PREcis FROM THE TwELFTH CONFERENCE
ON AFRICAN LINGUISTICS

STANFORD, APRIL 10-12, 1981

Edited by

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Supplement 8
Studies in African Linguistics
Department of Linguistics
University of California, Los Angeles

December 1981
This volume contains summaries of papers presented at the Twelfth Conference on African Linguistics at Stanford, April 10, 11, and 12, 1981. This is the first time that the proceedings volume for the annual conference has contained summaries rather than full papers, and I wish to thank all of our authors for cooperating in this experiment. The main reason for attempting this new format was simply that it would have been financially impossible for us to publish all of the proceedings in unabridged form. In addition, I hope that readers will find it handy to have substantive summaries of the conference papers all gathered in one small volume, and I am sure that a good number of papers from the conference will appear in full form elsewhere, as a few already have.

One of the most interesting observations that can be made about the Twelfth Conference on African Linguistics is that of the sixty formal registrants, one third were either black Africans, or had traveled to the conference directly from their place of work in Africa, or both. As far as I know, this is the first time that Africa has been so well represented at the conference, and this bodes well for the future of African linguistics.

Everyone who has run a conference knows that it is more trouble than you would like to think, and this one was no exception. But thanks to a lot of people, only a few of whom I can mention here, the process went a good deal more smoothly than I could have reasonably expected. Special thanks to Joseph H. Greenberg for generously lending his advice, support, and wisdom to the whole operation, to Peter Duignan for helping to secure our lavish conference facilities, to Paul Kozelka and David Cusic for adding their brain power and brawn power to the local arrangements, to Thomas Hinnebusch, Larry Hyman, and Russell Schuh for serving on the abstracts committee with me, to Judy Muchowski for answering a thousand questions, for anticipating a thousand details, and for overseeing the entire venture from start to finish, and to an untold number of conference participants who by virtue of being in the wrong place at the right time got drafted into table moving, wine bottle opening, and all those other activities that make a conference into a conference. Funding for the conference came from the Stanford office of the Stanford/Berkeley Joint Center for African Studies.

For publication of the present volume, we are indebted to Russell Schuh for permitting this to happen and for waiting patiently while the present editor struggled with the final version of the manuscript, to Judy Muchowski for proofreading and corresponding with our authors, and to John Singler for additional proofreading. Financial support for this volume came from the UCLA African Studies Center, the Stanford Department of Linguistics, and the Stanford/Berkeley Joint Center for African Studies.

W. R. L.
15 March 1982
# STUDIES IN AFRICAN LINGUISTICS

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1. Introduction

The purpose of this presentation is to argue that "palatalization" is simply a manifestation (although the commonest one) of a more fundamental process we term "sibilantization"; other manifestations of sibilantization are "affrication" of laminal stops, and "alveolarization" (cum affrication) of velars/uvulars. Our argument is based on Gbe, spoken in the southern part of the Volta Region in Ghana, the southern half of the Republics of Togo and Benin and parts of the Ogun and Lagos States in Nigeria. Gbe is made up of a number of dialects including Hwe, Avéno, Kpándo, Pecí, Gen, and Fon, selected here for their relevance to the topic.

2. Sample of the Data

a) Common Gbe laminal alveolars: /t/, /d/, /s/ and /z/

<table>
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<th>Common Gbe</th>
<th>Fon</th>
<th>Gen</th>
<th>Pecí</th>
<th>Kpándo</th>
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(For 14 and 15 Westermann gives gi and kʃ as 'Dahomey' forms.)
3. Comments on the Data

a) Synchronously:

1. In Hwe: /t/ before -y, i, ñ, u, ū
   /d/ before -y, i and ñ;
   /s/ optionally before u, ū
   /z/ before -y, i, ñ

2. In Ašeno:/t/ before -y, i, ñ
   /ts/ before -y, i and ñ;
   /d/ (but not before u and ū)
   /dz/ optionally before u, ū
   /s/ before -y, i, ñ
   /z/ optionally before u, ū

3. In Kpándo:
   /t/ before -y, i and ñ
   /d/ before -y, i, ñ

4. In Gen, Peci and Fon, no effect of the process.

b) Diachronically:

1. i. *t > before -y, in all dialects except Kpándo
   *d > (Note, however, item 9 in Peci)
   ii. *t > before -y, in Kpándo
   *d >

2. i. *t > before i, ñ, u, ū in Hwe
   *d >
   ii. *t > before i, ñ in Kpándo
   *d >

3. i. *k > before i (ñ) in all dialects except Kpándo
   *g >
   ii. *k > before i (ñ) in Kpándo
   *g >

4. i. *x > before -y, i (ñ) in Hwe at least
   *R >
   ii. *x > before -y, and i (ñ) in Gen at least
   *R >

4. Case for Sibilantization

   According to Ladefoged (1971:57), sibilant segments have a comparatively
   large amount of acoustic energy at high frequencies; in fact, sibilance is an
   auditory feature that we could equate with the hissing and hushing impression
   that derives from the perception of alveolar fricatives and affricates, palato-
   alveolar fricatives and affricates, palatal stops, fricatives and post-
   consonantal glide.
Now, looking at the input and output segments involved in the phonological process under discussion, we notice that:

1. When the alveolar and velar stops are the input segments, the outputs are either palato-alveolar affricates or alveolar affricates.

2. When the (velar) uvular fricatives are in the input segments, the outputs are either palato-alveolar fricatives, or alveolar fricatives.

3. When the alveolar affricates are the input segments, the outputs are palato-alveolar affricates.

4. When the alveolar fricatives are the input segments, the outputs are palato-alveolar fricatives.

Considering the output segments, only the palato-alveolars have the feature [+palatal] whereas both the palato-alveolars and the alveolars have the feature [+sibilant]. We submit, therefore, that "sibilantization" is the basic phonological process going on during the changes observed; it is manifested as either palatalization or alveolarization. Note that if the input segment is already a sibilant, it can only be palatalized.

By palatalization, I mean the process by which a given segment acquires palatality; and since alveolar segments are not palatal, palatalization cannot be the cover term for the process.

By sibilantization, I mean the process by which a given segment acquires sibilance. The question arises whether in the case of alveolar fricatives or affricates becoming palato-alveolars, we can still talk of sibilantization. Our answer is "yes" because the output segments have a higher degree of sibilance. In fact, we could talk of sibilantization of sibilants just as one talks of labialization of labials. But, as said above, in this particular case, sibilantization is always manifested as palatalization. We also make a special case of nasals.

5. Observations on the Palatalization Version of Sibilantization

1. We note that in Gbe, the (post) alveolar apicals (d and l) are never palatalized. We infer that a pre-condition for palatalization is the horizontal position of the tongue vis-à-vis the roof of the mouth. In the SPE system, the lingual segments that are palatalizable are [+distributed].
2. In Hwe, palatalization is obligatory before front close vowels for all alveolars, whether stops or fricatives; but before back close vowels, it is obligatory for alveolar stops, but only optional for fricatives: s and ∫, and z and ʒ are in free variation (items 7 and 13). We infer that:

i. If front, close vowels do not initiate palatalization; the back, close vowels cannot initiate it. In fact, there is a generalization from [+high,+front] to [+high] as there is from [+high, +front] to [+front] in other languages (like Akan).

ii. Palatalization does not affect fricatives unless it also affects stops.

6. Conclusion

Of course, only the main thesis has been put across. There are qualifications and elaborations which can be only found in the full version of the paper and the references below.

REFERENCES


HIGH TONE DOUBLING IN TWO MAKUA DIALECTS*

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and
Charles W. Kisseberth
University of Illinois

The most fundamental principle of Makua (a Bantu language spoken by over two million people in Mozambique and southern Tanzania) tonology is a rule that we will refer to as HIGH TONE DOUBLING (HTD). It says simply that if a tone-bearing unit (TBU) has a high tone associated with it, then that high tone will also associate with the immediately following TBU. This rule is abundantly motivated in both of the Makua dialects that we have studied—iko~overe, spoken in Tunduru district in southern Tanzania, and Imit'upi, spoken in Masasi district in southern Tanzania. Evidence in favor of this rule of Makua tonology is presented in summary form below; all the examples here are taken from the iko~overe dialect, since this dialect has fewer obscuring factors at work.

1. a. A grammatical affix that has a high tone associated with (one of) its vowel(s) will always be followed by a high-tone TBU (excepting cases to be mentioned below where this pattern is obscured by other principles operative in the language). Examples involving the tense/aspect markers -na- and -òho-:
   ki-ná-tʰaw-al-e 'I had already run', ki-ná-thámih-al-e 'I had already sold it', ki-ná-lókotanihac-al-e 'I had already picked them up', k-a-hó-tʰaw-a 'I ran', k-a-hó-lówol-a 'I carried it', k-a-hó-pupu̱tʰ-a 'I washed clothes'.

*This work was supported by the University of Illinois Research Board and the National Science Foundation Grant BNS-7924523.
b. A high tone assigned to a stem vowel (by virtue of the stem appearing in a certain morphological construction) is always followed by a high tone on the next TBU as well (again, excepting cases where other principles obscure the pattern). Examples: high tone on first stem vowel and following TBU: ki-ho-hukúl-a 'I have sieved', ki-ho-lówol-a 'I have carried', ki-ho-pángác-a 'I have fixed'; high tone on second stem vowel and following TBU: a-k-áa-th'okól-ál-e 'I didn't sharpen it', a-k-áa-lokóthh-ál-e 'I didn't pick up'; high tone on third stem vowel and following TBU: ki-n-th'ánán-a u-likacéríh-a 'I want to try it on', ki-n-th'ánán-a u-lokotánihac-a 'I want to pick them up'.

c. A high tone on a noun stem is always followed by another high tone (again, barring cases where this pattern is obscured by other principles): i-taámbáyí 'cowpea(s)', i-móótika 'car(s)', i-pilíkíca 'piece(s) of cooked meat', i-kukhúvíri 'half-burnt branches'.

The rule of HIGH TONE DOUBLING in Ikorovere is fairly transparent, though it is rendered somewhat opaque by the following factors.

2. a. A doubled high tone cannot appear on a phrase-final vowel: ni-váka 'spear', i-híce 'chair(s)', u-ráwo 'honey', ki-ho-lím-a 'I have cultivated', ki-ho-rúp-a 'I have slept'. This constraint affects phrase-final vowels, not word-final vowels: i-híce cóółémela 'heavy chairs', ki-ho-lím-á méele 'I have cultivated millet'.

b. A doubled high tone cannot appear on the second mora of a long vowel if that vowel is in the penultimate syllable of the phrase: mi-húuta 'maize racks', kándíiri 'lamp', u-léel-a 'to tell'.

c. One of the pairs of high tones resulting from HTD may be lost from the surface representation as a result of the rule of VOWEL REDUCTION, which takes three or more vowel morae ſ₃ₕ₆₉ₒ₉₆ and reduces them to two morae. For instance, kʰa-k-ó-omolénl-e 'I didn't guard him' has a series of three high tones on the surface rather than two pairs of high tones. But this form can readily be shown to derive from an underlying shape /kʰa-k-áa-a-omolénl-e/ where there are, in fact, two pairs of high tones. The vowel sequence áaaó, however, is reduced to simply óó on the surface—in effect, one of the high tones is lost from the representation.
d. One of the pair of high tones resulting from HTD may be lost from the surface representation due to the operation of a phonological rule that reduces a vowel consisting of two morae to a single mora when that vowel stands before a geminate consonant or a cluster of nasal plus true consonant. For example, when the word u-k-îvv-a appears in phrase-internal position, it is not pronounced with a high tone on its final vowel. This would seem, on the surface, to be a violation of HTD. But, in fact, the underlying form of this word is /u-ki-îvv-a/-by 'underlying form' we mean here simply the form of the word that exists after HTD but before any of the rules that obscure HTD. The long vowel î is reduced to i by the rule alluded to above, and thus on the surface one finds just a single high tone rather than the expected pair of high tones.

Up to this point we have dealt entirely with the Ikorovere dialect. The rule of HIGH TONE DOUBLING is rather less transparent in Imithùpi. All of the obscuring factors that are at work in Ikorovere are also at work in Imithùpi, but in addition there are more complications. Below we outline some of these new sources of opacity.

3. In Ikorovere, both the basic high tone and also the doubled high tone are consistently pronounced as level high tones (ignoring the cases where a high tone is associated with just one mora of a long vowel). Imithùpi lacks this consistent phonetic realization. The following sections describe the phonetic variants in some detail.

a. The basic high tone is often pronounced as a mid tone or even a low tone. This occurs, e.g., very frequently when the basic high is not preceded by another high tone in the word and is followed by a high tone in the surface form (that following high may itself be slightly modified, as will be shown): nacirîrero 'male Grant's gazelle', serulîya 'split bamboo', namarokolo 'rabbit', n-lâpa 'baobab tree', n-tukûruku 'dust'.

The fundamental high tone must, however, be realized as a high tone in various cases: (i) when it is the only high tone in the surface form—cf. n-lûto 'knot', n-câhi 'lip plug', nigungîya 'gunny sack', ki-ho-lîm-a 'I have cultivated'; (ii) when the basic high is preceded by a TBU that is high-toned: cf. n-râma 'cheek', but nînà n-râma nîna 'this cheek'; ma-pêle 'milk', but alà mà-pêly àla 'this milk'; (iii) when it is located on the first mora of a long vowel—e.g., ki-nôô-hôkôlyaanîh-a 'I am going and coming back the same day', khà-no-ki-than-a 'he is not calling me'.
b. The doubled high tone is pronounced as a slight falling tone when it appears on the penultimate vowel of the phrase; several examples of this can be observed in the preceding section. Only a doubled high is pronounced with such a falling quality; basic high tones that appear on the penultimate vowel of the phrase are always pronounced as level high tones (restricting ourselves to the cases where the vowel in question is not part of a long vowel).

The rule of HIGH TONE DOUBLING in Imit\textsuperscript{h}upi is also rendered opaque by the ambiguous status of pre-consonantal nasals in this dialect. Some such nasals are TBUS while others are not, and there is no way to predict in all cases which treatment will be assigned to a given instance of a pre-consonantal nasal. The distinction, however, is crucial to an understanding of the tone patterns of Imit\textsuperscript{h}upi. It should be emphasized that the pre-consonantal nasals that are not tone-bearing (i.e. cannot bear contrastive tone) are nevertheless pronounced on some tonal level—namely, they have the same tone as the preceding vowel. Examples relevant to the preceding points are given in 4.

4. a. All prefixes that consist phonetically of a single nasal consonant are tone-bearing—i.e. they may either have a high tone or a low tone associated with them. Examples of high-toned prefixes: \textit{n-luku} 'stone', \textit{n-rama} 'cheek'; examples of low-toned prefixes: \textit{n-luto} 'knot', \textit{n-thåtha} 'hand'.

b. Stem-internal pre-consonantal nasals may or may not be tone-bearing. If they are tone-bearing, they may be either high or low toned. For example, in \textit{ni-vëŋkwa} 'gunpowder horn', the nasal is low-toned (as a consequence of the principle that eliminates the doubled high tone from the second mora of a long vowel that is penultimate in the phrase), but in \textit{ni-vëŋkwa n-åka} 'my horn' the nasal is high-toned (since HTD is not blocked in this environment). The nasal in this example must be regarded as tone-bearing since it receives the high tone that arises from the application of HTD. There are, however, other stem-internal pre-consonantal nasals that must be regarded as not being tone-bearing units. For example, \textit{m-phëmburu} 'head dress', \textit{ni-khanda} 'baby bird' but \textit{nn'á nikh'andá nna} 'this baby bird', \textit{ni-kunguru} 'kind of cloth' but \textit{ni-kunguru n-åka} 'my cloth'. The pre-consonantal nasals in these cases cannot be tone-bearing since they do not receive the doubled high tone from HTD.

We have shown in this paper that although the rule of HIGH TONE DOUBLING is the very cornerstone of Makua tonology, it is also highly opaque (more so in Imit\textsuperscript{h}upi than in Ikorovere). Despite its opacity, no understanding of Makua tonal patterns is possible without recognizing its existence. Thus the data in this paper strongly support the view that phonological systems involving extensive opacity are possible, and that no theory that would disallow such opacity can be supported.
A CLOSER LOOK AT SHORT HIGH VOWELS IN HAUSA

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In spoken Hausa, the word for 'people' can be pronounced in any of the following ways: [muta:ne:, muta:ne:, mIta:ne:, mIta:ne:]. How do we account for the first vowel of this word? We know that it is short and that it is high, but it has been difficult to get Hausa scholars and phonologists to agree on much else about it.

It is more or less agreed that in Hausa the phonetic environment in which the short high vowel finds itself plays some role in determining its quality, but previous to the experiment described below, only one systematic attempt has been made to scientifically determine the behavior of Hausa short high vowels (Tuller 1980). That study was done on the Damagaram dialect, and the results obtained cannot be generalized to account for short high vowels in the standard Kano dialect. While Tuller postulates a hierarchy of CONSONANTAL environments that ultimately determine the quality of the short high vowel, Salim (1977) stresses the importance of VOCALIC environments. In our experiment, we set out to determine which environments affected short high vowel quality the most, in normative judgments as well as in the spontaneous connected speech of native Hausa speakers.

There is controversy as well as to the underlying segments responsible for the apparent chaos on the surface. Diachronically, Schuh (1977) and Parsons (1970) argue that Hausa short high vowels arose from a single phoneme. Newman (1979) however postulates the existence of two separate high short vocalic phonemes, historically. Synchronically, Tuller's Damagaram data confirms the single phoneme hypothesis, while Salim's research points rather to the existence of two underlying phonemes which are neutralized under certain conditions. Our techniques of analysis were designed to shed some light on this problem as well.

The experiment consisted of two parts. The first part involved asking native speakers of Hausa with extensive exposure to the Kano dialect which pronunciation of a particular word (one containing [u] and one containing [I]) sounded more correct. Words were carefully chosen to include all possible consonantal environments preceding and following the 'target' (i.e. high short) vowel, and distractors were included in the randomized list.

In the second part of the experiment, the subjects listened to a recording of a brief passage which contained many words with short high vowels. Subjects were then asked to give their own versions of the story, providing us with excellent samples of spontaneous connected speech containing these vowels, which were recorded and analyzed on a sound spectrograph.
The results of the normative judgment test indicate that:

1. Adjacent labial consonants, [w], and labio-velarized consonants influenced judgment toward [u], while palatalized consonants and [y] influenced judgment toward [i]. However, dental-alveolar, velar, and glottal consonants did not significantly affect subjects' judgments.

2. Since judgments about vowels between consonantal environments favoring [u] and consonantal environments favoring [i] showed no clear bias toward the front or the back high short vowel, no consonantal environment among those already determined to be influential could be said to be more influential in judgments about vowel quality than another.

3. Vocalic environments in which short high vowels are found play only a secondary role in determining judgments about their timbre.

4. In cases where there were no influential segments adjacent to the target vowel or where speakers' judgments favored the vowel quality which did not correspond to the consonantal environment, there was a high rate of concensus among subjects.

The results of the second part of the experiment indicate that:

1. Besides the above mentioned consonants, velar and dental-alveolar consonants tended to influence high short vowel timbre as well, the former prompting [u] and the latter prompting [i].

2. In cases where the target vowel was found between an influential and a non-influential environment the vowel timbre realized was the opposite of that favored by the environment in a significant minority of cases.

3. Vocalic environments have, if any, only an indirect influence on short high vowel quality.

4. In 20% of high short vowel realizations, the second formant frequency was somewhere between the [i] range and the [u] range typical of the speaker in question.

The results from both parts of the experiment point clearly to the existence of two underlying short high vocalic phonemes in Hausa. If there were only one underlying phonome why would Hausa speakers, in normative judgments as well as in normal speech, favor sometimes [i] and sometimes [u] in consonantal environments where the opposite would be expected or in neutral environments as well? The failure of consonantal environments to organize themselves into a consistent hierarchy, also indicates that more than one segment comes into play below the surface.
Final Conclusions

Results from the normative judgment and the production tests are, on the whole, remarkably consistent. On the basis of the results of the two parts of our experiment, we contend that the following generalizations can be made about the behavior of short high vowels in Hausa.

1. Certain consonantal environments, when they occur adjacent to the short high vowel, determine its quality (in the great majority of cases). Labial and palatalized consonants as well as [w] and [j] are influential in both normative judgments and production. In production, however, dental and velar obstruents and [r] are also influential. In a small but persistent minority of cases in both test I and test II, even the most powerful consonantal environments have no influence, so that we may characterize the influence of consonantal environments over the quality of short high vowels in Hausa as dominant, but not absolute.

2. Among consonantal environments which influence the quality of the short high vowel, there is no strict hierarchy. In the production test palatalized consonants showed stronger influence over target vowels than any other environment. Results from the normative judgment test also show this tendency, but less dramatically. Labials and [w] are generally less influential than palatalized consonants. Labio-velarized consonants are rare in both samples and data collected about them does not give any consistent indication as to their relative strength. While [r] is as influential as labials in production of short high vowels, it plays no influential role in the formation of normative judgments about them. Dental and velar obstruents are less influential than other environments in production, and also play no role in determining normative judgments. It must be borne in mind that the above are merely tendencies and that no definitive hierarchy can be established on their basis.

3. Adjacent non-target vowels have no primary effect on short high (target) vowels. At times, nonetheless, non-target vowels seem to have a secondary effect in determining which of two conflicting consonantal environments will influence the quality of the short high vowel in question.

4. Hausa has two short high vowel phonemes, /i/ AND /u/, the distinction between which is more often than not neutralized in certain consonantal environments.
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AN OUTLINE OF LUGANDA SYLLABLE STRUCTURE

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The phonetic form of words and phrases in LuGanda characteristically differs from their underlying representation in important ways. The rules that described these differences are very regular and for the most part fully productive, applying for example across major category boundaries and in the loanword phonology. These regularities point to the central organizing role of the prosodic category "syllable", a unit which has up to now received scant formal recognition in generative studies of Bantu phonology. These brief remarks examine in outline fashion some of the major regularities in LuGanda phonology and show how they may be interpreted as a function of syllable structure. We examine certain generalizations (Gl-7) and then suggest an analysis in terms of a formal model of the syllable.

1For fuller discussion of LuGanda segmental phonology see, among others, Ashton et al. (1954) and the excellent treatment in Tucker (1962). A longer version of the present paper will appear separately. I am indebted to Francis Katamba for discussion of an earlier version of this paper. Examples are given throughout in broad phonetic transcription rather than in orthography. ['] = high tone, ['] = low tone.
G1. LuGanda has no surface vowel sequences. The initial nonhigh vowel of an underlying vowel sequence is deleted, with concomitant lengthening of the last vowel of the sequence. /ka-æzi/ keezi 'small moon'.

G2. Glide formation induces length on the following vowel. The initial high vowel of an underlying vowel sequence is replaced by a glide, with concomitant lengthening of the following vowel. /mu-ezi/ mweeze 'moon'.

G3. Nasal clusters induce length on the preceding vowel. This statement holds both within and across morpheme and word boundaries. /mu-ntu/ muuntu 'person', /ba-N-gob-a/ baangoba 'they chase me'.

G4. Lengthening is not cumulative. All syllables are either short or long: there are only two degrees of vowel length. /li-ænda/ lyanda 'charcoal', /ba-a-N-gob-a/ baangoba 'they chased me' (= 'they chase me').

G5. Vowels are short before geminate consonants. This generalization takes precedence over those cited above. /mu-luadde/ mulwadde 'patient', /ba-a-e-ggal-a/ beggala 'they shut themselves in'.

G6. There are no prenasalized geminate consonants.

