concerned with phonetic detail, will deal with problems of downdrift and will assign scalar values to segments already specified for pitch.

(17)	mapaapáaí	gaabwe	
1.	màpaapaaí	gaabwe	Low Pitch on Class Prefix
2.	màpáápáaí	gaabwe	High Spreading Rule
3.	màpáápáaí	gàabwè	Low Pitch Spreading Rule
4.	$\overset{3}{m} \overset{1}{a} \overset{1}{p} \overset{1}{a} \overset{1}{p} \overset{1}{a} \overset{1}{a} \overset{1}{i}$	$\overset{4}{g} \overset{4}{a} \overset{4}{a} \overset{4}{b} \overset{4}{w} \overset{4}{e}$	Downdrift Rules

## 8. Conclusion

In accounting for pitch in Luganda words, the stage at which the language ceases to be a pitch accent language and converts to a tonal system is reached quite early in the derivations since all that is involved here is the specification of the accented segment (if any). Once this is accomplished, the language ceases to behave as a pitch accent system and converts to a tonal system with tonal rules to account for pitch on segments other than the accented segment. In environments longer than the word, however, accounting for the pitch that is manifested at the surface level involves more processes typical of pitch accent languages: apart from specifying the location of the accented segment, we need, before the tonal rules can apply, both an accent shift rule and an accent reduction rule, thus providing evidence to suggest that the stage at which the language switches from a pitch accent system to a tonal one is not as early as previously thought.

In investigating the nature of the various processes that modify *accent*, this paper has also shown or revealed certain characteristics of

these processes not previously revealed or thought likely to operate in Luganda. Specifically, we have shown that the accentual make-up of an utterance in this language is determined in some manner by the surface structure of the particular utterance and that, in general, the accentual shape of a particular unit such as a phrase, is determined by the inherent complex properties of its parts and the way in which these parts are combined, with similar rules operating on units of varying levels of complexity.

#### REFERENCES

- Byarushengo, E., L.M. Hyman and S. Tenenbaum. 1976. "Tone, accent, and assertion in Haya." In L.M. Hyman (ed.), *Studies in Bantu Tonology*, pp. 183-205. Southern California Occasional Papers in Linguistics, No. 3. Los Angeles: University of Southern California.
- Chomsky, N., and M. Halle. 1968. *The Sound Pattern of English*. New York: Harper and Row.
- Cole, D.T. 1967. *Some Features of Ganda Linguistic Structure*. Johannesburg: Witwatersrand University Press. [Reprint from *African Studies* 24:3-54, 71-116, 199-240, 1965.]
- Heny, F.W. 1970. "Explanatory tone assignment rules in Bantu." In C.W. Kim and H. Stahlke (eds.), *Papers in African Linguistics*, pp. 175-99. Edmonton, Alberta: Linguistic Research, Inc.
- Kalema, J. 1974. *Luganda Phonology and Morphology*. Doctoral dissertation, University of Reading.
- Kimenyi, A. 1976. "Tone anticipation in Kinyarwanda." In L.M. Hyman (ed.), *Studies in Bantu Tonology*, pp. 167-81. Southern California Occasional Papers in Linguistics, No. 3. Los Angeles: University of Southern California.
- McCawley, J.D. 1964. "What is a tone language?" Paper presented at 1964 Linguistic Society of America Summer Meeting.
- McCawley, J.D. 1968. *The Phonological Component of a Grammar of Japanese*. The Hague: Mouton.
- McCawley, J.D. 1970. "Some tonal systems that come close to being pitch accent systems but don't quite make it." In *Papers from the Sixth Regional Meeting of the Chicago Linguistic Society*, pp. 526-32. Chicago: Chicago Linguistic Society.
- Meeussen, A.E. 1965. "A preliminary tonal analysis of Ganda verb forms." *Journal of African Languages* 4:108-113.
- Meeussen, A.E. 1966. "Syntactic tones of nouns in Ganda: a preliminary synthesis." In Y. Lebrun (ed.), *Linguistic Research in Belgium*, pp. 77-86. Universa Wetteren.

- Pike, K.L. 1948. *Tone Languages*. Ann Arbor: The University of Michigan Press.
- Schadeberg, T.C. 1973. "Kinga: a restricted tone system." *Studies in African Linguistics* 4:23-48.
- Stevick, E.W. 1969a. "Tone in Bantu." *International Journal of American Linguistics* 35:330-41.
- Stevick, E.W. 1969b. "Pitch and duration in Ganda." *Journal of African Languages* 8:1-28.
- Voorhoeve, J. 1973. "Safwa as a restricted tone system." *Studies in African Linguistics* 4:1-22.