G7. Words are organized into moras according to the following principles: (a) a short vowel counts as one; (b) a long vowel counts as two; (c) a phrase-initial nasal cluster counts as one; (d) a geminate consonant counts as one. Examples: mala 'finish' (2), maala 'smear' (3), muuntu 'person' (3), mbuzi 'goat' (3), ttabi 'branch' (3), mago 'tooth' (3). Mora structure is reflected both in metrical scansion (Tucker 1962: 163-5) and in the tonal phonology (Stevick 1969). For example, the following words all exhibit the infinitival tone melody L-H-L-H characterizing Tucker's Tone Class II verbs: kulåléká 'to be visible', kükkáábá 'to cry', kükkwáátá 'to grasp', kübúumbe 'to mould', külfūná 'to climb', kücóopa 'to become a pauper'. It will be seen that the first tone falls on the first mora, the second on the second, the third on the third, and the fourth on the fourth.²

²In the final example, the low tone assigned to the first element of the geminate p is realized as a downstep lowering the pitch of the following high tone.
Let us now consider how the generalizations summarized above might be accounted for. It will be assumed that LuGanda syllables have the following minimal tree structure in underlying representation:

As will be observed, vowels and consonants are gathered into trees involving two higher levels of organization: a syllable-tier, consisting strings of the root node $\sigma$, and a CV-tier, consisting of strings of the elements C, V interpreted as the features [-syllabic] and [+syllabic], respectively. Single vowels and consonants dominated by two elements of the CV-tier are interpreted as long (maala). By language-independent principles of syllable organization, consonants are dominated by C-elements and vowels by V-elements except as provided by further language-particular statements. LuGanda syllables are of the form CV*, where C is a single C-element and V* is a sequence of V-elements of any length. By a special statement of LuGanda grammar, preconsonantal nasals are dominated by V-elements. These principles uniquely determine the underlying syllable representations given above.

Let us now consider how Gl-4 might be accounted for under these assumptions. To account for Gl we will postulate the rule of Vowel Deletion which deletes a nonhigh vowel before another vowel. G2 will be accounted for by a rule of Glide Formation which re-affiliates a high vowel to the preceding C-element if it precedes another vowel. G3 requires a rule of Prenasal Stop Formation which re-affiliates a postvocalic nasal to the following C-element. Note that each of these processes leaves a V-position vacant on the CV-tier. This position is filled by the general spreading conventions of auto-segmental phonology, as indicated by the dashed lines:

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3 See Clements and Keyser (1981) for fuller discussion of the syllable theory presupposed in this paper.

4 See Leben (1977) and McCarthy (1981) for similar treatments of length in Hausa and Arabic, respectively.
Note also that a vowel uniquely dominated by a C-element (as in mweezí) is interpreted as a glide. Finally, we must postulate a rule of V-trimming of the form V→∅/VV, applying on the CV-tier alone, to account for G4:

\[ \text{(Glide Formation)} \quad \text{and} \quad \text{(V-trimming)} \]

We have so far said nothing about the geminate consonants of LuGanda. It will be proposed that geminate consonants are multi-attached segments dominated by the sequence V C on the CV-tier. This hypothesis allows us to account immediately for G5 and G6. G5 follows from the principle of V-trimming, which requires a long (that is, multi-attached) vowel to become short (singly attached) before a following V-element, as in mulwadde:

\[ \text{(Glide Formation)} \quad \text{and} \quad \text{(V-trimming)} \]

G6 follows from the fact that there is no way of representing a prenasalized geminate stop without crossing association lines:

\[ \text{V \quad C} \]

Thus, given the rules developed so far, no additional rules or statements need be introduced to account for the superficially arbitrary properties of geminate consonants.

Our strategy has been to develop a hypothesis regarding underlying syllable structure in LuGanda on the basis of a small set of principles drawing upon a restricted theoretical vocabulary. We have then sought to establish the simplest rules possible to map underlying structures into surface structures. We have seen that these rules operate in such a way as to affect segments on single tiers (Vowel Deletion, V-trimming) or to reaffiliate segments on neighboring tiers (Glide Formation, Prenasal Stop Formation). The formal autonomy of the elements of each tier, which follows as an automatic consequence of our mode of representation, allows us a direct way of characterizing the notion of "concomitant" lengthening which emerged from our preliminary statement of the generalizations under discussion.
We may now observe a further consequence of our analysis. The arbitrary set of rules of thumb for counting moras, given under G7 earlier can be replaced by the following, unitary statement:

Each V-element of the surface structure counts as one mora. As the reader can easily determine, this statement is extensionally equivalent to the one given earlier. Thus, the analysis motivated earlier on the basis of the logically independent set of facts allows us an irreducibly simple way of characterizing the unit "mora" in LuGanda - a result that encourages us to believe that our theory is on the right track.

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THE SYNTAX OF BAKA AND KRESH

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At present, there is very little information available on the syntax of Central Sudanic languages. This paper attempts to remedy, at least partially, this deficit by describing major characteristics of two members of this language group -- Baka and Kresh.

To begin with the more superficial similarities, both languages have SVO word order. They also mark the termination of a verb phrase that is not followed by a direct object noun or an adverb similarly. In Baka, a marker, -a, is used for this purpose; the morpheme ni performs the same function in Kresh.

Neither Baka nor Kresh possesses direct object pronouns, but both have sets of indirect object pronouns. The basic order for dative constructions has the direct object preceding the indirect object.
Deletion of direct object nouns occurs without pronoun replacement, cf. (1) and (2) -- further proof that object pronouns do not exist, but indirect object nouns are replaced by pro forms.

(1) **Baka**

a. owu ib nduku z isi
   child gave food to dog
   'The child gave food to the dog.'

b. owu ib ø z isi
   'The child gave (it = food) to the dog.'

(2) **Kresh**

a. liti ni ene nošo bi kono ni
   child the gave food to dog the
   'The child gave food to the dog.'

b. liti ni ene ø bi kono ni

In Baka, the object and indirect object nouns may not be reversed by a rule similar to English dative movement; however, this is possible if the indirect object is a pronoun. It is not absolutely clear whether a dative movement rule exists in Kresh. The two linguistic consultants who provided the data for this study disagreed on this point.

Baka and Kresh show similarity in the formation of verb phrase complements. When the subject of the complement is the same as the main clause, it is not expressed. No complementizer is present, only the verb. When the subject of the complement and the main clause are not identical, a subordinator can precede the subject of the complement. Differences between the two languages depend largely on the verb in the main clause.

Like many languages, Baka and Kresh lack a passive, expressing this construction by means of the third person plural verb inflection. Li and Thompson (1976) suggest that this is an argument for topic prominence. Both languages have a rule of left dislocation which fronts an NP with its modifier to the head of the sentence, as shown in (3) and (4). Kresh may optionally include a marker, ne, which has mid-tone, as opposed to low tone carried by an otherwise identical focus particle.

(3) **Baka**

od bi ga ogu ona ni (pause) pita ib kiti za
man one past he here rel. Peter he chair to him
came gave
'The man who came here, Peter gave a chair to him.'
Baka and Kresh display close similarity in the formation of relative clauses. In each case the beginnings and ends of relative clauses are obligatorily marked. A morpheme that agrees in number with the NP which the relative clause modifies appears at the head of the clause in Baka, and the marker ni terminates the clause, cf. (3). Kresh has an initial relative clause marker de, which is preceded by the morpheme e, 'one of many', (4). If the NP which the relative clause modifies is plural, the marker i is used. The clause final marker in Kresh can be a, a ka, or ka, the selection of ka being determined by the phonological rule: a ka → ka/ (C) V #. Both languages require a pronoun copy for direct object, indirect object, and possessive focus relativization with animate nouns.

Most of the characteristics enumerated above are typical of SVO languages. However, Baka and Kresh differ from SVO languages in the means they use to express contrastive emphasis. Typically, in SVO languages the focused constituent is moved to the head of the sentence with the concomitant insertion of pro forms and a copula. Apparently Central Sudanic languages have two means of expressing contrastive focus, neither of which conforms to this pattern. The first involves the use of a particle ne. In Baka, this is restricted largely to the focusing of a subject of an otherwise simple declarative sentence (5). The fact that this particle is obligatory with WH- questions (6), lends some support to Harrles-Delisle's (1978) claim that word questions and contrastively emphasized structures are related and may be derived from underlying cleft sentences.

(5) Edward ogo kiti gab wanda ib z Pita ni ne
Edward he chair ones Wanda she to Peter rel. part.
bought gave

'It was Edward (as opposed to someone else), who bought the chair which Wanda gave to Peter.'

(6) amb ogo kiti gab wanda ib z pitar ni ne
who he/she/it chairs ones Wanda she to Peter rel. part.
bought gave

'Who bought the chairs which Wanda gave to Peter?'
In Kresh, the ne focus particle can be used for subject, direct object and verb emphasis. As in Baka, ne appears in WH-questions.

The second process used to indicate contrastive emphasis in these languages is the postposing of the focused constituent to the end of a clause. Example (7) shows how the movement of kufukaga to the end of the sentence emphasizes it contrastively, in the sense: 'it was fruit that John gave,' as opposed to what the previous speaker has maintained was given. Normally, kufukaga would appear directly after the verb.

(7) jon lb z odo bi wanda lb kiti za ni kufukaga
    John he to man one Wanda she chair to him rel. fruit
gave gave

Examples (8) and (9) show that this is a general process in Baka. Subject focusing is accomplished in (8) by the addition of a reflexive pronoun, which is moved away from the verb, where it would normally appear, to the end of the sentence. In (9), the verb is repeated after the direct object for contrastive emphasis.

(8) mi lag yam ga ngiri z meb ma ma
    I cut mine past wood for wife my myself.

'It was I who cut wood for my wife.'

(9) mi lag yam ga ngiri mi lag z meb ma
    I cut mine past wood I cut to wife my

'It was cutting of the wood that I did for my wife.'

Kresh does, in fact, make use of this second means of contrastive emphasis, witness (10), where the object of the benefactive phrase appears at the end of the sentence. Proof of this is that the logical continuation of the sentence would be aza ka ada nganga i ni, 'it wasn't for the men.' But in general, it appears that Kresh favors the ne construction for contrastive emphasis.

(10) maga romo ka adu ara lukpu ni
    I chopped wood for the sake of women def.

'It was for the women that I chopped wood.'

As work on the syntax of Central Sudanic languages is expanded, it may be useful to examine in particular how contrastive emphasis is expressed in different subgroups. We may hypothesize that Bongo, Avukaya, Moru and the Jur Beli cluster will favor postposing the focused constituent rather than the use of particles.
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KISWAHILI DIGLOSSIA IN KENYA: IMPLICATIONS FOR LANGUAGE POLICY

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Summary

'Swahiliization' has not succeeded in Kenya as well as in Tanzania for a number of reasons. One reason may be that the Kiswahili dialect designated as the official and national language of Kenya is not the dialect that has the most esteem there nor is that dialect represented by native speakers there. In this paper, I suggest that Kenya's former trifocal language situation has evolved such that the Kiswahili aspect of it is, on its own, a classic diglossic situation in the sense of Ferguson (1959). Where Kiswahili was one of three different language varieties in use in Kenya before, it is now two varieties itself.

The paper is a description of Kiswahili diglossia pointing toward a possible relationship of this language situation to the problem of implementing Kenyan language policy. Using Ferguson's diglossia model (where H and L are characterized and distinguished by a specialization of function, where H has a strong grammatical and literary tradition in contrast to L, where H and L have different lexical labels for a single referent and so forth), we find that the L (low) variety of Kiswahili is what we may call the "mixed" standard dialect and H (high) is Kimvita. The Standard Swahili of the textbooks, as Hinnebusch also found (1979: 211), is a language that no one in Kenya is really at home with. Yet, this variety is what is increasingly being fostered by the country's educational language policy.

The description of Kiswahili diglossia in Kenya allows us to see that an overt language policy of Kiswahili as both the official and national language may not be what is presently needed. Perhaps a continuation of an implicit language policy encouraging Kiswahili (Kimvita) as the language of national culture might best serve Kenyan ends until the "mixed" language now developing has reached a point where it may be standardized. Then an overt language policy to implement this Kenyan language as the national language might be practical.
One ramification of such an implicit policy is that Kenya ought to continue the current education policy with respect to language as is. The policy of vernacular primary education, the progressive introduction of Kiswahili in the schools as teachers become adequately trained in it, and the continuation of English as the language of higher education should proceed. Eventually, a Kenyan language amenable to a more overt policy will begin to emerge.

Kimvita cannot succeed as the national language of Kenya since it is not already a standard in a community that will merge with the diglossic one. Ferguson's model predicts that, given the characteristics of H and L Kiswahili dialects in Kenya, Kimvita (H) will fade away and become a language of scholars and specialists while the evolving "mixed" language (L) will become standard. If this turns out to be the case, it would seem that, in the meantime, language policy in the country might best remain implicit. Kimvita would remain a link to East Africa as a region and to the illustrious coastal Swahili past while the emerging variety would reflect the heterogeneity of the developing nation. When the change is complete the resulting policy would be that Kimvita (H) is the language of Kenyan national heritage while (L), the "mixed" language, is the language of national culture.

The current Kenyan situation further indicates that there will be a slow development toward any unified standard language based on the L of Nairobi - toward what present indications point to as a creolization of English and Standard Swahili with a heavy admixture of loans from other regional languages.

In conclusion, I suggest that it seems plausible to use Ferguson's mode of diglossia to make suggestions for language policy. He made predictions for his four defining languages over the next two centuries. If it turns out that a diglossia model can accurately predict the progress of language change, then language policy ought to reflect this.

YORUBA SERIAL VERB STRING COMMUTABILITY CONSTRAINT

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The paper summarized here but to be fully published later argues for the necessity of extending serial verb discussion to consideration of string commutability potential since, inter alia, it enables us to provide a frame of reference for evaluating the derivational source hypothesis.
A tripartite division of the verb complex into initial, central, and terminal verbs is proposed for serializing languages like Yoruba and these verb types are illustrated in (1) and (2):

(1) Dele yò ti tún lè lọ. (initial V's underlined)
Dele shall have again can go.

'Dele should have been able to go again.'

(2) Lola wa mu ìmu yó. (central V's underlined)
Lola come drink palm-wine fill up.

'Lola then got fully drunk from palm-wine.'

(3) Aina ti sùn lọ tán. (terminal V's underlined)
Aina have sleep go finish.

'Aina has slept off completely.' (one interpretation)

The above three verb types are further subdivided. Initial verbs which are always bound in syntactic structure and which are inflectionally represented in inflectional languages, can be divided into the timing verbs like yò 'shall', the aspectual like ti 'have', the adverbial like tún 'again' and the supporting like lè 'can' all illustrated in (1) above. Central verbs, which are responsible for the main verbal syntactic and semantic functions like selectional restrictions are divided into the catenative like wa 'come-to' or fẹ 'want-to' (not yet illustrated) and the dominant. Dominant verbs operate either as principal (the main verbal and only obligatory element in a VP) e.g. mu 'drink' and its complement e.g. yó 'be full'. The catenative, principal, and complement are illustrated in (2).

Terminal verbs have deictic or limiting functions while the deictic is either centripetal (e.g. wa lit. 'come' i.e. towards the speaker) or centrifugal (e.g. lọ lit. 'go' i.e. away from the speaker). The limiting is either intensifying (e.g. tán lit. 'finish' i.e. completely) or governing (e.g. fún lit. 'give' i.e. 'to' or 'for'). The centrifugal deictic and intensifying limiting verbs are illustrated in (3).

The functional categories are also sequentially ordered. First, initial, central, and terminal verbs appear linearly in that order. Second, within each category, there is mutual ordering. Timing verbs like yò 'shall' and the negation particle kọ 'not' normally occur initially in the initial verb class while the others: the aspectual, the adverbial and the supporting could be permuted. Hence, all the options in (4) are available. The two catentives wa and fẹ are also commutable.
The only central verb ordering rule is that catenative verbs precede the dominant. However, the principal could precede the complement as in (2) or follow it as in (4). There could be more than one catenative verb within the single verb complex as in (4), but there is only one principal verb.

The terminal verb ordering condition is that wherever both terminal options are jointly selected, the deictic precedes the limiting as in (3).

Serial verb string commutability in Yoruba is dictated by conformity to the ordering phenomenon for semantic functions as itemized above. A study of such commutability is imperative following the claim on verbs participating in concomitant serialization "that appropriate combinations of such verbs stipulate what composite lexical verbs are available in other languages' George (1976: 69). The point is that appropriate combinations are not limited to a mere selection of verbs, but also imply their linear sequence for each composite verb lexicalization operation. Hence, whereas lọ+gbé+wá (go+carry+come) is lexicalized in English as 'fetch' - George (1976: 67 & 71), no other arrangement of the same set of verbs has a single English lexical item equivalent. Hence, wá+gbé+lọ (come+carry+go) is 'come and remove' while wá+lọ+gbé is 'come for the purpose of carrying or taking'. The ordering phenomenon posited for semantic functions in the verb complex also explains the ungrammaticalness of gbé+wá+lọ and gbé+lọ+wá where lọ and wá occurring together after gbé perform their contradictory centrifugal and centripetal functions, since gbé 'carry' must be the principal whenever it occurs with wá or lọ or both of them.

The nine verbal semantic functions recognized could be represented as 1-timing, 2-aspectual, 3-adverbial, 4-supporting, 5-catenative, 6-complement, 7-principal, 8-deictic, and 9-limiting. The ordering phenomenon is represented as A-1 to 4, B-5, C-6 & 7, D-8, and E-9. A sentence in which all the nine functions are represented by their numerical value as itemized here is given as (5):
Sola shall have nearly can come want go carry luggage

'Sola should have almost succeeded in wishing to bring

nàá wá fún Bisi.

the come give Bisi.

the luggage to Bisi.'

The examination of serial verb string commutability in relation to the nine semantic functions has greater implications for linguistic theory on questions of universals and derivation. On universals, serializing and non-serializing syntactic types are relatable through the syntactic manifestation of their semantic functions. The difference seems mainly pertinent in the expression of terminal functions which are verbally represented in serializing languages, though prepositions and adverbs usually take over these functions in several non-serializing languages. Also, non-serializing languages do not have the optional complement to the principal of the dominant class. On derivation, it could be inferred that serialization research efforts are usually vitiated by the inadequacy of the data used for syntactic analyses. The predominance of two- or three-verb structures in verb serialization papers permit well documented data-oriented papers arguing convincingly for either multiple or single sentence sources for serial verbs, although only one or two of our semantic functions may be represented. Since such qualitative neglect of semantic functions is highly detrimental to verb serialization scholarship, our semantic function proposal may be used as an evaluative metric for derivational source analyses of verb serialization.

REFERENCE

Robert and Grace Green's son, William, marries Mary and takes her home to his family. Here she is taught by Joan an almost completely new language. Where necessary she is advised by Grace, the mother-in-law. This is because from now on she may never use the syllables or words: rob, ert, gree, will, may and grace. Thus for the sentence: 'Grace will not eat green yogurt', she'd have to say something like 'The older daughter of Smith refuses to eat grass-colored yomix'. This puts into context, considered from an English language point of view, the linguistic constraints which one would be subjected to in conforming with Hlonipha.

Hlonipha describes a custom between relations-in-law and generally, but not exclusively, is applied to the female sex. This phenomenon occurs among the Nguni and South Sotho people of South Africa. Thus far, in the research project approximately two thousand words collected from different families have been analysed. Having tested and revised where necessary a set of appropriate field work procedures, a sample group of over fifty families was selected in various regions of the eastern Cape of South Africa. All the material collected during field studies is being processed by a computer where a data base of the currently existing Hlonipha words is kept.

In order to meaningfully illustrate some of the mechanics relating to the use of Hlonipha among the Xhosa women of the family group selected, the family structure of one particular Xhosa family was described in some depth i.e. Nokhonza is married to Bonisile, the son of Nina and Dike. Dike's father,
Ntlokwana, has another son, Moykwa, whose wife is Nombuluka. Ntlokwana's father was Saki. The names Nokhonza would Hlonipha are: Dike, Nina, Ntlokwana, Saki, Moyikwa and Nombuluka. Only examples of the influences of the following members of Nokhonza's family have been given i.e. Dike, Nina, Ntlokwana and Saki.

Firstly, the avoidance of the great grandfather-in-law, Saki's name, e.g. my school (English) ísikolo sám (7/8) (Xhosa) ísilérisho tyám (7/8) (Hlonipha).

The $C_1$ of the syllable sa is replaced by another consonant, the ejected palatal plosive - ty [c'] . Note that although it is the syllable which is avoided, it is the consonant which is changed. The vocalic value remains constant.

Secondly, the avoidance relating to grandfather-in-law, Ntlokwana: íntloko (9/10) in Xhosa means "head". Nokhonza avoids this by using íphoba (5/6) in its place. This word in Xhosa means 'that part of head with hair'.

Nokhanza similarly respected the name of her father-in-law, Dike, through syllabic avoidance of his name: unmarried woman (English) idíkazi (5/6) (Xhosa) ishíkazi (5/6) (Hlonipha)

The syllables of Nina's name were avoided by Nokhonza in the following way:

to give to (English) úkuníka (15) (Xhosa) úkuphá (15) (Hlonipha)
to grant to (Xhosa meaning)

The complexity of the avoidance rules are facilitated somewhat by calling upon what the author has previously referred to as a core vocabulary. Various categories have been noted.

1. Phonological Features

1.1 It has been found that the click consonants are fairly often replaced by sh [ʃ] e.g.:

wagon (English) ínqwélo (9/10) (Xhosa) íshwélo (9/10) (Hlonipha)

1.2 A replacement by y, a glide consonant:

brick (English) ísitëña (7/8) (Xhosa) ísiyëna (7/8) (Hlonipha)
1.3 Consonant deletion and replacement with a glottal stop is another device commonly resorted to in order to avoid certain syllables. As exemplified above, y occurs with non-rounded vowels when there is at least one non-rounded vowel. Where we might expect w to occur, i.e. with two-rounded vowels, the glottal stop always occurs: e.g.:

to hatch (English) úkufukáma (15)(Xhosa) úku'ukáma (15)(Hlonipha)

1.4 It seems that two of the most common replacements are the palatal plosive consonants ty [ɕ] and dy [j].

person (English) ūmuntu (1/2)(Xhosa) ūmndyu(1/2)(Hlonipha)

2. Retention of Common Forms

This section could be divided into three:

a) Common Bantu
b) Common Southern Bantu
c) Common Nguni

e.g.  

<table>
<thead>
<tr>
<th>English</th>
<th>Xhosa</th>
<th>Hlonipha</th>
</tr>
</thead>
</table>
| to urinate | ukúchama| úkúthunda*-
| to pass    | úkuggítha| úku'dlíla-
| potato     | łtàpîle(9/10)| izâmbane(5/6) |

3. Association of Ideas

This area of avoidance could be subdivided into four sections:

a) shift in meaning
b) synonyms
c) descriptive phrases
d) verbal derivatives

e.g.  

<table>
<thead>
<tr>
<th>English</th>
<th>Xhosa</th>
<th>Hlonipha</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>milk</td>
<td>ubûsi(14)</td>
<td>Ÿkrakra(5) *a bitter thing</td>
<td></td>
</tr>
<tr>
<td>firewood</td>
<td>ſinkuni(10)</td>
<td>ſintsasa (10) brushwood</td>
<td></td>
</tr>
<tr>
<td>monkey</td>
<td>ſinkaũwú(9/10)</td>
<td>ſindlaláma (9/10)</td>
<td></td>
</tr>
<tr>
<td>ant</td>
<td>ſimbóvané(9/10)</td>
<td>ſingangéhléla that of the road (9/10)</td>
<td></td>
</tr>
<tr>
<td>door</td>
<td>ſcango(11/10)</td>
<td>ſubuyísó(11/10) that which returns</td>
<td></td>
</tr>
</tbody>
</table>

Milk is not allowed among the Xhosa women they enter their new home after marriage until a particular ceremony has been performed. It is, therefore, considered a 'bitter thing'.
4. Coinage of New Words

to milk (English) úkusëngá (15)(Xhosa) úkuhúka (15)(Hlonipha)

5. Borrowings

egg (English) íqandá (Xhosa) í'ëgi (9/10)(Hlonipha) (‘English)

As far as morphology is concerned, the same morphemes are involved, such as verb stems, verbal suffixes (e.g. causative), as well as nominals, denominatives, deverbatives.

Observations

1. Hlonipha is practiced fairly widely in southern Africa. However, so far it has been concluded that it is more commonly practiced among traditional families, individuals and communities.

2. Prior to the detailed analysis of the Hlonipha data, the author suspected that with regard to certain patterns of word avoidance and behavior it was possible to establish rules for this behavior. So far few consistent patterns have emerged.

3. Mention has been made to the effect that it is the syllable which is of prime importance in the conscious avoidance of patterns of the speakers of Hlonipha. Phonological regularities are maintained in that the vowel of the avoidance syllable is retained whereas it is the consonant which is replaced.

4. In certain situations, where an individual or group wishes their discussion to remain personal and private, they will use Hlonipha as a means of communication.

5. A detailed investigation of the rules as to whom a woman should Hlonipha in the in-law's family is a window from the language into the society which enables one to look at certain values within the society.

6. Hlonipha is used by Xhosa speakers in parallel with Xhosa itself. Hlonipha could be described as a socially governed subsystem of the Xhosa language.

7. Hlonipha extends widely not only geographically but also across different language groups including inter alia South Sotho, Zulu, Xhosa, Swati, and Ndebele. The discussion should, therefore, be seen as a contribution to this wider field to which it is hoped the field work will ultimately extend.
Introduction: Code-switching has been studied in various 'diglossia' situations from a purely sociological viewpoint, e.g. Gumperz (1976), Scotton and Ury (1977). The few attempts looking at it from the standpoint of linguistic analysis, e.g. Timm (1975), have concentrated on a few syntactic features only.

In this paper, we look at some phonological patterns that regularly emerge in code-switching between Akan, a Ghanaian (West African) language, and English, the official and second language of Ghana. After distinguishing between two types of code-switching, we will look at segmental substitutions, vowel harmony, epenthetic vowels, and tone.

1.0 Types of Code-Switching: Two types of code-switching are recognized: inter-sentential switching (switching between sentences), in which a complete sentence, or a series of them, may be in one or the other language, and intra-sentential switching, in which the switching occurs within the sentences.

Both types may occur in a single discourse.

It is found that in inter-sentential switching the speaker retains the phonological features of each of the languages involved. This, then, is not of immediate interest to us. This study is essentially concerned with intra-sentential switching.

2.0 Intra-Sentential Code-Switching: English items in Akan-English intra-sentential code-switching take on the phonological characteristics of Akan, which is the language the speakers consider themselves to be speaking, given the social factors of the situation: similar linguistic background (participants being Akan-English bilinguals, informal spoken discourse, etc. (Forson, 1979).

The following regularities are observed:

2.1 Segmental Substitutions: English phonemes and diphthongs not found in Akan get substitutions from Akan segments which have the nearest place/manner of articulation, just as we have in the English of Ghanaians without very much training in English.

1 Three of the dialects of Akan have been reduced to writing: Akuapem (Ap), Asante (As), and Fante (Fa).
2.1.1. Phonemes: There are no voiced fricatives and no dental fricatives, in Akan. Therefore,

(i) for voiced fricatives, apart from [θ], the Akan switcher substitutes the voiceless counterparts:

[v] → [f]; [z] → [s]; [ʒ] → [ʃ];

(ii) the dental fricatives are under-differentiated as follows:

(a) Initial and Medial: [θ] → [t]: 'thank' [tæŋk];
   'enthusiastic' → [ɛntsuiastIk];
   [ð] → [d]: 'this' → [dIs]; 'although' → [ɔldo:]
(b) Final: [θ] and [ð] → [f]: breathe → [briːf];
   breath → [brɛf].

(iii) Vowels: Some vowels are also under-differentiated:

(a) [a, æ, ø, ə, ʌ] → [a]
(b) [ə, ɛ] → [ɛ:]

2.1.2 Diphthongs: Akan does not have diphthongs on exactly the same lines as English does. There may be sequences of vowels, but these may be either separate syllables, as in [či-á] 'to greet', or separate morphemes, as in [kæ+ɪ] (say+PAST) 'said'.

There are generally no problems with English diphthongs which have structures with similar sequences in Akan. Where there are no near equivalents, the Akan code-switcher lengthens the first segment in the English diphthong:

made [meid] → [me : d]
coat [kout] → [ko : t]

e.g.,

If the word ends with a consonant cluster, then there is no lengthening, and the second vowel simply gets dropped:

cakes [keiks] → [keks]
cold [kould] → [kold]

3.0 Vowel Harmony: The Akan vowel harmony rule states that only vowels in one of the two sets may occur within or between words. The two groups are variously referred to in the literature as [+ TENSE] or [+ TONGUE ADVANCED] or [+ COVERED], and are as follows (using the term 'TENSE')

[+ TENSE]: i, e, ɔ, u, ʌ
[- TENSE]: I, ε, ɔ, U, a,

Apart from the (past) tense suffix and epenthetic vowels (4.0 below), which may be affected by preceding vowels, the rule has a regressive effect.
3.1 The Akan vowel harmony rule applies in a limited way to code-switching. English items are not supposed to obey this rule. Therefore, in multi-syllable English words, only syllables in the immediate environments of Akan syllables may be affected, as illustrated in Example (1)

(1) As wo - [tɛmt - ñ] se wò - o-[ste:t - ñ] wɔŋ [kɛ:ɔ].

they (a)ttempt V that they-PR- state - v their case....

'If they attempt to state their case....'

(i) The vowel in "(a)ttempt" [ɛ] selects the vowel in both the subject pronoun [wo -] and the epenthetic vowel [-I] (all [- TENSE]), and

(ii) The tense vowel in "state" [e -], selects the [+ TENSE] vowels [-o-] in the subject pronoun and the epenthetic pronoun [-i]. Similarly, the tense vowel in "case" [e:] selects [o] for the possessive pronoun [woŋ] 'their', instead of [wɔŋ].

In (2) below, we have a polysyllabic English item:

(2) As: ye - [di-saId - ñ - ñ - ñ] 3
de - decide - V - PA - EAS

'We decided (it).'

Here, the first syllable of 'decide' [di-] agrees in tenseness with the subject pronoun [ye-], but not with the vowel in the second syllable [ai], which agrees with the suffixes (all [- TENSE]).

3.2 'Frontness Harmony' in Fante: Allomorphs of Fante preverbal affixes, e.g. subject pronouns, tense morphemes, etc., which have front non-low vowels are conditioned not only by the 'tenseness' feature in the verb roots, but also by the 'features' [+ Front] and [+ High].

---

2 Tone Marking: Sentence initial low tones are not marked. A low tone following a non-low is marked ('). A high tone is marked ('). A tone marked ('') following another one indicates a downstep. Unmarked tones have the same level as the last indicated ones.

3 For a discussion on EAS, see 5.0.
4.0 Epenthetic Vowels: Akan syllable structure is basically CV. The only non-vowels in syllable-final position are: Ap: m, \( \ddot{u} \), w, ?; As: m, ?; Fa: m, n, w, r, ?.

Consonant-final English items occurring in Akan-English code-switching, therefore, often have an epenthetic vowel: [tek-m-I], [ste:t-i]; [disaId-I]; [sc:c-I], [\( \ddot{c}u:s-u \)].

Asante has fewest final non-vowels, and therefore uses more epenthetic vowels. Together with the fact that Asante has more low-tone pre-verbal affixes (e.g. tense aspect) followed by high syllables, many English items in Asante code-switching end on high tone where Akuapem and Fante may end on non-high tones.

(6) Ap: \( \ddot{w}o - \ddot{a} - st\ddot{6}p \) (o)
As: \( \ddot{w}o - a - st\ddot{6}p - u \)
Fa: \( \ddot{w}o - \ddot{a} - st\ddot{6}p - (u) \)

they - PF - stop-V

'They've stopped (it).'

4.1 'Backness Harmony': In Akan-English code-switching, epenthetic vowels following final English bilabials have to be [+back]. This supersedes the general vowel harmony rule, and takes into account only the tenseness features of the vowel(s) in the verb root; thus [st\ddot{6}p-u], not * [st\ddot{6}p-I]; [swIm-u] not * [swIm-I].

\(^4\) In parallel examples, e.g. example (6) the original sentence is identified by a small (o) in brackets at the end. The versions are not necessarily collected data, but what would be expected from speakers of those dialects. (These were frequently tested in separate conversations to see if they would draw attention.)
5.0 Extra Asante Suffix: In addition to the epenthetic vowel used by all the Akan dialects, Asante has a syntactically defined extra vowel suffix (EAS) at the end of sentence final subordinate clauses (including relative clauses, etc.). This has to agree in harmony with the vowel in the verb root and the epenthetic vowel:

(7) Ap: w - a - yéra sliká á ó - [kí:p] (o)  
    As: w - a - yéra sliká á o - kí:p - ù - o  
    Fa: w - á̆ - yĕ sliká á ó - ki:p - ú  
    he - PF- lose money REL he - keep - V - EAS

'He's lost the money he keeps.'

6.0 Tone: The Akan tone system is superimposed on English items used in code-switching. In longer stretches, the Akan tone effect is felt on portions nearest the Akan items; thus, the beginning and/or end of an English clause/phrase sandwiched between Akan items get Akan tones, but not the middle, e.g.

(8) As: ye - bē - [pres-í] winners of last year's  
    we - Fu praise-V  
    kompețišaí] no  
    competition the

'We'll praise the winners of last year's competition.'

Conclusion:

In intra-sentential Akan-English code-switching, the participants find themselves in a set-up in which unilingual Akan would be the choice -- all speakers of Akan (but bilingual in Akan and English), informal conversation, etc. But other parameters (e.g. subject matter, etc.) made code-switching a more normal choice.

The speakers, therefore, consider themselves speaking 'Akan', and the English items undergo a lot of phonological changes based on the Akan system. These are regular, and therefore predictable.

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PRE-PRONOMINAL MARKERS IN CHADIC: PROBLEMS AND HYPOTHESES

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There are several problems intimately connected with pronominal affixes in Chadic. These problems may be connected with each other and an explanation of one may possibly shed some light on other problems. The following problems will be discussed in the present paper:

1) In several languages there exist pre-pronominal markers whose functions are poorly understood. For example, whenever a verb in Hausa is followed by a pronominal object the final vowel of the verb is lengthened, and in one verbal form, so-called Grade II in Parsons' 1960 classification, the final vowel of the verb is replaced by -ee, e.g.,

\[ \text{yaa kaama dookli} \] 'He caught a horse'
\[ \text{yaa kaamaa shi} \] 'He caught it'
\[ \text{yaa sayi dookli} \] 'He bought a horse'
\[ \text{yaa sayee shi} \] 'He bought it'

(Zima 1971:219)

What is the function of the pre-pronominal vowel lengthening and/or change? If the function of this change were to indicate that the following morpheme is a pronoun, then this function would be at best redundant, for the identity of the following morpheme is never in doubt. The pronominal affixes are not affected by morpho-phonemic rules that would make their identification difficult. And while it is possible that one language would develop such redundant markers it is difficult to conceive of a number of languages developing them independently. Most of the authors writing on Hausa or other Chadic languages simply state the fact about the presence of these markers without asking about their function.
Looking for a non-redundant function one would obviously think that the pre-pronominal markers serve to differentiate between different types of pronominal affixes, such as between direct and indirect object pronouns, or between subject and object pronouns. The answer of this question cannot be given on the basis of synchronic analysis of any one language, for in most of the Chadic languages involved the difference is often marked by some other devices. Thus in Hausa the indirect object pronouns are marked by the particle ma- and the subject pronouns are marked as such by their position preceding the verb. A more satisfying answer can be obtained through a comparative study of the distinctions made between the direct and indirect object pronouns and also between the subject and direct object pronouns. The study of the distinction between the direct and indirect object pronouns constitutes the second problem discussed in the present paper.

2) In the languages for which some descriptions are available, there appear to exist three different types of cases:

a) No distinction is made between DO and IO pronouns. This means that the language has no structural devices of any sort for differentiating between the two types of pronouns and in effect has only one type, viz. object pronouns.

b) Pronouns from the two sets differ phonologically. The differences may be marked in two ways. One is through differences in the segmental structure of the pronoun and the other is through differences in the tonal structure. In some languages, the differences between the two types of pronouns is limited to certain persons only, mainly to the third person.

c) There are pre-pronominal, or less often post-pronominal, markers which indicate the role of the pronoun. When these markers are present they are not restricted to some persons only, i.e. there are no cases in which third person or first person only are marked by pre- or post-pronominal markers.

Data from only forty Chadic languages are discussed in the paper. It appears that the distinction between the subject, direct object and indirect object pronouns is realized in contemporary Chadic languages in the following ways: position (the differences between subject pronouns and the remaining types of pronouns), segmental differences (frequent between subject and object pronouns, in two languages also between DO and IO pronouns), tonal differences (between DO and IO pronouns), and finally the pre-pronominal markers (ti with its cognates and vowels a, i or e, i.e. non-round vowels). In certain tense/aspectual forms, however, both subject and object pronouns precede or follow the verb. It is not possible to reconstruct segmental differences that marked the distinction between the DO and IO pronouns or between Subject and DO pronouns. It is also impossible to reconstruct the tonal differences that would have carried these distinctions.
As for the non-round vowels, it appears that most often they mark the following pronoun (in some languages also the following noun) as direct object. There are, however, languages in which the vocalic marker indicates that the following pronoun or noun is an indirect rather than direct object. The 'majority rule' will be applied in the reconstruction of the function of vocalic markers. The result of such a reconstruction indicates that the vocalic markers most probably indicated that the following pronoun was a direct object.

The marker $t\bar{i}$ has three functions in contemporary Chadic languages: it is a locative preposition with the meanings 'to, at', less often 'from', it is a benefactive marker, and finally, in some languages it indicates that the following pronoun (and sometimes noun) is a direct object. The paper provides an explanation for the three functions of the marker $t\bar{i}$. It is postulated that the historically primary function of $t\bar{i}$ was locative. Then a benefactive function was added. Finally, the marker of benefactive complement was used to mark the direct object. Justification for the first step is hardly necessary in view of the fact that the extension from locative to benefactive function is attested in many languages. Justification for the second, viz., extension from benefactive to direct object is linked with the necessity to mark the direct object as opposed to subject pronouns.

The data from the contemporary languages show that there is a context in which the DO may have to be marked in order to distinguish it from the subject pronouns. One can conceive of a situation in which Proto-Chadic had one type of structure in some tenses, e.g. non-perfective, and another type of structure in other tenses. The fact that two pronouns could occur in sequence in one type of structure might have constituted a motivation for the markers to occur in that part of the grammatical structure. Subsequently, the markers would have been generalized and used to indicate the DO in all other environments.

This is just one of the possible scenarios for the emergence of the DO pronoun markers. Whether this actually was what happened has not been proven. This scenario does not exclude the possibility that some other factors were also involved in the structural change.

The following sequence of changes is postulated as an explanation for the facts to be encountered in contemporary Chadic languages:
Stage A. Proto-Chadic. IO marked by ti or by position with respect to other pronouns. DO distinguished in certain tenses from the Subject pronouns by position with respect to the verb. In other tenses, when pronouns from the two sets occur before or after the verb the DO is marked and the Subject pronoun is the unmarked category. A possible candidate for the DO markers are vocalic affixes as manifested in West and Biu-Mandara and East branches, or tonal markers as manifested in Dghwede.

Stage B. For some reason the DO markers could no longer perform their function. In some languages they are replaced by the markers which already mark the IO. In other languages the construction in which the Subject and DO pronouns both follow or precede the verb is eliminated and the distinction between the two sets of pronouns is primarily marked by their position with respect to the verb.

In view of the comparative data the -ee ending of Grade II of Hausa verbs appears to be a cognate of the vocalic markers occurring in other West Chadic and Biu-Mandara languages. On the basis of comparative data one may claim that its function must have been linked to the distinction between the DO and IO pronouns. This conclusion is reinforced by the fact that the present-day marker of IO pronouns, ma- seems to be an innovation in Hausa as it does not have cognates in other languages.

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This paper works through a concrete problem in the verbal morphophonology of Bakweri, a Bantu language of the Cameroons (Guthrie's A22, spoken near Buea and Mr. Cameroon). The verb in Bakweri has a rich yet relatively regular and uncomplicated morphological structure; the basic agglutinative slot-sequence schema is:

```
SB - (TNS-NG) - (OB) - (REFL) - ROOT - (EX) - FL
```

e.g. à - mà - nò - kòk - à

'He bit me (yesterday).'

where SB=Subject; OB=Object; TNS-NG covers various tense and negative markers (including zero for some tenses); REFL=Reflexive marker; ROOT=Verb root; EX=Derivational root extension; FL=Final vowel. The four pre-root slots are filled by monosyllabic affixes of several basic syllabic structures:

a. CV This includes most SB and OB markers (íí, vá, vé, nà, etc.) and several TNS-NG markers (Yesterday mà, Perfect má, Negative zi and za).

b. #V This includes several SB prefixes (à, é, è, í, í, ó, ó) and nothing else.

c. VV This is the class of all-vocalic affixes which appear non-initially in the verb. The class comprises the following 7 affixes:

(1) 3 OB affixes: -òò- 2-sg (e.g. à-òò-kòkà 'he bites you');-èè- Class IX (à-èè-kòkà 'he bites it'); -ée- Class VII (à-ée-kòkà 'he bites it').

(2) 3 TNS-NG affixes: 
-àà- Progressive 1 (ààà-kòkà 'he is biting');
-òò- When-Future (àòò-kòkà 'when he'll bite');
-ée- Before-Past (before he VERBed) (à-ée-kòkà 'before he bit').

---

1 In the Progressive tense, the SB prefix is forced to high tone.
(3) REFlexive marker: -áá- (á-áá-kóké 'he bites himself').

The point at issue here concerns this third group: should these affixes be represented as -VV- or -V- underlyingly? (I will be using the term "VV affixes" for this group, but with no intention to prejudge the issue.) In laying out the phenomenon, a sizable chunk of verbal morphophonology will come into play.

The morphophonology of Bakweri is characterized by the pervasive phenomenon of vowel blending across a morpheme boundary (apply either a. or b.):

\[
\begin{align*}
\text{a. } & V_1 + V_2 \rightarrow (G_1) V_2 \\
\text{b. } & V_1 + V_2 \rightarrow (G_1) V_2 
\end{align*}
\]

(where \(G_1\) = homorganic glide to \(V_1\))

Normally vowel blending either tracelessly deletes \(V_1\) or replaces it with a (roughly) homorganic glide (rule a). Concomitantly, both of the two input tones \(\alpha\) and \(\beta\) are placed on the surviving vowel; if the tones \(\alpha\) and \(\beta\) are different, a contour tone \(\alpha\beta\) arises, which is normally simplified to a level tone by various tone absorption processes, usually following the rules (cf. Gensler 1980, Chap. 5):

\[
\begin{align*}
\text{H L L} \rightarrow \text{H L} \quad &\text{H H} \rightarrow \text{L H}.
\end{align*}
\]

A somewhat different process (rule b) applies if the tone sequence \(\alpha\beta = H'\text{H}\), involving a downstepped high (cf. Gensler 1981); here the downstep is displaced rightwards after the surviving vowel. Examples:

a. nà-ongéaf \(\rightarrow\) nongéaf \(\rightarrow\) nongéaf 'I built (A While Ago)'

b. á-zá-undá \(\rightarrow\) ázúndá 'He won't fall.'

The typical environment for -VV- affixes is in the frame SB-VV-ROOT, and our primary data will come from the surface realizations of this underlying schema. So as to maximally insulate VV from the destructive effects of vowel blending, we will stick for the most part to a consonant-initial ROOT kóka 'bite'. The problem is that VV in principle cannot be insulated in this way looking leftwards; the sequence SB-VV- is always (C)V-VV-, hence "blendable". Fortunately, the set of SB prefixes splits into several subgroups, according to their behavior under vowel blending (examples with ROOTs kóka 'bite', ónga 'build', ènde 'go'):
a. Never blend  
   e.g. mé, vé, à: mékóká méóngá mě́ndè
b. Always blend  
   lí, má, vá, nà: nakóká nóôngá ně́ndè
c. Always blend with glide  
   í, ɇ, ě, ě: ìkóká jòngá jě́ndè
d. No blend before back Vs;  
   mo, wo, o, o: mòkóká móôngá mwé́ndè
   otherwise blend with glide

The raw data showing the blending behavior of the VV affixes is given in the following table. The columns represent the seven VV affixes; the rows, the four types of prefixes. The table entries are abbreviations for the protocol which heads the column; e.g. à in the upper left position stands for àòkóká.

<table>
<thead>
<tr>
<th>SB-OB-ROOT</th>
<th>SB-REFL-ROOT</th>
<th>SB - TNS-NG- ROOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>X bites Object</td>
<td>X bites Self</td>
<td>X is biting/Before X bit/When X will bite</td>
</tr>
<tr>
<td>2-sg IX VII</td>
<td>REFL</td>
<td>Prog</td>
</tr>
<tr>
<td>...</td>
<td>....</td>
<td>....</td>
</tr>
<tr>
<td>àòkóká</td>
<td>àòkóká</td>
<td>àòkóká</td>
</tr>
<tr>
<td>...</td>
<td>....</td>
<td>....</td>
</tr>
<tr>
<td>a. à-</td>
<td>aò</td>
<td>æe</td>
</tr>
<tr>
<td>me-</td>
<td>méo</td>
<td>mée</td>
</tr>
<tr>
<td>b. lí-</td>
<td>løó</td>
<td>leé</td>
</tr>
<tr>
<td>na-</td>
<td>noó</td>
<td>née</td>
</tr>
<tr>
<td>c. ɇ-</td>
<td>jɵo</td>
<td>jëë</td>
</tr>
<tr>
<td>d. ø-</td>
<td>---</td>
<td>wee</td>
</tr>
<tr>
<td>mo-</td>
<td>moo</td>
<td>mwëë</td>
</tr>
</tbody>
</table>

How shall we account for these surface forms? The straightforward approach would derive these forms by applying ordinary vowel blending (when applicable) to a suitable underlying form, viz. a double-vowelled representation -VV:-

a. (Never blend)  
   à-òò-kóká → *àòòkóká  
   mé-òò-kóká → *méòòkóká  
   na-òò-kóká → nòòkóká (Solution A)

b.  
   nà-òò-kóká → nòòkóká

c. ɇ-òò-kóká → jòòkóká

d. (No blend before back vowels)  
   mo-ëè-kóká → mwëëkóká → mwëëkóká
   mo-òò-kóká → *móòkóká

Straightforward though it is, this approach gives the wrong answer in those cases where the SB prefix does not undergo vowel blending. Alternatively, one could view the phonomenon not in terms of an extraneous vowel disappearing through blending, but in terms of a single vowel assimilating completely to its neighbor, with no blending. On this approach a special rule of Total Assimilation, not unprecedented in Bantu languages, would apply wherever vowel blending would otherwise apply:

---

²Actually the prefixes 'má, vá, nà' blend whenever the next morpheme does not begin with a. No such restriction applies to the prefix lí.
Thus $V_1$ "becomes" its neighbor $V_2$. The derivations now look like this:

a. (Never blend)  
\[
\begin{align*}
\text{a-o-koka} & \Rightarrow \text{aokoka} \\
\text{me-o-koka} & \Rightarrow \text{meok~ka}
\end{align*}
\]

b. na-o-koka  
\[
\text{~nookoka (Solution B)}
\]

c.  
\[
\text{~o-koka} \Rightarrow \text{jookoka}
\]

d. (No blend before back vowels)  
\[
\begin{align*}
\text{mo-o-koka} & \Rightarrow \text{mowokoka} \\
\text{mo-o-koka} & \Rightarrow \text{mowokoka}
\end{align*}
\]

I shall be arguing for solution A and against B, and so it should be pointed out in advance that it is B which appears to work while A does not. This is not surprising; B is totally ad hoc, and works because we invented an otherwise unmotivated rule and tailor-made it to fit the situation. By contrast, vowel blending is a well-established and pervasive process in Bakweri. In fact, there are two explicit arguments which can be made in favor of Solution A:

a. The REFL marker must be -áá-.

In the Reflexive Imperative (the only tense form where the SB slot is empty), the bare REFL affix is revealed completely untouched by any sort of vowel blending. The form has a double vowel:

\[
\text{áá-kóká} \quad \text{'Bite yourself!'}
\]

b. The Before-Past marker must be -éé-:

Consider three derivations in this tense ("Before he VERBed")

\[
\begin{align*}
\text{SB - TNS-NG - ROOT} & \\
\text{bite} & \text{à - é(e) - kóká} \quad \Rightarrow \text{àékóká} \\
\text{wash} & \text{à - é(e) - zožá} \quad \Rightarrow \text{àé(e) - zožá} \quad \Rightarrow \text{aežožá} \\
\text{grow} & \text{à - é(e) - ōngá} \quad \Rightarrow \text{àé(e) - ōngá} \quad \Rightarrow \text{ae(y)ngá}
\end{align*}
\]

The second derivation occurs by downstep formation (cf. Gensler 1981). In the third derivation, downstep formation is followed by downstep displacement (vowel blending); note that in the last step, the downstep has moved one syllable rightwards, a clear sign that downstep displacement has blended the vowels:  
\[
\text{é \quad - \quad o} \Rightarrow o'.
\]

Yet an $e$ survives in the surface form. If the underlying form were not $ee$ but $e$, we would have a reductio ad absurdum: the single $e$ would both have to survive on the surface and simultaneously be absorbed in vowel blending. Thus the affix must have the form $ee$. 

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How, then, are we to explain the exceptions (e.g. *ãàoòókóká) encountered in the A analysis? Consider the following three suggested derivations involving the Progressive and REFL affixes:

```
<table>
<thead>
<tr>
<th>SB - TNS-NG - REFL - ROOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prog</td>
</tr>
<tr>
<td>á --- áá ---------------</td>
</tr>
<tr>
<td>Reflexive Future</td>
</tr>
<tr>
<td>á -------------- áá ----</td>
</tr>
<tr>
<td>Reflexive Prog</td>
</tr>
<tr>
<td>á ----------- áá ------</td>
</tr>
</tbody>
</table>
```

In none of these cases is the result simply predictable from vowel blending. The significant point here is that in all three cases, quite independently of whether or not there are one or more VV affixes present underlyingly, the surface prefix complex always has just two vowels áá. Neither approach A nor B has anything to say to this difficulty. It seems, rather, that Bakweri in general has an aversion to lengthy vowel sequences, and it is the "longness" per se which is being responded to here. Hence, we may formulate a rule of vowel collapsing, which contracts double vowels appearing next to other vowels:

```
a β V_1 V_1 \rightarrow aβ V_1 / \{V_1 \}
```

This rule, though it may seem a mere recapitulation of vowel blending, is functionally quite different: it is effectively a surface constraint, it has nothing to do with morpheme boundaries, and it only applies to sequences of the selfsame vowel V_1 V_1. The application of vowel collapsing (subsequent to vowel blending, as in the above table) removes the last difficulty with approach A.

A final complication is the matter of glide variants. The three Object affixes have glide allomorphs, whose vowel V always blends out and hence is indeterminate: 'oo/wV, 'ee/yV, and especially commonly 'ée/yV. For example, 'he sold it' (=VII) is:

```
not *(a-má-éé-ávízé \rightarrow ámèávízé)
bvut a-má-yV-ávízé \rightarrow a-má-yV-ávízé \rightarrow ámáyávízé
```

The precise environment(s) for glide variant formation is not very clear, nor is it clear whether it applies obligatorily or optionally. It seems, though, that glide variants often serve the function of breaking up what would otherwise be a long vowel sequence, especially if the vowel adjoining the glide variant is á. From a functional point of view, then, glide variant formation and vowel collapsing are similar and essentially competing processes. One or the other may apply fairly near the surface so as to break up a long vowel sequence. Glide variants are essentially secondary to the concern of this paper, viz. the choice between -VV- and -V- representations. They contribute to the analysis only negatively, by "bleeding off" numerous forms (e.g. *âmeávízé above) which otherwise would be germane to the analysis.
The evidence, in conclusion, strongly supports the -VV-analysis (Solution A). The apparent exceptions stem from a constraint in Bakweri against lengthy vowel sequences, which manifests itself in the two processes of vowel collapsing and glide variant formation.

REFERENCES


NILO-SAHARAN MOVABLE k - AS A STAGE III ARTICLE

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Among the grammatical elements of Nilo-Saharan enumerated in Greenberg (1966) was movable k - (no. 36) which is prefixed to nouns in an apparently random fashion. In the same etymology forms with and without k - may occur as free variants in the same language, as dialectal variants or between different languages of the same or different branches. Virtually every nominal etymology shows this variation.

The name movable k - was chosen because of the parallelism to Indo-European movable s - which displays similar variability. Some Indo-Europeanists have explained this as resulting from sandhi variation at word boundaries. Roots in sC - when preceded by words ending in -s simplified the geminate, and the root might be reinterpreted as not containing s - in this environment but as containing s- in other environments. The variants with and without s- survived in a random manner. A rival theory posits that s- is not part of the root but originally a morphological element, but there is no agreement on its function.

There is a basic difference between the Indo-European and Nilo-Saharan cases, however. The Indo-European movable element appears indifferently on nouns and verbs, while Nilo-Saharan k- is essentially nominal. A closer parallel is Penutian -s. In Greenberg (1978), it was proposed that Penutian -s is a stage III article. I now offer the same explanation for Nilo-Saharan k-.
A stage I article is an ordinary definite article, which usually derives from a distance demonstrative. A stage II article combines the uses of a definite and indefinite article. At this stage, most text occurrences have the article but the unarticulated form occurs typically in a number of uses. These are either instances in which there is automatic definiteness so no marker was ever required e.g. the vocative, or generic uses such as an incorporated noun object. In stage III there are no longer any productive contracts hence either the articulated or non-articulated form spreads to all environments. Even closely related dialects may differ in either losing it or retaining it everywhere except, possibly, for isolated survivals. If the original demonstrative was classifying, they become pristine or redundant gender markers. If it was not, they become a mere mark of nominality.

In stage III, however, there is a third possibility besides universal loss or universal spread of the marker, namely survival or loss in random fashion in each form. The value of the Indo-European case is that although s- does not derive from a demonstrative, it is a generally accepted instance of just such irregular retention or loss of either of two alternating forms.

Thus far the marker has been considered to be k-. However, there is much evidence to show that it was ki- before consonants and k- before vowels. In addition there may have a variant ku- before stems beginning in C plus back vowel. A comparison of Western and Eastern Nilotic languages shows a number of instances in which before consonant stems Eastern Nilotic languages have ki- while Western Nilotic languages, with their essentially monosyllabic basis, have forms without ki- before consonant stems while often retaining k- before vowel stems. Another piece of evidence is the infinitive in *-ki- of Turkana, Karimojong and Teso which only appears before consonant stems. Further, in Masai there are a series of nominal derivational forms in which k- occurs before vowel stems but zero in consonant stems. A further phonological observation is that the zero form in Songhai shows initial h-, which internal evidence is factitiously prefixed to original initial vowels.

An opaque element such as k- is liable to reinterpretation. The most obvious is that, given its nominal character, it becomes a productive marker of verbal nouns. In Languages of Africa, k- 'nominal derivative' was listed as no. 35 under Nilo-Saharan but its ultimate identity with movable k- was suggested. Their identity now seems clear to me and is probably of Proto-Nilo-Saharan date.
A more complex type of reinterpretation is the combination of k- with other markers in more specialized derivatives. The most important example of this is in the agent nouns of Eastern Nilotic in which all the language agree in the suffixation of an -n/-k formative but Masai prefixes a- while the other languages prefix ka-. This is presumably related to the ka- in agentive of Nandi in Southern Nilotic. Another example of amalgamation is its prefixation to an n- abstract prefix in Saharan languages. In at least one instance, the Moru-Madi terms for 'bird' and 'blood', otherwise homonymous forms are disambiguated by the presence or absence of k-. (See A.W. Tucker, Eastern Sudanic languages pp. 342-3 for the relevant data.) In some instances, k- is prefixed to borrowed nouns. Sometimes k- appears in the singular but not in the plural of the same word. It is not impossible that movable k- was a singulative. In Bari it appears on the word for 'cow' in both numbers, but not on the word for 'herd' from the same root.

If the nominal k- ultimately derives from a demonstrative, one may expect this demonstrative to develop into a third person pronoun also (cf. Latin ille). This probably happened in regard to the *k- third person verb subject prefix of Saharan languages as against its suffixation in the first and second person. Zaghawa even shows the posited k-, ki-, ku- alternation. Other possible pronominal survivals are Teso k-a-, third person singular acts on first person singular, k-i-, third person singular acts on second person singular and Masai k-i- third person acts on second singular involving first and second person markers found elsewhere in the language as indeed widely in Nilo-Saharan.

Penutian -s shows many parallels to Nilo-Saharan -k, random variation within and across languages, productive formation of verbal nouns, combinations with other affixes in nominal derivation and suffixing to borrowed nouns. However, I have found no plausible instances of -s as a third person pronoun.

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1. Introduction

In the focus of this comparative study is the politicized version of contemporary Tanzanian Swahili, labelled here 'Kiujamaa'. It is approached as a question of language style. In terms of this paper 'politcized' language is the vehicle for the expression of a socialist ideology derived from Marx-Leninism, and practiced in one-party states like Tanzania. What makes this language style so striking is the fact that it affects the society as a whole, due to the vigorous spreading of the state's single ideology. While language styles of other sub-cultures might display similar characteristics, the Marxist-derived political language in one-party states has become a growing phenomenon after World War II. It thus offers for study socio-linguistic situations which closely parallel the situation in Tanzania. Hence, modern Chinese and the Russian of the Soviet Union have been selected here for comparative analysis.

Existing studies of politicized language turn largely to the question of meaning. It would be a linguistic caveat to suggest that the structural elements undergo a comparable change during the same time. Yet we lack studies of politicized languages of Eastern Europe, contemporary Africa, or Nazi Germany for example, to answer such a caveat.

2. Politicized English, Russian and Chinese

In the West, political language has attracted social scientists more than linguists. In the Soviet Union and in Eastern Europe research into political language is not encouraged.

Orwell (1946) identified certain features which to him characterized the deteriorating standard of modern English, and of political writing in particular. He finds, for example, that the use of the passive voice is preferred to the active, that "noun constructions are used instead of gerunds" ('by examination' instead of 'by examining'), and that simple verbs like 'break' tend to be substituted with a phrase "made up of a noun or adjective tacked on to some general-purpose verb such as 'prove', 'serve', 'form', etc." These features combine, according to Orwell, to give the style a lack of precision and vagueness on the one hand, and an aura of a scientific style on the other.

1 'Ujamaa is the Swahili term for the Tanzanian brand of socialism. The prefix ki- here indicates language.
In a rare and so far untranslated study of the Soviet Russian language (Rzhevskij: 1951) the following features are described as being characteristic of the post-1917 language.

- A trend to form large numbers of abbreviations which become new nouns: 'kolkhoz' = 'kollektivnoje khozjajstvo', Collective farming.
- Forming of new language patterns which assured that only 'approved' terms were used.
- Influx of dialectal expression into the standard language.
- Influx of loan words from Western European languages.
- Uniformity and monotony of the 'approved' language.

Rzhevskij also feels that the general pathos and what he calls the 'superlative styles of speech' are a measure of the propagandistic function of the language. While Rzhevskij does not discuss the types of structural means that were used to express these new trends, Kratochvíl, in his description of Modern Standard Chinese does.

According to him, the old classical style, 'wènyán', which had been rejected in 1919, was found suitable for the so called political slogan due to "the telegraphic terseness of (its) units and their construction." (p. 136) However, the main influence on contemporary, i.e. 'politicized' Chinese has been that of Western languages, particularly of English and Russian. Interestingly enough, it is not the vocabulary which has been affected most significantly. While there are sound loans, like 'faxisi', Fascist,

"the great part of the new vocabulary are words constructed by arranging Chinese morphological units in accordance with the rules of Chinese morphological patterning." (140)

Chinese written style and its morphology have, however, been significantly influenced by Western languages. Thus,

"(...) under the growing influence of (....) Western political writing much of what was originally felt as alien 'translationese' has become an accepted part of the structure of the new written style." (141)

The effect of Chinese morphology can apparently be found in the growing number of polymorphemic words, in contrast to the original preferences of monomorphemic items. The polymorphemic trend has in turn sparked off an increased use of grammatical affixes, even to the extent that they are used redundantly.

Both Russian and Chinese became open to an influx of foreign loan words after their socialist revolutions, but both at the same time began to incorporate dialectisms into the standard form.
Also, while rules of the standard began to be relaxed, the rules for the 'approved' modes of expression began to be tightened. While stereotyped language was criticized by the leaders (Chairman Mao, 1942), it was gaining more ground among the party 'cadres'. While existing structural devices were used, some gained dramatically in their frequency of usage.

In one party states particularly, the role of the individual leader may be considered as a further norm-creating influence. In the case of Russian and Chinese no such influence has been reported. But above all else, all 'political'/' politicized' languages share their function as the medium of propaganda. By virtue of having a clearly identifiable style, the adoption of which is widely encouraged, the 'new' language style becomes more or less mechanized. The basic stock of images and expression is determined by the specific bend of the politics, and it is culture-specific.

3. Swahili

Tanzanian Swahili of the post-1967 period shares its role as a medium of explicit propaganda with all other 'political' languages. It is also the main feature which differentiates it from its Kenyan counterpart, and from its historical predecessors. While Kiujamaa and the other 'political' languages mentioned exist first of all in public writings, speechmaking, etc., their elements can be frequently found in private speech also. In that case, their use tends to be ironic.

3.1 Vocabulary

The several studies available centre around several key expressions and discuss their semantic development. Temu (1971) presents a political wordlist (some 600 items), and discusses the types of formative processes involved in coining such new terms. It can be said in 1981 that Temu's findings from 1971 are still valid. The difference is in greater expertise with which the Institute of Swahili Research in Dar es Salaam operates, as well as the stabilization of certain tendencies in the coining of new terms.

2 She mentions several features of Hitler's idiolect, which became emulated by numerous SS officials.

3 During a drinking scene a man is pushed out of the group where he had been drinking, with the words: 'Get out you tick! Be self-reliant!' ('Kupe toka! Jitegemee!) The policy of self-reliance (Kujitegemea) is the economic backbone of Ujamaa. The verb -jitegemea has extremely high frequency of usage.
As in Chinese, existing structural patterns are used nowadays in preference to sound loans, which were predominant especially in pre-independence days. Nevertheless, borrowing is a productive process, but with a clearly established hierarchy among the source languages. Firstly, Tanzania's Bantu languages are searched for a suitable item. Thus, 'bunge', Parliament, is from Ha. Secondly, Arabic is considered. 'mpingathaura', a counter-revolutionary, is a composite the first part of which is of Bantu, the second of Arabic origin. Thirdly and lastly, English. Thus 'dikteta', Dictator and 'kada', Cadre were formed.

Derivation and composition are word-building processes characteristic of Swahili and other Bantu languages. Thus,

'ubadilishaji', Revisionism ← 'kubadili',

to change

The Class 14 prefix u- is a part of the Bantu structure of Swahili, as is the Causative extension -sh- and the Agentive suffix -ji. But 'ubadilishaji' is not recorded in Johnson's, Sacleux's (both 1939) or Olderogge's (1961) dictionaries. Rechenback (1968) does contain the item, with the glosses 'changeableness', 'fickleness'; '(pol.) revisionism'. The last is also Temu's gloss.

3.2 Structural Patterns

A few studies can be found dealing with structural aspects of contemporary Swahili. It may be argued that modern Swahili in Kenya, too, not only Kiujamaa, can be characterized by the tendencies listed below, or by the word-building processes mentioned above. On the other hand, it is the Ujamaa system which has initiated these tendencies, or accelerated them. It is also a fact that these tendencies orginate in Tanzania, with Kenya acting as a receptive ground. New modes of expression have become necessary in Tanzania due to the politicization of those areas of social reality, which had previously been left untouched by explicit politics. Hand in hand with this goes the fact that the influence of English and of Marxian political writing in particular, has exerted a strong influence on Swahili, just as it has done on Chinese.

The following list summarizes the characteristic features of Kiujamaa structure, as it is contrasted with its synchronic counterpart in Kenya and with its historical predecessors in Tanzania.

1. Increase in Class 14 nouns of the type u- + Stem: 'utengano', Factionalism.
2. Increase in Class 14 nouns of the type u- + Verb Root + (Causative Extension +) Agentive suffix -ji: 'uandikishaji', Registration; 'unyonyaji', Exploitation.
3. Increase in Causative verbs: 'taifisha', Nationalize
4. Increase in Adjectival constructions of the type -a + ki- + (Nominal Prefix +) Stem/Adverb: 'a-kisiasa', Politicital.
5. Increase in Adverbial constructions of the type ki- + (Nominal Prefix +) Stem/Adverb: 'kisiasa', Politically.
6. Increase in multiple Nominal prefixes, mostly in structures described in 4 & 5 above: 'kimawazo', Ideologically; 'undugu', Comradeship.

While no new element of structure has emerged in Kiujamaa, new structural developments have taken place. Certain existing structures have gained dramatically in frequency. Some existing structures have begun to appear in new environments. Some of the new tendencies merely reflect the influence of English, while others (No. 6 above) bring with it considerable semantic refinement.

REFERENCES


L'INFORMATION SEGMENTALE NECESSAIRE
A L'ELABORATION DES REGLES TONALES DE L'ADIOUKROU

Georges Herault
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L'adioukrou, langue lagunaire de Côte d'Ivoire, a été classée par Greenberg parmi les langues kwa occidentales (I.A.4). Au plan tonal, on démontre facilement l'opposition de deux tons ponctuels, H et B, et de deux tons modules, HB et BH. Une règle de QUANTIFICATION rend compte du downdrift caractéristique de la langue; partout sauf devant pause, les modulés descendants HB sont réduits à H par une règle de PONCTUALISATION. La langue fait usage de tons flottants, notés (H) et (B), tant au niveau lexical que grammatical.

A la base du système tonal fonctionne une règle d'ASSIMILATION PARTIELLE qui transforme tout ton bas en haut-bas à la suite d'un ton haut:

$$\text{ASSIM: } B \rightarrow HB / H_1$$

1) \( \hat{\text{ñ}} \) \( \hat{\text{ê}} \)
visage peau
'la peau du visage'

2) \( j \hat{\text{o}} \hat{\text{w}} \)
fémin DEFINI
'la femme'

\( H \quad B \)
\( H \quad B \)
ASSIM \( [H \quad HB] \)
ASSIM \( [H \quad HB] \)

Cette règle est également déclenchée par (H). Sous cette forme, elle ne requiert aucune information segmentale sinon celle qui prévoit qu'elle ne joue pas par dessus une frontière de phrase ou une pause.

Le même assimilation est également déclenchée par la finale haute du modulé, mais seulement si le mot suivant, porteur d'un ton bas, est à initiale vocalique. Une éventuelle consoine initiale fait écran et empêche l'assimilation. Il apparaît ainsi que dans l'une de ces applications, la règle d'ASSIMILATION requiert que soit précisée la nature segmentale de l'initiale du mot:

$$\text{ASSIMILATION: } B \rightarrow HB / \begin{cases} H_1 \\ (H) \\ BH \end{cases} \text{ à voyelle initiale}$$

cf. ex. (1) (2)
3) Le ton haut flottant (H) est lexical
4) Le ton (H) est grammatical:
   il indique que le verbe est à l'ACCOMPLI

   gbàd' džàm
   pagne derrière

   1-ôtʃ' prèdʒ
   il-prendre+ACC civette

   'Derrière le pagne'
   'Il a pris une civette'

   B (H) B
   ASSIM B (H) HB
   EFFAC [B HB]

5) tʃ'an džàm
   chèvre derrière

   'Derrière la chèvre'

6) tʃ'an à
   chèvre DEFINI

   [BH B]
   (ASSIM ne s'applique pas)

La finale haute de BH est donc moins efficace que H ou (H); BH a des propriétés distinctes de la séquence B - H (et par ailleurs comparables à celles de HB puisque les deux modulés abaissent par downstep tout H suivant).

7) tʃ'an dʒn
   chèvre visage

   'Devant la chèvre'

8) ěl dʒn
   maison visage

   BH H
   QUANT [BH 'H]
   PONCT [H 'H]

9) tʃ'an jén
   chèvre cinq

   'Cinq chèvres'

10) ěl jén
    Cinq maisons

   BH H
   QUANT [BH 'H]
   PONCT [H 'H]
Lorsqu'il suit un ton haut, un ton flottant (B) est lui aussi assimilé en (HB). Ce modulé flottant est alors automatiquement absorbé par le mot suivant s'il est à initiale vocale et porteur d'un ton bas, jamais s'il est à initiale consonantique. On met donc en évidence une règle d'absorption sensible à l'information segmentale des unités porteuses de ton :

**ABSORPTION : (HB) B → HB**

à voyelle initiale

11) le ton flottant (B) est lexical
12) le ton flottant (B) est lexical

<table>
<thead>
<tr>
<th>/ɪw`/</th>
<th>/ɛl/</th>
<th>/ɪw`</th>
<th>ðs</th>
</tr>
</thead>
<tbody>
<tr>
<td>aulacode</td>
<td>peau</td>
<td>aulacode</td>
<td>argent</td>
</tr>
</tbody>
</table>

'Une peau d'aulacode '  
H (B) B  
ASSIM H (HB) B  
EFFAC[H B]  

On observe également la transformation de B en H dans les séquences H B (H) lorsque B est supporté par un mot à initiale vocale appartenant au même constituant syntaxique que le H précédent (information syntaxique indispensable). Que l'on interprète ceci grâce au jeu d'une règle d'ASSIMILATION TOTALE de B en H lorsque ces conditions sont réunies, ou grâce à une nouvelle règle d'ABSORPTION: HB à voyelle initiale + (H) → H opérant après celle d'ASSIMILATION PARTIELLE, toujours est-il que la langue requiert une nouvelle règle où doivent être spécifiées des informations segmentales et syntaxiques.

13) Le ton flottant (H) est lexical
14) Le ton (H) est lexical

<table>
<thead>
<tr>
<th>/mɛː/</th>
<th>/lɛs`/</th>
<th>/mɛː</th>
<th>ëj`/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mel</td>
<td>mère</td>
<td>Mel</td>
<td>épouse</td>
</tr>
</tbody>
</table>

'La mère de Mel '  
H B (H)  
ASSIM H HB(H)  
EFFAC[H HB]  

Le flottant (H) de (13) n'est pas seulement effacé mais éliminé comme le prouvent (15) et (16) pour les flottants (H) lexicaux et (17) et (18) pour les (H) grammaticaux.
Dernière observation : un ton flottant \((H)\) est carrément éliminé dès lors que le ton précédent est devenu \(HB\) par assimilation et que ne sont pas réunies les conditions décrites au paragraphe précédent :

\[
\text{ELIMINATION DE} \ (H) : \ HB \ (H) \rightarrow HB
\]

15) \(\text{mél} \ lîs' \ dżam\)  \(\text{Mel} \ \text{mère derrière} \ \text{Mel} \ \text{mère DEFINI}
\]

'Derrière la mère de Mel '  'La mère de Mel '

\[
\begin{array}{cccc}
H & B & (H) & B \\
\text{ASSIM} H & \text{HB} & (H) & B \\
\text{ELIM} H & \text{HB} & B & \text{ELIM} H & \text{HB} & B \\
\text{PONCT}[H & H & B] & \text{PONCT}[H & H & B]
\end{array}
\]

17) \(\text{mél} \ otʃ' \ predʒ\)  \(\text{Mel} \ \text{prendre=ACC} \ \text{civette}\)

Mel prendre=ACC, civette

18) \(\text{mél} \ otʃ' \ òs\)  \(\text{Mel} \ \text{prendre=ACC, argent}\)

'Mel a pris une civette '  'Mel a pris de l'argent '

\[
\begin{array}{cccc}
H & B & (H) & B \\
\text{ASSIM} H & \text{HB} & (H) & B \\
\text{ELIM} H & \text{HB} & B & \text{ELIM} H & \text{HB} & B \\
\text{PONCT}[H & H & B] & \text{PONCT}[H & H & B]
\end{array}
\]

Alors que la règle d'ASSIMILATION PARTIELLE exposée en \((1)\) exhibe un même comportement pour \(H\) et pour \((H)\), celle-ci les sépare très nettement puisque le non flottant \(H\) n'est jamais susceptible d'être éliminé alors que le flottant \((H)\) l'est.

**Conclusions**

a) Dans le système des règles tonales de l'adioukrou, seules les règles de quantification, rendant compte du downdrift, et de ponctualisation de \(HB\) se dispensent de toute information segmentale.

b) L'information segmentale requise par les autres se réduit à la spécification, vocalique ou non, de l'initiale de l'unité porteuse de ton. Cela semble cependant suffisant pour interdire de concevoir que toutes les transformations sont explicables à un niveau purement suprasegmental à partir duquel il suffirait de faire jouer les MAPPING RULES. Il semble plutôt qu'il y ait interaction constante, même si elle est sommaire, entre le niveau suprasegmental et le niveau segmental.

c) Dans le cadre d'une théorie suprasegmentale, comment peut-on spécifier que certains tons sont flottants et d'autres pas?
The purpose of this paper is to compare Proto-Benue-Congo and Proto-Bantu noun classes and genders and then to suggest some explanations for the discrepancies between these two systems.

I. Comparison between Proto-Benue-Congo and Proto-Bantu

When comparing the Proto-Bantu (PB) noun class prefixes with Proto-Benue-Congo (PBC) counterparts, the following differences are observed (see Table 1):

a) A nasal is present in PB (mV- for classes 1, 3, 4 and 6 and n- for classes 9 and 10) where we only have a vowel prefix in PBC.

b) PBC *mà- does not seem to have a correspondence in PB.

c) All noun prefixes in PB have a low tone but some of the proposed reconstructed tones in PBC are high.

d) There are a number of differences in the vowel qualities of PB and PBC noun prefixes (i.e. classes 5, 8, 19).

e) PB class 13 *tù- does not have a correspondence in PBC.

f) PBC *ti- does not have a correspondence in PB.

Table 2 shows the correspondences between the gender system of PB and PBC with the following discrepancies:

g) PBC ku-/, bù-/-f and û-/-ti- do not seem to have their counterparts in PB.

h) PB genders 11/10, 12/13, and 19/13 do not have correspondences in PBC.

The locative classes 16, 17, 18 and the questionable class 24 have not been included here.

Although the PBC "reconstructions" presented here have not been obtained through the rigorous application of the comparative method, they are associated with the PB forms on the basis of phonetic similarities, singular/plural pairings and class content.

When noun prefixes in Table 1 or genders in Table 2 are between parentheses, this indicates that their existence is not absolutely clear at the PB or PBC stage.

We will ignore the case of class 5 *j- since there is evidence for reconstructing a CV- sequence for this class (Guthrie, 1967-1971; Meinhof, 1932).

In Table 1, the absence of tone marks on PBC noun prefixes indicates that these tones were not reconstructed by deWolf.

Genders for which deWolf reconstructs less than five items were excluded from this table. Additionally, single class genders have been excluded.
Table 1. Noun Prefixes in Proto-Bantu and Proto-Benue-Congo

<table>
<thead>
<tr>
<th>Classes</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB</td>
<td>mû-</td>
<td>bû-</td>
<td>mû-</td>
<td>mû-</td>
<td>l-</td>
<td>mû-</td>
<td>kû-</td>
<td>bû-</td>
<td>ñ-</td>
<td>ñ-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td></td>
</tr>
<tr>
<td>PBC</td>
<td>ñ-</td>
<td>bû-</td>
<td>ñ-</td>
<td>ì-</td>
<td>l-</td>
<td>ñ-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Genders in Proto-Bantu and Proto-Benue-Congo

<table>
<thead>
<tr>
<th>PB</th>
<th>1/2</th>
<th>3/4</th>
<th>5/6</th>
<th>7/8</th>
<th>9/10</th>
<th>11/10</th>
<th>12/13</th>
<th>14/6</th>
<th>15/6</th>
<th>(19/13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Meeussen, 1967)</td>
<td>1/2</td>
<td>3/4</td>
<td>5/6</td>
<td>(7/8)</td>
<td>9/10</td>
<td>(12/13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PBC</th>
<th>1/2</th>
<th>3/4</th>
<th>5/6</th>
<th>(7/8)</th>
<th>9/10</th>
<th>(12/13)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(de Wolf, 1971)</td>
<td>ñ-</td>
<td>bû-</td>
<td>ñ-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
<td>ì-</td>
</tr>
</tbody>
</table>

II. Suggestions for explaining the differences between PBC and PB

The first three differences mentioned above, that is, innovation of nasal classes, merger of classes 6 (plural of class 5) and 6a (single class gender containing mainly mass nouns and liquids), and loss of tonal contract on nominal prefixes are well-known characteristics of Bantu languages.

The development of nasals is still considered a puzzle by Bantuists. A historical scenario for a similar development was recently proposed (Hombert, 1980) for the Beboid languages, located in the North-West Province of Cameroon. From these languages the following stages are suggested:

1) stem-final consonants were lost except when they were nasals;
2) final nasals could be used to distinguish singular vs. plural;
3) for classes with vowel or glide concords, the final consonant of the stem could be copied in front of the concord in order to get the more classic C(G)V(C) syllable structure;
4) finally, the nominal prefix was made identical to the concord (i.e. with an initial nasal).

7 For a recent review of existing theories as well as new proposals, see Hyman (1980).
Further research is needed to see if a somewhat similar scenario could account for the development of nasals in PB.

The merger between PBC classes *a- and *mə- is easy to understand if we accept the development of an initial nasal consonant in front of all vowel initial prefixes in PB, (i.e. *a- > *mə-).

Interaction between the tone of prefixes and the following stem, either its first consonant as in Ngamambo (Asongwed and Hyman, 1976) and Ngie (Hombert, 1976), or its initial tone as in Mekaf (Hombert, 1980) provide interesting clues for the changes between PBC and PB tones of nominal prefixes.

Vowel quality differences between PBC and PB for classes 5, 8, and 19 are easily accounted for since deWolf reconstructed a five vowel system, that is without the PB *i and *u. It is not unlikely that PBC will ultimately be reconstructed with a seven vowel system.

Does PB *tu- come from PBC *ti-? This is a very tempting hypothesis. If these two prefixes were to be reconstructed with super-closed vowels i and u, it would be even more likely considering the possible change going on between these two vowels at the PB stage. There is some evidence that PBC *ti- could be reconstructed with a super-closed u. Thus, this would suggest that these two classes have a different origin. Furthermore, in the Beboid languages we find reflexes of these two classes to-< *tu- and ki-< *ti- suggesting two proto classes *tu and *ti- (or tı-).

---

8 See, for instance, Guthrie's reconstructions for abdomen, back, beard, evening, oil, hair, spear, to bear, to die, and to steal. Two reconstructions are proposed for these items (i.e. i and u).

9 Mukarovsky (1977) reconstructs two classes *ti- and *tu- but claims they have merged in Proto-Western Nigritic.

10 Although this sound change may seem strange from an articulatory point of view, it should be noticed that these two CV sequences are acoustically very similar. A merger between tı- and ki- is found all over the Bantu area (except in zones A, C, D, E, and F).
Three PBC genders do not have PB counterparts. PBC ku-/f and bu-/f- have become PB 9/10 or 11/10 (e.g. roots for 'crab', 'jaw', 'wind', and 'firewood') but PBC ú-/ti- are found in PB 3/4 (e.g. roots for 'branch', 'thorn', and 'tree'). This split between 9/10 and 11/10 on the one hand vs. 3/4 on the other is probably based on the tone of the singular prefix (i.e. ú/ti- > ú-/f-).

Items reconstructed for PB 11/10 cover a variety of PBC genders: li-/á- 'tongue', ki-/bl- 'nail', ku-/f- 'jaw' and bu-/f- 'firewood'.

Finally, PB 12/13 and 19/13 associated with diminutives are not found in PBC.

Acknowledgements

I would like to thank Larry Hyman for his helpful comments on this paper. This research was supported by a National Science Foundation Grant No. BNS 76-81261.

REFERENCES


All of the languages of the world have a syntactic structure, produced through a wide range of formation strategies, which most would agree to refer to with the appellation "restrictive relative clause construction" (hereafter RRC). Given the syntactic diversity in RRC formation across languages and language families, Downing (1978: 378-80) proposed the following semantic (rather than syntactic) universals for the properties of RRCs: "coreference between terms inside and outside the clause (Rel NP and Ant NP); the notion that the RC is an assertion about Rel NP (that Rel NP is its theme); and the relation of modification which holds between a restrictive relative clause (RRC) and its antecedent."

This paper centers on the first of these universals, coreference, and attempts to describe the ways in which languages effect this semantic property syntactically. The ultimate goal is a syntactic typology of the ways in which the coreferential nominals here referred to as relative or "Rel NP" (à la Downing) inside the restrictive relative clause and the antecedent or "Ant NP" outside the relative clause, are linked. I assume that coreference between Ant NP and Rel NP represents one form of anaphoric pronominalization in all languages and that therefore (à la Kuroda, 1968) a rule of definitization applies to the second of two coreferential NPs as one stage in the process of anaphoric pronominalization and as a precondition to relativization.

The coreferent nominal in rel NP position, regardless of its surface form (or non-form), performs the following functions in carrying out coreference: 1) somehow indicates the case function of rel NP within the RC, 2) definitizes the rel NP position, effecting anaphoric pronominalization. At least one (often more) of the following syntactic processes are used to accomplish the above functions: 1) subordination (may involve change in verb aspect to subordinated form), 2) pronoun retention in + canonical typological position + case function-marked, 3) delimitation of the restricting sentence on one or both sides through the use of determiner positions vis-à-vis the restricting sentence of whole NP (ie. when NP determiner element is used to introduce restricting sentence); this use of determiner elements also effecting definitization of rel NP, 4) simple juxtaposition + pre-postpositional conjunction (may be in coordination with the process of subordination of 1) above).
One (or almost any combination) of the following syntactic elements in languages are involved in effecting the coreference function of the rel NP within the restricting clause: 1) determiner elements: definite article, demonstrative (usually the anaphoric set of demonstratives), 2) personal pronouns, + clitic, + case function-marked, 3) definitized forms of interrogative pronouns + case function-marked, 4) invariable "relative particles" which are often related morphologically to the determiner elements of 1) above. The category "relative pronoun" is not cited here, since all those elements which have been awarded the status of "relative pronoun" originate from the sources cited.

Definitization processes have not traditionally been given adequate attention in treatments of the typology of relative clauses. Benveniste (1966) presented convincing evidence that "relative pronouns" are in fact "determiners", and concluded:

... the use of the pronoun as the determiner of the noun or adjective ... is its proper function from its very origin, and its use as a "relative pronoun" is only an extension to the verbal clause. In the two cases the role of the pronoun is the same, that of a determiner, whether it is determining a nominal term or a complete clause. ... the relative clause, no matter how it is connected to the antecedent (by a pronoun, a particle, etc.), behaves like a determined "syntactic adjective" just as a relative pronoun plays the role of a determinative "syntactic article". (Benveniste, 1966: 191-2)

In a generative framework, analyses suggesting a relationship between determiner elements and relative pronouns in English (Smith, 1964 and Kuroda, 1968) have been for the most part unheeded by other generative syntacticians. Chumbow (1977) provided indubitable evidence of the interrelationship of these systems in Ngemba, a Grassfields Bantu language. The major tenet of the present paper is that in analyzing the relative clause construction of any language, an awareness of the definitization processes and determiner elements used in the nominal system of the language is crucial to an understanding of the relative clause. Knowing how both deictic and anaphoric definitization are effected in the simple noun phrase is always crucial to an understanding of the relative clause construction.

In this light consider the Saharan language, Kanuri, an SOV language with post-modifying noun phrase structure. In Kanuri the postposed definitizer +dé functions uniquely throughout the language as an anaphoric determiner, whose indefinite counterpart is either Ø, or for [- definite] NPs,
the postposed laá 'some, a certain'. The determiner +dé functions as the root of the set of deictic demonstratives of the language. In the following examples the antecedent NP and the rel NP are clearly coreferent, and agree in both being \([+\text{definite}]\). This agreement is shown by the unique occurrence of the determiner element +dé in clause-final position (NP-final position). The determiner position between antecedent NP and modifying clause may not be filled in a RRC when this agreement in definiteness and specificity exists (though it may be filled by +dé in a nonrestrictive appositive clause).

1) Lê + zó + nà, 2) Kâm lèznà+dé sàwà+nyí.
   go 3S PERFECT person DET friend my
   'S/He has gone.'                       'The person that went/has gone is my friend.'

3) Kâm shí lèznà+dé sáwànyí.
   s/he
   'The person that went/has gone is my friend.'

The retained pronoun in 3 is rarely retained in examples of this kind where the rel NP is the subject of the restricting clause. The antecedent NP of such constructions may be optional, with or without a retained pronoun. Note the identical surface form of this complex NP with the nominalized clause as noun phrase complement of a verb.

4) (Shí) lèznà+dé sáwànyí. 5) Lêznà+dé nòngànlà.
   'The one that went/has gone is my friend.'

If in Kanuri the antecedent NP of a RRC does not agree in definiteness with the always definite anaphoric rel NP, then this must be shown through the use of the post-antecedent NP determiner position, filling it with the \([-\text{definite}, [+\text{specific}]\) laá, as shown here:
6) Fâtò kâm láá sù + nzé Jîbrîn sâi+dé + bê+n zâpcîn.

'He would stay at the home of a certain/some person whose name they say is Jibrîn.'

7) Kâm láá sù+nzé njèsèngánà+dó kâdîlo.

'Some people whose name I have forgotten came.'

8) Kâm láá kàsûwû +îàn rûkànà+dó kâdîlo.

'Some person that I saw in the market came.'

In the Kanuri RRC, the pattern of pronoun retention within the restrictive clause matches almost exactly that which is reflected in the NP Accessibility Hierarchy proposed by Keenan and Comrie (1977). It might be said that the order of accession reflected in their hierarchy reflects the degree of markedness of the noun relativized on, with subject NP being the most unmarked, and oblique, genitives, and objects of comparisons being the most marked. Frequency of pronoun retention in Kanuri is thus reflected in this same order, with subject NP being the only NP which is not postpositionally marked for function when retained within the restricting clause. A rel NP which is subject of the clause is never or rarely retained other than in its clitic form within the verb. An object NP is infrequently retained, but obligatorily retained when the direct object is fronted in the RRC and followed by an agent-marked subject NP to produce the Kanuri equivalent of a passive plus agent construction, as in:

Kâm shià Álîyè sùrû̀nà+dó sàwànyî.

'The man who was seen by Ali is my friend.'

For a relativized indirect object NP, there is normally obligatory retention with function-marking by the indirect/dative postposition +rô. For genitive and instrumentals there is obligatory pronoun retention, the former being indicated by a suffixed form of the possessive pronoun. Pronoun retention almost never occurs in oblique RRCs expressing time and place and there the oblique function is expressed with an oblique postposition on the entire NP. If the rel NP is the object of a comparison, there is obligatory case function-marked retention.
Although a lot is left unsaid, the determiner +da in Kanuri functions to definitize the rel NP within the restricting clause, and may be said to also definitize the ant NP when the coreferent pair agree in definiteness. With +da functioning in this way from RRC construction-final position, any required case-coding in the form of pronoun retention is carried out by the case function-marked retained pronoun in its canonical typological position. In any language I would suggest that as long as definitization is taken care of from the determiner position by a non-case-coding morpheme, then pronoun retention will occur in the canonical position, and pronoun attraction will never be an issue. It is a tenet of this paper that pronoun attraction does not occur in any language and that the position of the "relative pronoun" in a language like English exists as a result of the case-coding of the determiner position, rather than through pronoun attraction. That is, the determiner position already exists as a result of the definitization process involved in anaphoric pronominalization leading to relative clause formation.

Evidence that determiner systems and relative clause forming strategies are closely related and that they may almost totally coincide in anaphoric pronominalization is provided by a surprising number of languages in which a personal pronoun affix performs the anaphoric function of a definite article. In Swahili where this is true, this definitizing clitic may function as an anaphoric pronoun object, or as a definitizer when the object to which it refers is also independently expressed. In related RRCs, this retained pronoun/definitizer is normally required, as would be predicted, and is somewhat redundantly matched by another occurrence of the same clitic pronoun in its "relative" or "dependent" form (the latter being also a component of one of the demonstrative pronoun series). Standard Macedonian, described by Browne (1970), presents even more clear cut evidence. Similarly in Amharic, a suffixed 3S pronoun functions as the definite article and also plays a crucial role in the definitization entailed by relative clause construction. In languages of this kind where the retention of a pronoun within the restricting clause is an obligatory part of the RRC forming strategy, one would have to evaluate pronoun retention by different criteria than those relevant to a language like Kanuri, where the Keenan and Comrie NP Accessibility Hierarchy has considerable relevance and applicability.

Acknowledgement

I would like to extend my thanks to Boston University's Department of Modern Foreign Languages and Literatures for its support in making it possible for me to attend the Stanford Conference.
I. The Luganda Surface System: As evident from Cole, Meeussen, Stevick, Heny, and McCawley and others, there is at most one drop from H to L per word. In fact, one needs at least the following information to predict melody:

1. Place where rise occurs, if any
2. Place where fall occurs, if any
3. Nature of the L tones following the H tones, if any (i.e. whether they come from underlying H/* or L/; see below).

examples:

a) a-tu-\*ab-a
   \ ~ \ ~ \ ~
   L   H   L
   'He sees us.'

b) a-tu-bal-a
   \ ~ \ ~ \ ~
   L   H   L   L
   'He counts us.'
They see us.  
'\text{They see us.}'  
(\text{actually } \text{ba-tu-lab-}^*; \text{ see below})

\begin{align*}
\text{e) } & \quad \text{a-ba-tu-lab-}^* \\
& \quad \begin{array}{c}
\text{L} \\
\text{H} \\
\text{L}
\end{array} \\
\text{f) } & \quad \text{a-ba-tu-bal-}^* \\
& \quad \begin{array}{c}
\text{L} \\
\text{H} \\
\text{L}
\end{array}
\end{align*}

'They who see us.'  
'They who see us.'

\begin{align*}
\text{g) } & \quad \text{a-ba-lab-agan-}^* \\
& \quad \begin{array}{c}
\text{L} \\
\text{H} \\
\text{L}
\end{array} \\
\text{h) } & \quad \text{a-ba-bal-agan-}^* \\
& \quad \begin{array}{c}
\text{L} \\
\text{H} \\
\text{L}
\end{array}
\end{align*}

'They who see each other.'  
'They who see each other.'

Postponing, for the moment, the nature of * assignment, the basic question is how to map the LHL, especially how to line up the fall (HL) properly. Three issues are as follows:

1. Which L of the LHL is the associated one in (b)?
2. Why doesn't the initial L associate in (c) and (d)?
3. Why isn't H assigned to the final * in (e) and the final two *'s in (h)?

The answers to these questions are as follows:

1. It is the \textbf{initial} L of the LHL which associates in (b)—in fact, I shall argue that the HL is not assigned to any word unless there is at least one * in it;

2. The initial L does not associate in (c) and (d) because the first vowel is asterisked. It is possible to allow the L to associate on the first vowel and then apply a late, very general rule in Luganda, which changes any rising (LH) tone to a H tone (whether on one vowel or on two contiguous vowels).

3. The reason why the last * in (e) and the last two *'s in (h) do not receive H tone is that they are directly preceded by a *. In other words, it is only the first of the last accent sequence in a word that receives H tone (contrast this with -l*ab- in (g), which does receive H tone, because although last in a sequence of *'s, it is not the last accent sequence in the word; instead, -l* is.)
I shall take the position that there is a constant "accentual melody" HL in Luganda and that the initial L is a boundary tone. There are two major environments where this boundary tone is found: (a) before the first word after a pause; and (b) before the verbal unit (VU). Thus, consider the following:

(i) // a-bal-a e-bi-\*\*k\*po
   L H L

(j) // ba-bal-a e-bi-\*\*k\*po
   L H L H L

'He counts cups.' 'They count cups.'

The noun object 'cups' receives only a HL melody in both (i) and (j), since it does not appear after pause. In addition, it is noted that the form a-bal-a 'he counts' doesn't receive a HL accentual melody, because it does not have a *. Somehow the mapping process must place the L boundary tone on only the first V of (i) and the H of the HL of 'cups' must be assigned to the remaining two unaccented vowels of the verb. Before seeing the initial tone association rule, consider the following:

k) // a-ba-ta-lj-lab-ij-il-a a-ba-pakas-i
   L H L H L

'They who will not look after porters.'

In this case, the first H goes only on the first \* of the verb; the L goes on the remaining V's, and the H of the object goes on the following unaccented vowels.

II. Tone Mapping

A. Initial tone association rule (ITAR) [language-specific]

\[ \# X \hat{V} (C_o \hat{V})_1^\hat{} Q \#\# (\text{where } Q \text{ does not contain } \hat{V}) \]

The Luganda ITAR states that the L of the accentual melody HL associates with all but the first asterisked vowel of the last accentual sequence of a word. (The additional specification \# X \hat{V} is added to ensure that the ITAR will not look beyond \# \# is establishing where the last accent sequence begins.)

This ITAR violates the notion that the initial association should be made to one tone-bearing unit only (Haraguchi). However, all other attempts have led to great complications. The only complication required here is an accent rule which doubles the last accent of a word if it is not already preceded by an accent:

\[ \hat{V} C_o \hat{V} C_o \hat{V} Q \#\# (\text{where } Q \text{ does not contain } \hat{V}) \]
This kind of rule is implicit in Stevick's assignment of "tonic" to the first two vowels of verb stems in certain tenses, although he did not try to predict one on the basis of the other (and, I believe, assigns this pattern too generally).

The above accent rule can be slightly amended to take care of another fact: this is that words which have an accent on their final vowel undergo vowel-lengthening (doubling). Thus, o-mu-"t→ o-mu-"t** 'tree'. This length will generally be present even if the characteristic fall is suppressed (see below for explanation):

1) // o-mu-t** m) // o-mu-t** gw-aa kigundu
   L   HL          L         H  L 'tree'                       'the tree of Kigundu'

B. Additional tone association rules [universal]

1. Associate all free H tones, holding back the boundary tone until later.

2. Extend association lines to unassociated vowels. (At this stage the only vowels remaining without a tone will be those following the HL sequence.)

C. Minor tonal adjustment

At this stage all is well except for cases where one has (a) the L boundary tone; and (b) more than one unaccented V preceding a V. This rule changes certain initial H's to L:

// o-mu-pákās-i → o-mu-pákās-i →
     H L     L     H  L

III. Further Confirmation of the Analysis

A. Boundary reduction (## → # / _____ C)

There is a general process whereby a full word boundary (##) is reduced to an internal word boundary (#) as follows:

In verbs: whenever the element to the right of the verbal unit (VU) begins with a consonant -- and the VU is [−NEG].

In nouns: whenever the element to the right of the noun begins with a consonant -- and is a noun complement, e.g. possessive.
There are no exceptions to the statement concerning verbs, aside from a few elements which condition the reduction even though they do not begin with a consonant, e.g. ani 'who(m)'. The crucial element may be presence vs. absence of the prefix or initial vowel. The reason why [+NEG] VU's do not undergo the rule is that they do not take an initial vowel on complements. I have not studied noun complements exhaustively but will give a genitive example.

The result of this boundary reduction is that only one accentual melody is assigned even if both the noun/verb and its complement have one or more *'s:

o) a-lab-il-l-a ** o-mu-pakes-i **
   L   H   L

  'he is looking after a porter.'

p) a-lab-il-l-a # kigundu **
   L   H   L

  'he is looking after Kigundu.'

(Besides proper names, the same phenomenon is observed with following absolute pronouns, nouns in focus (which lack their initial vowel), prepositional phrases beginning with na 'with', WH-words such as ddi 'when' and wa 'where' -- N.B. geminates as in ffe 'us' and NC sequences as in mbwa 'dog' act as consonants in this respect.) Now compare the following noun example:

q) o-mu-kono # gw-aa # wal*
   L   H   L

  [ò-mù-kônò] 'arm'

  'the arm of Walusimbi.'

Thus, Luganda loses some pitch drops as a result of the HL assignment process, instead of by accent reduction.
As noted by Hagege (1974) and Clements (1975), a number of West African languages have a special set of pronouns, logophoric pronouns, used in reported speech to indicate coreference with the subject of the main clause verb, as in this Igbo example, where \( y' \) must be interpreted as coreferential with \( \phi \):

1) \( \phi \) sërl \( na \) \( y' \) byârà.  
   he said that he/LOG came  
   'He said that he/LOG came.'

In Gokana, an Ogoni language (Cross-River Benue-Congo) of Nigeria, logophoricity is also indicated, but by a suffix on the subordinate clause verb; this suffix has the predictable allomorphs: \(-e, -e, -ee, -ee, -ree, -ree:\)

2) ãè kô ãè dô /dô-ë.  
   he-PAST say he-PAST fall/fall-LOG  
   'He said that he/LOG fell.'

In Gokana, the nonlogophoric/logophoric opposition is obligatory in the third person; in the first and second persons, it is optional, although preferred in the second person (where it helps to distinguish between coreferential second person pronouns in indirect speech and noncoreferential second person pronouns in direct speech), and dispreferred in the first person. In the second person plural, the logophoric suffix is incompatible with the subject suffix \(-i\), the only subject suffix of Gokana, so logophoricity is never marked here:

3) òò kô òò dô/dô-ë  
   'You said that you fell.'

4) mèn kô mèn dô/dô-ë  
   'I said that I fell.'

In this very brief report on our ongoing research into logophoricity Gokana, we identify four major topics for discussion:
(i) what noun phrase(s) in the main clause can trigger the logophoric suffix; (ii) what noun phrase(s) in the subordinate clause can be targets for logophoricity (i.e. have logophoricity marked on their verb); (iii) what constructions require or permit the expression of logophoricity across their internal clause boundary; (iv) what precisely is meant by 'coreferentiality' in this context.

In clear cases like (2), the trigger for the logophoric suffix is both syntactic subject of its clause and also, semantically, the source of the speech or feeling reported in the subordinate clause. Where a noun phrase is neither subject nor source, in general it cannot trigger logophoricity: 2

(5) ṭm k3 nè ḋ k5 ɖè dɔ / *dɔ5-è.
  I-PAST say give him that he-PAST fall/fall-LOG

'I told him1 that he1/2 fell.'

Where subject and source are distinct noun phrases, as with the verb 'hear', either subject or source will trigger logophoricity:

(6) ɖè dɔ m gә k5 ɖè dɔ / dɔ5-è.
  he-PAST hear me mouth that he-PAST fall/fall-LOG

'He1 heard from me that he2/he1 fell.'

(7) ṭm dɔ ɛ gә k5 ɖè dɔ / dɔ5-è.
  I-PAST hear him mouth that he-PAST fall/fall-LOG

'I heard from him1 that he2/he1 fell.'

This suggests that in the overall characterization of logophoricity in Gokana, both syntactic and semantic factors must be taken into account in order to determine potential triggers (and also, as will be shown below, in determining some of the other parameters).

The target of logophoricity may be any noun phrase within the subordinate clause. Examples were given above where the target is subject: example (8) has an object target, example (9) a possessor target (i.e. the target can be a constituent of an argument of the verb taking the logophoric suffix):

(8) ɖè k3 ḋɔ dìn ɛɛ / dTv-ɛɛ ə.
  he-PAST say you-PAST hit him / hit-LOG him

'He1 said that you hit him1/2/him1.'

(9) ɖè k3 ḋɔ zìn / zTv-ɛɛ ə q TIMESTAMP ḋә.
  he-PAST say you-PAST steal/steal-LOG his yams

'He1 said that you stole his1/2 his1 yams.'
Given a number of potential targets in the subordinate clause, and
the fact that logophoricity is marked on the verb, sentences like
the following are ambiguous:

\[(10) \quad \text{"He}_1 \text{ said that he}_1 \text{ hit him}_2 \text{ or that he}_2 \text{ hit him}_1." \]

In characterizing the range of constructions where logophoricity
is relevant, there is a core set of clear cases where someone’s
speech or feelings are reported. As in characterizing the trigger,
there are two possible approaches: the one formal, the other
semantic; and, as with the trigger, it seems that overall both
sets of factors are required. Presence of the verb \(k\) 'say',
also used as a complementizer, is sufficient to guarantee
logophoricity, even if the content of the subordinate clause is
not (necessarily) attributed to the trigger:

\[(11) \quad \text{"Lebare PAST hit me because that I-PAST eat-LOG his yams} \]

\[\text{"Lebare}_1 \text{ hit me because I ate his}_1 \text{ yams."} \]

Subordination in itself is clearly not sufficient to promote
logophoricity, as can be seen from the absence of logophoricity
in relative clauses like (12):

\[(12) \quad \text{"Lebare PAST hit the child who-PAST eat/eat-LOG his yams} \]

\[\text{"Labare}_1 \text{ hit the child who ate his}_1 \text{/}_2 \text{ yams."} \]

However, logophoricity is also required, if other conditions are
met, in indirect questions, which do not contain \(k\), and
have the same formal structure as a relative clause (as in
many West African languages):

\[(13) \quad \text{"Lebare PAST ask person who-PAST eat-LOG his yams} \]

\[\text{"Lebare}_1 \text{ asked who ate his}_1 \text{ yams."} \]

Thus, neither formal nor semantic criteria are on their own
sufficient to define the full range of constructions allowing
logophoricity; either presence of \(k\), or reported speech/feelings,
is sufficient.
In the examples presented so far, it has always been clear whether two noun phrases are or are not coreferential, but problems can in principle arise when two noun phrases are neither fully coreferential nor disjoint in reference, but where rather the referent of one is included properly within that of the other (e.g. I and we). In Gokana, third person examples are clearest, given that marking of logophoricity is obligatory here if other conditions are met. If the referent of the trigger is properly included within that of the target, then the logophoric suffix is obligatory:

(14) an he-PAST kọ bẹẹ dọ / dọ-ẹ.
he-PAST say they-PAST fall/fall-LOG

'He said that they (excl. him) / they (incl. him) fell.'

Where, however, the referent of the target is properly included within that of the trigger, the logophoric suffix is excluded:

(15) bẹẹ kọ an dọ/*dọ-ẹ.
they-PAST say he-PAST fall/fall-LOG

'They excl/incl. him) said that he fell.'

The important thing in Gokana, then is that the referent of the trigger should be carried forward into the target: this allows addition of further referents, but not reduction or substitution of referents.

While this paper provides an outline of the use of the logophoric suffix in Gokana, much work remains to be done on the precise characterization of some of the parameters involved (especially the range of constructions affected), on the interaction of these parameters, and, from a broader perspective, on the comparison of logophoricity in Gokana in logophoric pronouns in other languages of West Africa and with systems of same/switch-reference in other parts of the world.

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1 We are grateful to Godwyn Zoranen for his generous help in allowing us to gain insight into his language. We also would like to thank Kay Williamson and Isaac George Madugu for sending us Gokana materials from the Universities of Port Harcourt and Ibadan, respectively. The first author was supported in part by a fellowship from the John Simon Guggenheim Foundation during early phases of this study. Finally, we would like to thank David S. Wiesen, Dean of Humanities of the University of Southern California, for providing informant funds for this project.

2 For reasons as yet unclear to us, however, the object of 'say' can trigger logophoricity if the target is a possessive noun phrase, as in mọọn kọ nọ ẹ kọ ọọ de-ẹ (LOG) ẹ ọọ 'I said to him that you ate his yams'.

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VARIETIES OF PASSIVE IN HAUSA

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1. The Claims

   a) Contra Keenan (1980a:9), Hausa appears to have a legitimate passive, since it evinces the criterial properties detailed in Keenan (1978, 1980a, 1980b) and Keenan and Faltz (1979). It presents, in fact, two distinct but related passive types -- here designated the 'Perfective Passive' (PP) and 'Imperfective Passive' (IP) respectively -- and corresponding to Parsons' (1960/61, 1962) so-called "Grade 7" of the Hausa verb.

   b) The passive rule for Hausa operates on the lexical category (+Verb), i.e. it is not a sentence-level phenomenon, and is constrained to presenting natural passives on a limited class of active verbs. The requisite rule is thus best handled in the lexicon by means of a word-formation rule relating verb pairs.

   c) The semantic common denominator binding this restricted class -- and which must be represented in the rule if we are to generate all and only the acceptable passive constructions -- appear to be a function of the degree of transitivity expressed by the related active verb.

   d) From a functional point of view, and following Givón (1979: 186ff.) passive in Hausa is a pragmatically "marked" process whose role is to place some active non-agent NP -- most typically a direct object -- in the foregrounded position of clausal topic.

2. The Data

Hausa PP and IP constructions are of two types: "Basic Passives", where no agent is present and where the related non-passive verb expresses an activity, taking an agentive subject and patient (direct) object; "Non-Basic Passives" -- ditto, except the active object NP ≠ (direct object) patient.
2.1 Basic (Direct Object-Based) Passives

Sentences (1) instantiate the systematic canonical relationship between active verbs "high" on the cline of transitivity, [cf. Hopper and Thompson (1980)] and their passive grade (gr.) 7 variants:

(1) a. PA: \( \text{Audù yaa } gyaarà \) (1) mootàa \(^2\)
    'Audu repaired the car.'

a'. PP: \( \text{mootàa taa } gyaaru \) (7)
    'The car was totally/well and truly etc. repaired.'

b. IA: \( \text{Audù yanàa } gyaarà \) (1) mootàa
    'Audu is repairing the car.'

b'. IP: \( \text{mootàa tanàa } gyaaruwaa \) (7)
    'The car can be repaired/is repairable.'

2.2 Non-Basic (Locative) Passives

(2) \( \text{mutàanee sun } shìgà \) (3) (cikin) čaakli
    'The people entered (into) the room.'

a'. PP: \( \text{čaakli yaa } shìgu \) (7)
    'The room was completely entered' i.e. chock-full

b. IA: \( \text{mutàanee sunàa } shìgaa \) (3) (cikin) čaakli
    'The people are entering (into) the room.'

b'. IP: \( \text{čaakli yanàa } shìguwaa \) (7)
    'The room can be entered.' etc.


a) The two coexisting passive types both guarantee a typical passive interpretation, with the semantic interpretation of the passive (a', b') configurations in the general case expressible as a direct function of the active constructions to which they are related. Note too the integral readings over and above the purely passive entailment, to wit: the PP subject NP has totally, directly, conclusively etc. sustained the realized verbal action, denoting a change of state; the IP subject has the potentiality for undergoing the same action and so attaining the same altered state. The particular passive variant is thus a compositional function of gr. 7 morphology (LO HI -- disyllabic) tonal template, final -u) and aspect.

\(^1\) Denote "Perfective Active" and Imperfective Active" respectively.

\(^2\) Related active:passive verb-pairs are underlined and the parenthesized postverbal numbers refer to the grade of the verb in question, in accordance with Parsons' (1960/61, 1962) classification which divides the verbal system into a hierarchy of seven such grades. Gr.7 passive forms one of the "Basic" (1-3) or "secondary" (4-5) grades.
b) All gr. 7 passive verbs are passive of something -- overwhelmingly of active lexical (maximally) transitive verbs.

c) In keeping with the operation in many of the world's languages, passive constructions in Hausa are agentless -- cf. Classical Arabic, Tamazight (Berber), and Tera (Chadic) -- and the distinctive signalling of the passive process is located solely on the verb itself.

d) Gr. 7 passive subjects display all the coding properties of active subject NPs -- leftmost position and control of cross-referential subject pronoun agreement.

e) Because the passive rule belongs to the functional domain of "detransitivization", Hausa passive verbs may not appear in transitive clauses.

f) In accordance with universal constraints, the passive formation is restricted to occurrence in fewer syntactic environments than are the corresponding active configurations -- *passive imperatives, *passive reflexives.

g) Passive gr. 7 subjects exhibit the high degree of discourse presuppositionality which Givón (1979:57 ff.) claims is a global trait of the operation.

4. The Formal Derivation of Hausa Passives: A Lexical Redundancy Rule

Active verbs "low" in transitivity features tend not to passivize naturally, and the necessary explanatory principle which underlines conditions on passivization involves the notion of the degree to which the passive subject is affected by the verbal action, i.e. it is a function of the overall degree of transitivity of a given clause. Let us represent this notion with the distinctive semantic feature [+direct affect]. This refinement allows us to correctly generate the primed sentences in (1) and (2) and rightly block such unacceptable strings as *lààabaar'ì yaa tûnù (7) (è tunàa (dà) 'to remember') 'the news was good and remembered', and *aakli yaa flòtu (7) (è fìtà 'to go out') 'the room was completely gone out of'; cf. 2a' -- it being easier, we would contend, to imagine a resultant situation in which the basic character/state of a room is more visibly/markedly affected if it is entered by a crowd of people than if it is 'gone out of' by the same group.
3) **Lexical Rule of Hausa Passives**

\[
\begin{align*}
\text{a.} & \quad /X/ \quad +\text{active} \\
& \quad +V \\
& \quad +\text{NP}_1 \quad \text{NP}_2 \\
& \quad Z \quad [+\text{dir. aff.}] \\
\text{b.} & \quad /X/ \quad +\text{active} \\
& \quad +V \\
& \quad +\text{NP}_2 \\
& \quad Z' \quad [+\text{dir. aff., +totality}] \\
\text{b'.} & \quad /X/ \quad +\text{active} \\
& \quad +V \\
& \quad +\text{NP}_2 \\
& \quad Z'' \quad [+\text{dir. aff., +potentiality}]
\end{align*}
\]

where

\[
\begin{align*}
\text{a.} \quad \text{NP}_1 & = [\text{NP}, S] = \text{subject/agent} \\
\text{NP}_2 & = [\text{NP}, \text{VP}] = \text{Object [+direct affect]} \\
\text{b.} \quad \text{NP}_2 & = [\text{NP}, S] = \text{subject [+direct affect]} \\
\text{b'.} \quad \text{NP}_2 & = [\text{NP}, S] = \text{subject [+direct affect]}
\end{align*}
\]

and Z, Z', Z'' represent the semantics of the three forms. Since the generalized grammatical function "Object" is not sensitive to the precise grammatical relationship that the patient argument bears to the verb, use of this term captures the direct object- and locative-based passives.

5. **The Class of "Degenerate" Non-Passive Gr. 7 Formations**

5.1 **Gr. 7 Subject=Subject NP of Basic Verb: [+Totality, -Passive]**

\( (4) \)

\[
\begin{align*}
a. \quad \text{rìgaa taa jìka} (3) & \quad \text{b.} \quad \text{rìgaa taa jìku} (7) \\
\text{'The gown was/is wet.'} & \quad \text{'The gown was/is completely soaked.'}
\end{align*}
\]

5.2 **Base Verbs Whose Derivative Gr.7s are [-Totality, -Passive]**

Some of the more frequently occurring members include:

dàamu (7) (dà) 'to be concerned (with)', gàmu/hàdu/tàaru (7) (dà) 'to meet (with)', ràbu (7) (dà) 'to part (with)', aìku/fàaru (7) 'to happen', yìlwu (7) 'to be possible' etc.

These verbs are isomorphic with canonical passive gr. 7s, but a number of syntactico-semantic features preclude their analysis as passives:

a) Some may be extended, in a quasi-transitive fashion, with an oblique associative ìpp;

b) Most may occur in the imperative/subjunctive moods and be embedded under manipulative verbs;

c) Some operate reflexive forms;
d) Some may occur in impersonal active constructions;

e) Their deverbal nominal forms introduce an imperative reading only;

f) Three members of the subset -- aùku, fàaru, and tàaru -- operate special predatival forms;

g) As befits non-passive forms, they have a much higher frequency in both spoken and written Hausa than do the more restricted "true" passive gr. 7 verbs.

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The presence of implosive consonants in the phonological inventory of many languages of West Africa is a phenomenon well known to Africanists. Implosives have been studied in great detail from a phonetic point of view (e.g. Ladefoged, 1964). In spite of these studies, the phonological status of implosives remains relatively obscure. Welmers (1973;48) hints that they may be considered to be resonants. Hyman and Schuh (1974;109f) note that implosives function as voiceless obstruents with respect to their influence on tone rules.

In this paper I will discuss a variety of phonological processes both synchronic and diachronic, involving implosives within the Kru linguistic family. My conclusion is that, at least for this linguistic family, implosives are clearly liquids. It remains to be seen whether the above is universally true, or represents one interpretation of this class of segments (cf. recent work by M.L. Kean where certain segments are shown to be interpretable in different fashions. Thus, b and g may function as either voiced fricatives or as sonorants depending on the language).

I will consider first a series of historical changes in the Kru family. It is my view that these changes represent dissimilatory processes, changes quite typical of liquids (cf. al~ ar: fiscal, annual, astral vs. lunar, regular, stellar, solar). The four languages represented in (1) below are Vata (Zaroko), Dida (Srikpalilie), Bété (Ouragahio) and Guéré (Zagna). These data have been collected by members of the Projet sur les langues Kroues. In certain cases a Guéré form is taken from Marchese (1979). The reconstructions are my own. The vowel qualities are less than certain but do not directly concern us here. Reconstructed tones are likewise rather speculative.

(1)    Proto Vata Dida Bété Guéré
       *l̩Al̩A dAl̩A  6l̩A  1̩0̩0̩  0̩6̩  'kill'/'strike'
       *nEnE nnE  mEnE  nEmE  nmI  'animal'/'meat'
       *IIl̩u  dI̩  6l̩u  1̩0̩0̩  0̩u  'mash'
       *yA1̩A yI̩A  yl̩A  y0̩0̩  --  'want'/'ask'
       *zI1̩I  zl̩E  jI1̩I  zI1̩I  zIml̩E  'fish'
       *tE1̩E  tI̩E  tI̩E  t0̩0̩  sE  'snake'
       *sA1̩A s1̩A  s1̩A  s0̩0̩  --  'build'
       *gI1̩u  gl̩u  j̩1̩u  j̩0̩0̩  --  'salt'

([-ATR] vowels are transcribed in caps.)
In the above forms, Dida and Vata \( \lambda \) corresponds to \( \delta \) in Béte and Guégré. In a nasal context the correspondence is between \( n \) and \( m \). The directionality of the change is controversial. Here I will assume that the process involved is that of dissimilation and hence, that \( \lambda \) represents the proto-segment. The change in question is formulated in (2).

\[
\begin{align*}
\lambda & \rightarrow \delta \\
 n & \rightarrow m
\end{align*}
\]

A dental [+cor] liquid dissimilates to a non-coronal (labial) liquid following a coronal consonant and flanked by identical vowels. In Béte the initial consonant may be any coronal consonant, while in Guégré the change is limited (with a few exceptions) to liquids following a coronal sonorant. In sum, according to (2) a liquid dissimilates to a non-coronal (labial) point of articulation. It is my claim that the change in status from non-implosive to implosive is incidental.

Dida and Vata handle a sequence of liquids in a different way. In Dida the initial liquid dissimilates to \( \delta \) retaining liquid status. In Vata, the dissimilation takes the form of a change in status from a liquid to an occlusive. This is a synchronic rule of Vata. Tone behaviour enables us to distinguish \([d]\) from underlying \( \lambda \) vs. \([d]\) from \( d \). Examples of these changes may be seen in (1) above. Two more instances are given in (3) below. The changes are presented in (4).

\[
\begin{align*}
\lambda & \rightarrow \delta \\
 n & \rightarrow m
\end{align*}
\]

\[
\begin{align*}
\lambda & \rightarrow d \\
 n & \rightarrow m
\end{align*}
\]

The Vata form of the final example in (3) represents a sporadic dissimilation of the nasal to a velar articulation. Normally, the initial nasal remains coronal (cf. 'animal' in (1) above). The combination of changes (2) and (4a) accounts for the apparent metathesis in cognate sets such as 'kill', 'animal', 'cord' etc. Thus, the implosive precedes the lateral in Dida (blâ), and follows the lateral in Béte (lôôô). Both languages manifest the same dissimilation; it is only the choice of which liquid to dissimilate that distinguishes them.

Guégré shows the regular development of \( \delta \) from \( \lambda \) in initial position.

\[
\begin{align*}
\lambda & \rightarrow \delta \\
 n & \rightarrow m
\end{align*}
\]

It is commonplace to find one coronal liquid replaced by another in related dialects. Thus a change \( \lambda \rightarrow r \) occurs routinely in numerous linguistic families (e.g. Proto-Bantu \( \lambda \rightarrow \text{Kinyarwanda} \ r \)). The change \( \lambda \rightarrow \delta \) in Guégré represents the same sort of process.
Further evidence for the liquid status of implosives derives from the fact that like the laterals (and unlike occlusives) they become nasals in nasal contexts. Thus, /l or /r alternate with /n exactly as /o alternates with /m (cf. 'animal' and 'mash' in (1)).

Implosives behave like sonorants with respect to tone rules in Kru languages. Voiced obstruents behave as opaque consonants in several tone rules. Implosives like other resonants and voiceless consonants are transparent to these processes. Two examples are given in (6).

(6) a. Vata
\[ ^{\text{n}} \, lî \, 'I ate' \quad [^\text{n} \, l\text{i}] \quad {^{\text{n}} \, b\text{àdà} } \, 'I hung' \quad [^{\text{n}} \, b\text{àdà}] \]
\[ {^{\text{n}} \, ë\text{ùbêle} } \, 'I pardoned' \quad [^{\text{n}} \, ë\text{ùbê}â]\]

b. Béte
\[ ^{\text{lî} } \, 'spear' \quad s\text{ù\text{ò}lî} \, 'which spear' \quad p\text{ôpô} \, l\text{î} \, 'a throwing spear' \]
\[ ^{\text{gb}l} \, 'arrow' \quad s\text{ô} \, gb\text{l} \, 'which arrow' \quad p\text{ôpô} \, gb\text{l} \, 'a throwing arrow' \]
\[ ^{\text{b}l} \, 'fruits' \quad s\text{ô} \, b\text{l} \, 'which fruits' \quad p\text{ôpô} \, b\text{l} \, 'throwing fruits' \]

In (6a) a rule which copies a preceding tone onto a low tone applies across a liquid, is blocked by a voiced stop, and applies across an implosive. In (6b) nouns appearing in an associative construction are assigned a low tone. This low tone is raised to mid following a high tone. This raising rule applies across a liquid, is blocked by a voiced obstruent (gb), and applies across an implosive.

The status of gb is of interest in the Kru family. We have just seen that it behaves like a voiced obstruent in Béte. This is also true in Dida and Vata. In Guéré (and Wobé), however, there is evidence that the labio-velar is a liquid, i.e. a labio-velar implosive. In general voiced obstruents have been devoiced in Wobé as shown in (7).

<table>
<thead>
<tr>
<th>Guéré</th>
<th>Wobé</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>bu′</td>
<td>puck ′</td>
<td>swell</td>
</tr>
<tr>
<td>dî ′</td>
<td>ti ′</td>
<td>buffalo</td>
</tr>
<tr>
<td>jî ′</td>
<td>ci ′</td>
<td>panther</td>
</tr>
<tr>
<td>gÈ′</td>
<td>kÈÈ′</td>
<td>egg</td>
</tr>
</tbody>
</table>

but:

| gbû | gbû′ | house         |
| gbè | gbè′ | dog           |

Labio-velars are the only exceptions to the above generalization. If they are considered to be liquids, their failure to devoice in Wobé is explained.

In Guéré voiced obstruents add a phonetic low tone to the lexical tone of a given form. The phonetic nature of this rule is seen in the associative construction. In this construction the first lexical tone of the stem is changed to low. Tones added by voiced obstruents do not count.
The labio-velar adds no phonetic low tone - a second indication of its liquid status.

(8)  bî [bî] 'fence'  gbê [gbê] 'dog'
     bÁ bÁ' 'cocoon'  gbú [gbú] 'house'
     dî [dî] 'buffalo'

b.  plē- bÁ 'a cocoon to sell'  plē- dî 'a buffalo to sell'

Finally, like liquids and unlike obstruents, labio-velars are nasalized in a nasal context.

(9)  Guéré          Other
     nEÉ           lÎtî (Godiê)   'iron'
     ëmùÉ          gbó (Néyo)     'concession'
     ëmlî         gbîlî (Dalua)   'python'

We see that the labio-velar gb enjoys a dual status in Kru, functioning either as a voiced obstruent (Dida, Vata) or a labio-velar liquid (Guéré, Wobé). There is no apparent phonetic correlation with this change of status.

NOTES

* Research on Kru is supported in part by a grant from the Conseil de recherches en sciences humaines du Canada (410-80-0103) and from the F.I.R. of the Université du Québec à Montréal. Special thanks to Hilda Koopman, Carole Paradis and Dominique Bosse for their insightful suggestions. They do not necessarily share the point of view expressed in this note.

REFERENCES


The asymmetry of the interaction between tone and segment has been noted in various studies of (African) tonal systems. While cases where a tone rule depends, at least in part, on segmental information are quite common, truly convincing examples of a rule of segmental phonology being sensitive to a tonal context are conspicuously absent from the literature. Hyman and Schuh (1974:108) accordingly conclude, "Consonants affect tone but tone does not affect consonants" (original emphasis JK/MC). Schuh (1978:224) goes further in stating, "Tone rarely, if ever, influences segments." He summarizes, "Virtually no clear cases of tonal influence on segments have been found..." (225).

In this note we will briefly discuss what we believe to be a clear case of segmental rules involving tonal contexts. The data are from the Dida dialect spoken at the village of Srikpalilie near the town of Lakota in the Ivory Coast. Dida is an eastern Kru language.

In (1) we present the vowel system along with the tones of this Dida dialect.

<table>
<thead>
<tr>
<th>Vowel</th>
<th>+ATR</th>
<th>-ATR</th>
<th>Tones</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>u</td>
<td>U</td>
<td>V : high</td>
</tr>
<tr>
<td>e</td>
<td>o</td>
<td>O</td>
<td>V : mid-high</td>
</tr>
<tr>
<td>a</td>
<td>A</td>
<td>V</td>
<td>V : low</td>
</tr>
</tbody>
</table>

Dida has a five vowel system each member of which may be advanced ([+ATR]) or retracted ([−ATR]). The feature [ATR] and its accompanying harmony process are surely to be represented on a auto segmental level. For ease of exposition we shall distinguish ten vowels at the segmental level as indicated above. Dida has four lexically distinct level tones given at the right of (1). Contour tones are analyzed and transcribed as sequences of level tones.

The phonological processes to be described here involve vowel sequences. In particular we shall be concerned with verb-stem object clitic construction. Since all verb stems end in vowel and all object clitics are vowel initial 1, these constructions always result in vowel sequences.

In (2) below third person object clitics are given. Dida distinguishes vowel sequences from diphthongs both phonologically and phonetically. The latter are transcribed with a ligature.

<table>
<thead>
<tr>
<th>Vowel</th>
<th>+ATR</th>
<th>-ATR</th>
<th>Tones</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>ni</td>
<td>yî</td>
<td>see woman part</td>
</tr>
<tr>
<td>n</td>
<td>nio</td>
<td>yî</td>
<td>see-her part</td>
</tr>
<tr>
<td>n</td>
<td>ju</td>
<td>n o</td>
<td>respect woman</td>
</tr>
<tr>
<td>n</td>
<td>p l</td>
<td>ml</td>
<td>respect-her</td>
</tr>
</tbody>
</table>
Dida also has two rules of regressive assimilation. The most perspicuous formulation may well be in non-linear terms. Here we content ourselves with a linear formulation as in (4). Examples illustrating these rules are found in (5).

\[(4)\]
\[
\begin{align*}
\text{a. } & \quad \left[\begin{array}{c}
V \\
-hi
\end{array}\right] \rightarrow [\alpha F] \quad / \quad \left[\begin{array}{c}
V \\
\alpha F
\end{array}\right] \\
\text{b. } & \quad \left[\begin{array}{c}
V \\
+hi
\end{array}\right] \rightarrow [+back] \quad / \quad \left[\begin{array}{c}
+hi \\
+back
\end{array}\right]
\end{align*}
\]

(5) Verbs (imperfective forms)

\[\begin{array}{ll}
\text{1A} & \text{'call'} \\
\text{pE} & \text{'give'} \\
\text{n} & \text{'see'} \\
\text{jU} & \text{'}put'
\end{array}\]

\[\begin{array}{ll}
\text{n 1A0 [n 100]} & \text{'}I call him'} \\
\text{pEA [n pAA]} & \text{'}I give it'} \\
\text{n niU y[ [n nuu yi]} & \text{'}I see it'} \\
\text{n jUI [n jUJ]} & \text{'}I put them'
\end{array}\]

Rule (4a) assimilates non-high vowels to the quality of following clitic vowel. A second rule (4b), which is optional, backs high front vowels before a clitic which is high and back. The examples show that (4b) may only back front vowels. Back vowels in the verb stem remain unaffected. Note that the verbs given in (5) are imperfective with a mid-high tone on the stem vowel. The stem vowel may undergo rule (4a) or (4b) but it remains. If we compare these forms with imperfectives having a mid tone stem vowel we note a marked difference in behaviour.

\[(6)\]
\[
\begin{align*}
\text{a. } & \quad \text{n 1A0 [n 100]} \quad \text{'}I call him'} \\
& \quad \text{n niE y[ [n nie yi]} \quad \text{'}I see it'} \\
\text{b. } & \quad \text{n 1A0 [n 10]} \quad \text{'}I carry him'} \\
& \quad \text{n liE [n le]} \quad \text{'}I eat it'} \\
\text{c. } & \quad \text{n koO [n koo]} \quad \text{'}I wait for him'} \\
& \quad \text{n gbOO [n gbOO]} \quad \text{'}I screw him'} \\
\text{d. } & \quad \text{n ni U y[ [n nuu yi]} \quad \text{'}I saw him'} \\
& \quad \text{n i U [n 1u]} \quad \text{'}I ate it'}
\end{align*}
\]

In (6a) we see verb stem with a mid-high tone on the stem vowel. In (6b) we find similar forms but this time with a mid tone stem vowel. Note that both the stem vowel and the stem tone are deleted by rules to be formulated in (7). Examples (6c) show two mid tone verbs which fail to undergo the rules in (7). Most verbs ending in \(O\) and \(Q\) are exceptional in this way. Two perfective forms are given in (6d). The example at the left shows the perfective form of a mid-high tone imperfective stem. To form the perfective, a floating low tone is added to the stem. The floating tone eventually winds up on the suffix vowel and lowers the mid-high tone of the suffix to a mid tone. In the second example a mid tone stem in the imperfective has a low tone in the perfective. The stem vowel is deleted as was the case for the imperfective forms. We conclude that any stem vowel with a \([-\text{HIGH}]\) (= mid or low) tone will delete in these circumstances.
a. LOW - truncation.
\[
v \rightarrow \emptyset / [- \text{HIGH}] [+ \text{HIGH}]
\]

b. Tone rules.
1. \[
\begin{array}{c}
M \\
V
\end{array} \rightarrow \begin{array}{c}
\text{MH} \\
\text{V}
\end{array}
\]

2. \[
L \text{ MH} \rightarrow L \text{ M}
\]

Rule (7a) is a tone-sensitive rule of segmental phonology. A stem vowel will delete only if it carries a [- HIGH] tone in the context of a following pronoun with a mid-high tone. Rules (7b) are the two tone rules which are involved with the forms in (6).

Let us consider now stem vowels with a high tone (\# [+ HIGH]). Such stems are found in negative forms which involve a subject pronoun followed by a negative particle (a copy of the pronoun with a high tone) followed by the base form of the verb. Unlike imperfective forms which are restricted to mid or mid-high tones, a base form may have any of the four lexical tones. In (8) both imperfective forms (with mid-high tones) and negative forms (with high tones) are given. The difference in segmental behaviour is striking.

(8) Examples: p\text{A} 'throw' n\text{E} 'give' n\text{i}...y\text{i} 'see' l\text{A} 'call'
\[
\begin{array}{c}
n p\text{A} E [n p\text{EE}] \\
n n p\text{A} E [n n p\text{E}]
\end{array}
\]

'n I throw it' 'I don't throw it'

\[
\begin{array}{c}
n n \text{E} 0 [n n \text{E} 0] \\
n n \text{E} 0 [n n \text{E} 0]
\end{array}
\]

' I give him' 'I don't give him'

\[
\begin{array}{c}
n n i 0 y\text{i} [n n i 0 y\text{i}] \\
n n i 0 y\text{i} [n n i 0 y\text{i}]
\end{array}
\]

'I see him' 'I don't see him'

\[
\begin{array}{c}
n n i U y\text{i} [n n i U y\text{i}] \\
n n i U y\text{i} [n n i U y\text{i}]
\end{array}
\]

'I see it' 'I don't see it'

\[
\begin{array}{c}
n l\text{A} 0 [n l\text{E} 0] \\
n l\text{A} 0 [n l\text{E} 0]
\end{array}
\]

'I call him' 'I don't call him'

In (8) we see that a non-high stem vowel with a high tone deletes when followed by a pronoun. A high stem vowel behaves differently, apparently deleting only before another high vowel. In fact, the situation is more complicated in the case of high vowels but space limitations preclude a detailed discussion. Let us assume the rules to be as in (9).

(9) a. HIGH - truncation
\[
\begin{bmatrix}
V \\
<+\text{hi}> \\
[+\text{hi}]
\end{bmatrix} \rightarrow \emptyset / H + \begin{bmatrix}
V \\
[+\text{hi}]
\end{bmatrix}
\]

b. Tone rule: \[
\text{MH} \rightarrow \emptyset / H
\]

Rules (7) through (9), though similar, must be considered two distinct rules. Note that rule (7) may delete any vowel regardless of its height.
Rule (7) admits numerous exceptions while rule (9) appears to be exceptionless. Note further that HIGH-truncation is not conditioned by the negative context. The final form in (8) shows a verb stem whose base form has a mid-high tone. This verb stem shows the expected behaviour of a mid-high stem, whether in an imperfective or negative form.

In this note we have shown the effect of tone on certain rules of the segmental phonology of Dida. We do not wish to suggest that tones may serve as a context for any sort of segmental rule. Just as segments may play a limited role in tonological rules, so it appears that tone may play a limited but real role in rules of segmental phonology.

NOTES

*Research on Dida is supported in part by a grant from the Conseil de recherches en sciences humaines du Canada, (410-80-0103) and from the F.I.R. of the Université du Québec à Montréal. We wish to thank M. Jacques-André Guéyraud for his valuable aid.

1 The second clitic of double object constructions are not vowel initial. These cases do not interest us here.

REFERENCES


LINKLESS CLAUSES IN BANTU

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California State University at Sacramento

It is very common in Bantu languages to find the type of sentences illustrated in (1):

(1) a. A-ta-ka-po-rudi bwana m-piki-e chai
   he-T-T-T-return sir him-cook-subj tea
   'When the boss comes back, make him some tea.'

   b. Ba-tw-aandik-i-ye tw-aa-ba-subiz-a
      they-us-write-appl-asp we-T-them-answer-asp
      'Would they write us we would answer them.'

   c. Kitabu a-na-cho-ki-soma Hamisi ni kizuri sana (Swahili)
      book he-T-that-it-read H be good very
      'The book Hamisi is reading is good.'
These types of sentences consist of two or more clauses without a conjunction, coordinator, or subordinator. The purpose of this study is first to examine the kind of clauses that occur in this construction, second to see their grammatical status and third to offer an analysis and an explanation of this phenomenon.

This research indicates that most of these linkless clauses are either conditionals, participials, relative clauses, subjunctives or narrative/consecutive clauses. These clauses don't seem to have any independent or peculiar status - they have the same formal properties as main clauses or subordinate clauses. In Bantu languages, main clauses and subordinate clauses are formally distinguishable. In Kinyarwanda, for instance, main clauses and subordinate clauses have their own negative morphemes, as the examples in (2) show:

(2) a. Ba-zaa-som-a
   they-fut-read-asp
   'They will read.'

b. Nti-ba-zaa-som-a
   neg-they-fut-read-asp
   'They will not read.'

c. A-zi ko ba-ta-zaa-som-a
   he-know that they-not-fut-read-asp
   'He knows that they will not read.'

Also only certain tenses of main clause verbs can carry the 'focus-marker' in the verb (that is whether the verb has an object or not) but subordinate clause verbs don't, as (3) shows. The focus-marker of the present tense is the prefix -ra-:

(3) a. Ba-kor-a mu gitoondo
   they-work-asp in morning
   'They work in the morning.'

b. Ba-ra-kor-a
   'They are working.'

c. *Ba-kor-a
   they-work-asp
   'They work.'

d. *Ba-ra-kor-a mu gitoondo
   'They work in the morning.'
e. A-zi ko ba-kor-a mu gitoondo
   he-know that they-work-asp in morning
   'He knows that they work in the morning.'

f. *A-zi ko ba-ra-kor-a mu gitoondo
   he-know that they-f-work-asp in morning
   'He knows that they work in the morning.'

(3c) is not correct because -ra- is lacking when the verb doesn't have an
object, and (3d) is also ungrammatical because the verb does have an object
but the focus marker -ra- is present. (3f) is unacceptable because the
focus marker never occurs in subordinate clauses. Conditionals, parti-
cipials and relative clauses behave like subordinate clauses while narrative/
consecutive and subjunctives share the same properties as main clauses, which
is interesting because the former entail indeed subordination and the latter
coordination.

Three types of analysis will be presented for these constructions,
namely the lexical analysis, the assimilation analysis and the incorporation
analysis. Some of these linkless clauses are triggered by the preceding
verb. It is the nature of the verb itself which determines what type of
clause should follow. This type of information is already provided in the
lexicon. The lexical analysis is favored for other syntactic processes, also
in recent theories of grammatical analysis, especially Extended Standard
Theory and Semiotic Theory (Kimenyi, 1980).

In certain cases the verb of the linkless clause takes the same form
as the preceding verb. Thus the main verb of the clause that follows a
subjunctive or a narrative/consecutive is also realized in the subjunctive
or narrative/consecutive form respectively, as the Kiswahili and Kinyarwanda
examples that are provided below indicate:

(4) Mw-it-e Hamisi mwambi-e a-end-e sokoni
   him-call-subj H him-tell-subj he-go-subj market
   'Call Hamisi and tell him to go to the market.'

(5) N'uko tu-ra-andik-a ba-ra-du-subiz-a
   be it we-T-write-asp they-T-us-answer-asp
   'We wrote and they answered us.'

This is obviously an assimilation process. Assimilation takes place, how-
ever, if there is sequentiality or simultaneity between the events or actions
expressed by the preceding verb and the verb of the linkless clause.

The linkless clause phenomenon can be accounted for also by positing
an incorporation analysis which implies that these clauses are not linkless
but that coordination and subordination in this case are already expressed
in the tense-aspect-modality morphology of the verb. Arguments in favor of
this approach are the following: (i) The preprefixation of the copular ni
to the verb—which has different functions from language to language—is
a very common and recent phenomenon in many Bantu languages. (ii) Two or
more tense markers can appear in the same verb (see also Hyman 1980 about
Bamileke). (iii) True conjunctions can be prefixed to the verb. In
Kinyarwanda, for instance, the coordinator na can appear before what is
being coordinated such as a noun, a verb, a clause, or inside the verb
itself as seen on the next page:
(6) a. Abahuungu ba-ra-som-a igitabo, ba-ra-andik-a n' ibaruwa
boys they-T-read-asp book they-T-write-asp and letter
'The boys are reading a book and they are also writing a letter.'

b. Abahuungu ba-ra-som-a igitabo ba-ra-na-andik-a ibaruwa
boys they-T-read-asp book they-T-and-write-asp letter
'The boys are reading a book and they are also writing a letter.'

(iv) In certain Bantu languages the relative pronoun can appear outside the
verb or on the verb itself, a prefix or a suffix, as exemplified by the
Kiswahili in (7):

(7) a. Kisiwa ambacho ni-na-ki-penda ni Unguja
island say that I-T-it-like be Zanzibar
'The island that I like is Zanzibar.'

b. Kisiwa ni-na-cho-ki-penda ni Unguja
island I-T-that-it-like be Zanzibar

c. Kisiwa ni-penda-cho ni Unguja
island I-like-that be Zanzibar

In both (7b) and (7c), the relative pronoun has been incorporated into the
verb. Linkless clauses in African languages have been wrongly analyzed
as parataxis. Although clauses classified under the lexical analysis have
finite verbs, semantically they don't entail any notion of coordination or
subordination, since most of them are triggered by modal, auxiliary or sen­sory verbs. In the case of the assimilation, an infinitive construction is
preferred if the notion of purpose or intention rather than simultaneity
or sequentiality is involved.

Incorporation, suffixation or prefixation to the verb is a general
drift in Bantu languages. The most common and the most obvious is the
suffixation of the prepositions -ho/-mo which also appear as prepositions
before their head nouns and the preprefixation of the copular ni.

Other africanists (Givón, 1972) have argued that most of the tense­
aspect morphemes come from full verbs. There is support of this analysis
in the synchronic grammar of Bantu languages. In Kiswahili the
verb -ja 'come' is incorporated into the verb to mean 'not yet' as in
Haja(ku)ja 'he hasn't come yet'. In Kinyarwanda, the verb -za 'come' is
also used as either an auxiliary or a future tense marker as in (8):

(8) a. Ba-ra-aza ku-uza
they-T-come to-come
'They are coming.'

b. Ba-zaa-za
they-come-come
'They will come.'

When it is used as an auxiliary -za has a near future meaning but when it
is prefixed to the verb it has a regular future time reference. Verbs
which give rise to tense-aspect morphemes are first reduced phonetically
and then attached to the verb.
The conjunctions which become absorbed into the verbs must have been full verbs also because non-incorporated ones derive from verbs as the next examples of Kinyarwanda show:

(9) nyamara 'but' from -mar- 'finish'; keretse 'except' from -rek- as in uretse 'you leave'; maze 'then' from -mar- 'finish'; usilibye ko 'except' from -sib- 'be absent'; cyakora 'but' from -kor- 'work'; cyaangwa 'or' from -aang- 'refuse'; ahaari 'maybe' from aho ari 'where he is'; kubeera ko 'because' from kuba 'be' + applicative -ir-; kugira ngo 'for' from kugira 'to have, to cause'...

Further research should investigate the relationship between the linkless clause phenomenon of the Bantu languages with the serial-verb construction of the Kwa languages.

REFERENCES


UNUSUAL CONSONANT CLUSTERS AND COMPLEX SEGMENTS IN EGGON

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UCLA

The phonotactics of languages in the Niger-Congo family typically disallow consonant clusters. Frequently only open syllables occur; thus consonant sequences do not even arise across syllable boundaries. If clusters are allowed, they are generally limited to a few types, such as Nasal + Obstruent or Obstruent + Liquid, drawn from among those that are most frequent in the languages of the world.

It is thus surprising to find a rich variety of consonant clusters, some of a rather unusual kind, occurring in Eggon. This is a Benue-Congo language classified in Greenberg's Plateau 5 group and in group J of my own enumeration of the Plateau languages. It is spoken in an area to the south and west of Akwanga in the Benue State of Nigeria.

In addition to clusters of two consonants in which one of the two is a nasal, a liquid, or a central approximant (or 'glide'), the clusters in Eggon may consist of two contiguous obstruents - which can be the same or different in place of articulation, and, within limits, can differ in voicing. A large number of the possible pairings of Eggon consonants have been found to occur as clusters. However, some constraints on the structure of clusters can be observed, for example, palato-alveolar fricatives may only be the first element of an obstruent cluster. Some of the possible clusters are listed and exemplified in Table 1.
In addition to the clusters of two consonants, Eggon permits certain clusters of three consonants. In these clusters, the first or the third consonant (or both) must be a member of the class of readily clustering consonants, i.e. a nasal, a liquid or an approximant.

Among the most interesting sets of clusters are those involving labial and velar obstruents. Beside simple bilabial and velar plosives, Eggon also has voiced and voiceless labial-velar plosives. In contrast with the labial-velars, clusters of a bilabial and velar occur with either the bilabial or the velar in first position. Furthermore, the labial-velar stops also cluster with simple labials and velars, although it appears that the labial-velar must precede in these cases. Representative cases to illustrate some of the possibilities are given in Table 2.

Two considerations jointly confirm that consonant sequences in Eggon are in fact clusters. That their elements are within the same syllable is shown by the fact that a morpheme boundary generally precedes them. For example, the initial vowel of the nouns in Tables 1 and 2 is a class prefix which alternates with another prefix to form the plural, e.g. adgá 'legs'. These prefixes are also derivational morphemes, e.g. èj kó 'name' is derived from the verb root -j kó 'greet'. That the clusters are not complex units of some kind is shown by the fact that their elements can be separated. This occurs in the process of reduplication where just the first consonant of the cluster is repeated. This process is found in a number of irregular noun plurals, e.g. àtút kú 'calabashes', and in a productive process by which action nominals are formed from verbs, e.g. ógbò gbó 'buying'.

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dg/  odgá  'leg'</td>
</tr>
<tr>
<td>/b/  ɔbò  'vagina'</td>
</tr>
<tr>
<td>/jg/  ɔjgé  'beer'</td>
</tr>
<tr>
<td>/zg/  èzgá  'thorn'</td>
</tr>
<tr>
<td>/tk/  àtkú  'calabash'</td>
</tr>
<tr>
<td>/ck/  èckú  'market'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>/k/  àkú  'room'</td>
</tr>
<tr>
<td>/kp/  ù kpus  '...dies'</td>
</tr>
<tr>
<td>/kp/  ù kpu  '...kneels'</td>
</tr>
<tr>
<td>/kb/  ø kbá  '...digs'</td>
</tr>
<tr>
<td>/kp/  àkpu  'stomachs'</td>
</tr>
<tr>
<td>/kpmr/  øbìèkpmrè  'beans'</td>
</tr>
<tr>
<td>/gbm/  ìgbmbmè  'fat'</td>
</tr>
</tbody>
</table>
The historical origin of the rich variety of clusters in Eggon is fairly obvious. In the relatively recent past, medial vowels in -CVCV-structures were deleted, producing -CCV-. This may be demonstrated by comparisons with forms in other individual Plateau languages, or with reconstructions for such constructs as Proto-Bantu (Guthrie, 1967) or Proto-Plateau (Gerhardt, 1968). Some illustrations of the comparative data supporting the vowel-deletion hypothesis is given in Table 3.

Table 3

<table>
<thead>
<tr>
<th>Eggon</th>
<th>Proto-Bantu</th>
<th>Chori</th>
</tr>
</thead>
<tbody>
<tr>
<td>òzgá</td>
<td>&quot;tooth&quot;</td>
<td>cf. PB *-gègò</td>
</tr>
<tr>
<td>òtrá</td>
<td>&quot;three&quot;</td>
<td>cf. PB *tátù</td>
</tr>
<tr>
<td>òbgó</td>
<td>&quot;arm&quot;</td>
<td>cf. PB *-bókò</td>
</tr>
<tr>
<td>gbá</td>
<td>&quot;divide&quot;</td>
<td>cf. PB *-gåb-</td>
</tr>
<tr>
<td>òkpó</td>
<td>&quot;ten&quot;</td>
<td>cf. Chori kop</td>
</tr>
<tr>
<td>kbá</td>
<td>&quot;dig&quot;</td>
<td>cf. Chori kaba</td>
</tr>
</tbody>
</table>

Note. Chori is a dialect of Jaba, a Plateau language spoken somewhat northwest of Eggon. The forms are from Ivan Dihoff, "Aspects of the Tonal Structure of Chori" (Ph. D. Thesis, University of Wisconsin, Madison, 1976).

Now, in addition to clusters, Eggon also has a number of phonetically complex phonetic segments of unusual kinds. Among these are voiced and murmured nasalized labial-palatal approximants [ɔ1] and [ɔ2]. These occur in near-minimal contrast in the words [aʊqɛ] 'child' and [aʊqɪ] 'black' respectively. The historical origin of these segments also appears to be the deletion of a medial vowel, but in this case deletion has been followed by a coalescence of the phonetic attributes of several original segments. Thus from a root of the form *-wan- (Gerhardt reconstructs *gwal "child", *nwan "children"), /w/ supplies the labiality, /n/ the nasality, while the front vowel /-e/ probably sufficiently accounts for the palatal articulation of [ɔ1]. A specific shape for the root 'black' is less easy to reconstruct, and the source of the murmured approximants in this and other words, such as [aʊqɛ] 'he-goat', remains unresolved at this time. A reasonable speculation might be that a voiceless obstruent was among the elements involved in the coalescence. Note that no evidence has been found that the components of a segment resulting from coalescence can be separated in reduplicative processes such as those described in connection with clusters.

Further work will be required to determine what regularities govern medial vowel deletion and consonant coalescence and other processes that simplify the clusters created. One clear constraint on deletion concerns roots of the form -CVN(V)-, where C is an obstruent and N is a nasal. If the two consonants are homorganic, deletion occurs, followed by reduction of NV to a nasalized vowel if the preceding C is a fricative. If C and N are not homorganic, the vowel between them is not deleted. Instead the final vowel, if any, is generally dropped. Thus Eggon [ɔtnò] 'five' (compare PB *-tánò), but [ɔtúm] "work" (n.) (compare PB *-túm-).
The phonology of Eggon illustrates some phenomena of inherent phonetic interest. It also promises to throw light on the analysis of the phonological nature of complex segments. The diachronic origin of these phenomena demonstrates one of the ways in which the Niger-Congo languages may have gone about truncating longer roots. This may have particular importance in relation to those languages in which the typical root morpheme has been reduced to -CV.

REFERENCES


TONE AND THE THEORY OF SYNTAX

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Although the debates about the autonomy of syntax with respect to phonology have not been as pronounced as those concerning the boundaries of syntax and semantics, we want to argue that retention of a transformational subcomponent within syntactic theory leads to a relaxation of the constraints on grammar which is made available by the autonomy thesis. To that end we believe that a theory of language which can best preserve the autonomy thesis as a constraint on the interaction of components within grammar is one which imposes the requirement that the transformational subcomponent of the syntax be null.

To demonstrate the above claim we look at the application of two tonal rules in Chichewa - a Bantu language spoken principally in the Republic of Malawi and other countries of Eastern Central Africa such as Mozambique, Zambia and Zimbabwe. The rules under investigation are tone-doubling and tone-simplifying rules. The former rule governs the spreading of a high tone assigned to one syllable on to the syllable that follows it. For instance in the words:

\[
\begin{align*}
\text{si} & \quad \text{ndi} & \quad \text{na} & \quad \text{mu} & \quad \text{ménye} \\
\text{not} & \quad \text{I} & \quad \text{past} & \quad \text{him} & \quad \text{hit}
\end{align*}
\]

'I did not hit him'

\[
\begin{align*}
\text{si} & \quad \text{ndi} & \quad \text{ku} & \quad \text{mu} & \quad \text{menya} \\
\text{not} & \quad \text{I} & \quad \text{press} & \quad \text{him} & \quad \text{hit}
\end{align*}
\]

'I am not hitting him'

the high tone assigned by rule to the negative affix si- doubles onto the next syllable. The tone-simplifying rule reduces a rising tone on some syllable to a low tone under certain conditions. This rule may be formalized as follows:

\[
\begin{align*}
\overset{\text{LH}}{} & \rightarrow \overset{\text{L/}}{}\text{syll#}
\end{align*}
\]
Stated differently, this rule affects words which are in clausal non-final position. Look at the following:

usamalé  (that) you (may) take care
upité  (that) you (may) go
usamalé mwâmunâ  (that) you take care of the man
upité kwânu  (that) you go home

Here the ' marks a rising tone while the acute accent marks a high tone.

Having formalized the two rules, we wish to examine their interaction with the syntactic rules in a grammatical model that incorporates a transformational subcomponent. According to some current versions of a transformational grammar, the transformational component has the general rule "Move α", a category where the movement of the category operates in accordance with the trace-theoretic elaborations of grammatical theory. We wish to maintain that even within such versions of TG the constraints on rule interaction made available by the autonomy thesis still get relaxed.

An example of the rule "Move α" is when α is a wh-phrase, giving the rule "Move wh". Such a rule seems to operate in question formation in Chichewa. Consider the following:

(1)

a. anyamata awa akufuna kumanga nyũmbá
   'These boys want to build a house'
   boys these they-pres-want to-build house
b. Kodi anyamata awa akufuna kumanga chi-yani
   'These boys want to build what' (Kodi = Q)
c. Kodi ndi chi-YANI chimene anyamata awa akufuna kumanga
   Q it be what that these boys want to build?
   'What do these boys want to build?'

Assuming that the movement of chi-YANI leaves a trace in the pre-movement site we would have the following structure:

d. Q ndi chi-YANI chimene anyamata awa akufuna kumanga ti?

The ability to leave traces is said to distinguish between movement rules (transformations) and deletion rules. It is further said that the presence of intervening traces can block the application of phonological rules, e.g. rules which derive 'hafta', 'wanna', 'usta' from 'have to', 'want to', 'used to' (cf. Lightfoot 1977). In other words, phonological rules are not blind to the presence of traces in surface structure. What happens then, if phonological rules appear to behave in a conflicting manner as regards their recognition of the presence of trace in surface structure? It obviously becomes essential to re-examine the status of the trace itself, and, through that, of the movement rules. Now consider the examples below:

(2)

a. asungwana akufuna kuti usamale nyani
   girls they-pres-want that you-look after baboons
   'the girls want you to look after the baboons'
Now observe that the doubling rule does not apply in (3c) because $t_i$ has no phonological content and therefore does not fulfill the conditions for doubling to occur. On the other hand however, the tone simplifying interprets the structure in (2c) in an unexpected way. This is so because according to our prediction the simplifying rule should apply to usamale which is arguably in a non-final position due to the presence of trace in surface structure, and yet it does not.

Should we therefore say that it is only some phonological rules which are sensitive to the presence of trace? This leads one to question whether there is still a principled reason for distinguishing between movement rules and deletion rules.

Consider further the interaction of the rule of clefting and the tone simplifying rule. Given the sentences:

\[(4) \text{Amene akufuna kuti mumuthamangitse ndi nyani' 'what they-pres-want that you-it-chase is baboon} \]
\[(5) \text{Ndi nyani' amene akufuna kuti mumuthamangitse } t_i \text{ 'it is a baboon which they want you to chase' }\]

What appears to be happening here is that when the tone simplifying rule applies to the output of the clefting rule it simplifies the tone on nyani but is blocked on mumuthamangitse, which is treated as being in final position despite the presence of trace.

This raises the question whether it is correct to adopt a transformational account of the relationship between pseudo-clefs and cleft sentence. However, it has been argued on independent grounds that such a transformational account is less revealing, that in an optimal grammar the two types of structures should be independently base-generated (cf. Mchombo 1980). Note that if a transformational analysis of cleft sentences is maintained (cf. Gundel 1977) the tone simplifying rule would have to be ordered before the syntactic rule of clefting, contra the autonomy thesis.
In order to preserve the autonomy thesis and to give a more satisfactory account of the interaction of the tonal rules with the rules of syntax it is our belief that the heaviest possible constraint that could be imposed on the expressive power of the transformational subcomponent should indeed be imposed, viz. the requirement that this subcomponent be null. In other words, a satisfactory account of the trading relation between phonology and syntax is obtained if one adopts at least some version of a base generated syntax.

REFERENCES


AN ACOUSTIC AND PHONOLOGICAL STUDY OF PRE-PAUSAL VOWEL LENGTH
IN HAUSA

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This is a study of an unusual and poorly understood "alternation" in Hausa of certain vowels in pre-pausal position. In word-final position, all five vowels may occur L(ong) or S(hort). The phonetic differences between them depend on whether they occur before pause or not. In non-pausal position, L and S are maximally differentiated qualitatively as well as quantitatively: L vowels are long and tense whereas S vowels are short, lax and centralized. In pre-pausal position, however, the differences are not so apparent: duration differences are said to be reduced and all vowels, L or S, are tense in quality. The major phonetic cue is said to be the presence of final glottal closure in S pre-pausal vowels (e.g. caka [caka?] 'clubs in cards', kooko [ko:ko?] 'gruel'), vs. its absence in L pre-pausal vowels, (e.g. tsakaa [tsakaa:] 'gecko', doogoo [do:go:] 'tall one').

In addition to its lexical function, word-final vowel length in Hausa also functions morphosyntactically to mark certain inflectional and derivational processes, such as the derivation of a proper name from a common noun by shortening, e.g. Doogo 'name (m)' < doogoo or the formation of the present participle form of a verb by lengthening, e.g. fitaa 'going out' < fita 'go out'. Such length alternations are always explicitly transcribed.

While it is expected that the underlying length of final vowels remains constant regardless of position before pause or not, there are a number of unusual cases where certain vowels seem to have one length, L,
non-pausally but another length, S, pre-pausally, with no change of grammatical information involved. For example, the verb cikoo 'to fill (toward speaker)' is [ciko:] non-pausally but [ciko?] pre-pausally, i.e. pronounced with final glottal closure in this position. It is not clear whether these "undetermined" vowels, as we shall refer to them, are the same phonetically as normal short final vowels, nor what their phonological status in this position is.

"Undetermined" vowels (written with capital letters) have been reported to exist in the following cases. (a) Final A - in first person sg. bound possessive pronoun, e.g. gidaanA 'my house'. While the alternation is generally recognized, some Hausaists claim it is underlyingly S with lengthening pre-pausally, while others claim it is underlyingly L with shortening pre-pausally. (b) Final O of Grade VI (ventive extension) verbs, e.g. koomO 'return here', saaO 'steal and bring back' fito 'come out'. While the vowel is generally analyzed as L everywhere, those who acknowledge a short variant pre-pausally never transcribe it as such. (c) Final vowel of monosyllabic verbs not ending in -i, e.g. jA 'pull', jE 'go to', shA 'drink', zO 'want', biyA 'pay', jirA 'call'. (d) Final diphthong of monosyllabic verbs kAI 'carry', hAU 'climb', kAU 'move away'. Recognition of any short pre-pausal variants in case (c) has been confined to a specific verb or two, never to all the verbs as a set, whereas in case (d), such variants have been conveniently ignored, due to the analytical contradiction of having to deal with "short diphthongs", given the standard analysis of Hausa diphthongs as consisting of two segments, either as vowel sequences or V + semivowel.

The question arises whether these cases do exhibit the same phenomenon phonetically, and whether this can lead to a phonologically consistent treatment for all the cases taken as a set. To begin with, we take it as given that U(ndetermined) vowels are all L in underlying structure, so that we are only examining their behavior pre-pausally. We then ask: do U vowels all have glottal closure before pause, and if so, does this automatically mean that they are identical to S final vowels? Or might they in fact differ in duration from normal S pre-pausal vowels?

A preliminary recording of many examples of cases (a-d) by one Hausa speaker confirmed that they were all pronounced with final glottal closure. The next step was to compare these U vowels with normal S and L pre-pausal vowels, examining both duration and presence/absence of glottal closure as separate variables for all the vowels tested. The acoustic parameters chosen for the experiment were overall vowel duration and abruptness of vowel offset. Previous phonetic studies have shown that the major acoustic correlate of a post-vocalic glottal stop is the abruptness of the vowel offset, measurable as the decay time or final portion of the vowel. A vowel checked by glottal stop has an abruptly ending intensity curve, whereas an unchecked vowel has a smoother decay time curve. Since decay time is part of overall duration, an abrupt offset contributes to shorter overall duration whereas a smoother offset contributes to longer overall duration. Overall duration thus consists of two components, a non-decay or initial portion, and a final or decay portion.

For the experiment a word-stimulus matrix was devised consisting of 26 disyllabic items, all ending in High tone, categorized for length group as S, U, or L, and for vowel quality as a, o, ai, or au. Each
FIGURE 1: Mean overall durations ± 1 standard deviation (indicated by line above bar) for short, undetermined, and long pre-pausal vowels in Hausa at slow vs. fast speech rates.

FIGURE 2: Means for short, undetermined, and long pre-pausal monophthongs and diphthongs in Hausa at slow vs. fast speech rates, plotted in a two-dimensional decay portion/initial portion plane.
item was recorded by two speakers, 10 times per speaker in different random orders, 5 times relatively slow and 5 times relatively fast.

The results of this experiment are presented in Figure 1, which gives overall durations and standard deviations in ms for all vowels at slow and fast speech rates. It can be seen that all L pre-pausal vowels are clearly much longer than any of the S or U vowels (263 ± 45 ms average mean). U vowels are longer (198 ± 34) than S vowels (176 ± 23). While the difference between U and S vowels (as contrasted to L) may appear to be small, a Newman-Keuls test (p < .05) followed by an analysis of variance showed the differences in all three groups to be highly significant, F(2,517) = 287.1, p < .001. As for the speech rate factor, all vowels, diphthongs included, vary systematically in duration, with more slowly spoken vowels being longer than quickly spoken ones, with some slight overlapping between slow S and fast U vowels.

Figure 2 presents the results of the experiment differently, with the two variables' overall duration and decay time plotted independently. In this graph, all vowels have been pooled into two categories, monophthong vs. diphthong. Along the decay time axis, S and U vowels cluster together with shorter decay times indicative of glottal closure (80 ms or less), whereas L vowels form a separate cluster with longer decay times (105 for diphthongs, 127 for monophthongs). But even the slight differences in decay times for S (72 ms) and U (78 ms) proved to be statistically significant. Another interesting finding was that decay time is basically unaffected by speech rate. Instead, time compression is most noticeable in the initial portion. When the rate factor is averaged out (as shown by the filled-in centroids), S, U, and L vowels form three distinct groups, with initial portion means at 105, 119, and 149 ms, respectively.

To summarize our findings: (1) all L pre-pausal vowels are very much longer than S pre-pausal vowels, with about 50% greater duration; (2) while U vowels are definitely shorter than L vowels, they are significantly longer than S vowels; (3) diphthongs behave temporally like monophthongs, so that U diphthongs are shorter and have glottal closure just like U monophthongs. To conclude, U vowels are not S vowels, but rather form a third phonetically distinct category.

Turning now to the problem of the phonological interpretation of U vowels, a possible solution which has been implicitly assumed by Hausaists willing to acknowledge the existence of short variants (at least in cases a-b) is that Hausa has a morphophonemic alternation rule whereby these particular long vowels become short pre-pausally. Then, all short pre-pausal vowels subsequently undergo a lower-level phonetic rule specifying final glottal closure.

Given our findings, we must reject such a solution since it cannot explain the differences which we found between U and S vowels. Moreover, if one wants to account for all the cases in the same way, the solution requires the unnecessary step of having to mark diphthongs as short in intermediate structure when it is nowhere else needed.

Our interpretation is that U vowels are long vowels with pre-pausal glottal closure, phonologically distinct from short vowels with pre-pausal glottal closure. Only one rule is needed, presented informally as follows:
\[ V \rightarrow [+\text{glottal closure}] / \underline{\text{I}} \underline{\text{I}}, \text{ where } V \text{ is (i) phonologically short, or (ii) belongs to the lexical class noted as case } [a,b,c,d]. \]

This solution is possible because we regard presence of glottal closure as a prosodic feature of pause position rather than as a feature associated only with short pre-pausal vowels, as has been the standard analysis. As a prosodic feature, it may be added to either short vowels, which is the usual case in Hausa, or to long vowels, which is much rarer. The actual shorter duration of underlying long vowels followed by glottal closure results from a phonetically natural process: it is a near-universal characteristic of any vowel checked by glottal stop that it is phonetically short in duration. In Hausa, long checked vowels have nevertheless remained phonetically distinct from short checked vowels pre-pausally.

It is important to note that our interpretation of final glottal closure as a prosodic feature rather than as a vowel length feature has direct parallels in other African languages. For example, Fula has final glottality after long and short pre-pausal vowels, as well as resonants, but only for certain grammatical classes of morphemes. The Borana dialect of Oromo has long pre-pausal vowels realized as short plus glottal stop, contrasting with short pre-pausal vowels realized as voiceless. In Akan, glottal stop is a phonetic realization of certain final vowels and consonants, but again, only in pre-pausal position. In the light of such phenomena, the existence in Hausa of certain long final vowels being checked by pre-pausal glottal closure, as reported in this paper, does not seem so unusual.

[Note: The full version of this paper is to appear in *Journal of African Languages and Linguistics* 3(1).]

**A NONLINEAR APPROACH TO VOWEL LENGTH IN KIMATUUMBI**

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In this paper, a nonlinear approach is taken to the representation of vowel length and syllable structure in Kimatuumbi, a Bantu language of southern Tanzania. It is shown that the nonlinear theory is capable of accounting for preservation of moraic value after application of phonological rules with considerable ease. In the nonlinear theory, a phonological string is organised hierarchically into syllables, which are composed of \( \text{C} \) and \( \text{V} \) nodes dominating segmental matrices. Any segment dominated by the node \( \text{C} \) is nonsyllabic, and any segment dominated by the node \( \text{V} \) is syllabic. Segmental length is representable in the nonlinear theory as a branching configuration dominating a single segmental matrix. The nonlinear representation of the syllable twaa is given as (1).

\[
(1) \quad V V V
\]

99
There are five phonological processes in Kimatuumbi which affect syllabic structure which preserve the underlying moraic value of the string. One rule, Glide Formation, disassociates the high vowels i and y from their V-nodes when they stand before another vowel. The subject prefixes ty- 'we' and j- 'they (Cl. 10)' appear as tw- and y before another vowel, which is compensatorily lengthened.

(2) y-6bjte  'they are lost'  /j-6bjte/
tw-6bjte  'we are lost'  /ty-6bjte/
tw-a6kchte  'we hunted'  /ty-a6kchte/

In nonlinear theory, compensatory lengthening of the following vowel is a consequence of the fact that the V node which dominates the vowel y in the form twaakchte is preserved after Glide Formation, and is then re-associated with the vowel a, yielding a phonetic long vowel.

(3) $ C V V$
----
  t y a
underlying

Glide Formation and reassociation

Another process which involves compensatory lengthening is a vowel coalescence process which optionally combines a into ee and ay into oo.

(4) ait6l6jke  eet6l6jke  'he cooked them'
pajtu6mbwik6  pe6tu6mbwik6  'when they fell'
pajtu6mbwik6  po6tu6mbwik6  'when you fell'

This process is accounted for by an optional rule deleting the segmental matrix of the vowel a in this context which preserves the V node of the vowel a, and hence the moraic value of the vowel. The segmental change of i to e is accounted for by preserving the feature [-hi] originally borne by the vowel a.

A third process discussed deletes the vowel a in a demonstrative after any vowel. Thus rule retains the underlying V node of the prefix a, but does not retain the feature [-hi] of the vowel.

(5) aatw6tji 6chi  aatw6tji 6chi  'he took this'
kjndol6 6chi  kjndol6o 6chi  'this sweet potato'
ljliji ay6  lijliji y6  'those villages'
kjtyungyungy 6ch6  kjtyungyungy 6ch6  'that onion'

The final example involves loss of the prefixal mora, since after the mora of the prefix a is associated with the final long vowel of the stem, it must be pruned, due to a constraint that no vowel may be dominated by more than two V nodes.
The fourth process in Kimatuumbi phonology is the problem of syllabic nasals and vowel lengthening. Vowels are often long before the cluster NC in other Bantu languages, accounting, for example, for the long vowel in the Luganda form omuuntu 'person'. In the nonlinear analysis, this lengthening process is explained on the basis of the fact that the preconsonantal nasals were originally syllabic, i.e. dominated by the node V. Nasals have undergone a reorganization process so that they are members of the onset of the following syllable. Their original V node is left behind, yielding a long vowel. I argue that this account is necessary in Kimatuumbi synchronic phonology.

It is shown that vowels are not generally lengthened before NC clusters, as shown in (6). This is due to the fact that most nasals in Kimatuumbi are dominated by the node C in underlying representation.

(6) nga-ndó 'it's a bucket'
   aajbwénj ndýsí 'he saw yarn skeins'
   aatwétj ngalawá 'he took a dhow'

There are some underlying syllabic nasals, generally long nasals from Swahili loan words. When long on the surface, these nasals do not lengthen the preceding vowel.

(7) ndýge 'grey hair'
    nga-ndýge 'they are grey hair'
    nga-tjóge 'at the grey hair'
    nga-ndýge 'they are grey hair'

When these nasals are shortened by an independently motivated rule, they are attached to the C node of the following syllable, leaving their V node empty. That V node then reassociates with the preceding vowel, giving a phonetic long vowel.

(8) nga-ndó yanaanchjma 'they are many locusts'
    paa-mj waángu 'in my town'
    aajbwénjí yáángu 'he saw my grey hair'

The nonlinear theory can therefore account for the fact that a vowel is lengthened only before a nasal plus consonant cluster, in case the nasal is desyllabified.

The fifth process of Kimatuumbi phonology is the reduction of the locative prefix my- to m-. It is shown that the V node of the syllable my- is preserved after deletion of the vowel y, and is reassociated with the consonant m in order to form a wellformed representation. Due to the language specific rule moving a syllabic nasal into the following syllable, the syllabic m is then disassociated from that V node, which associates with the preceding vowel and yields a phonetic long vowel.

(9) nga-mj-kjíndiílo 'it is in the hut'
    aajbjí mj-kjíndiílo 'he put it in the hut'
    aajbwénjí mj-changaláwe 'he saw it in the gravel'
Finally, it is argued that the nonlinear theory accounts for other facts of the language with considerable ease. It is shown that three V-morae at the phonetic level may be syllabified distinctively as long-short or short-long.

(10) ky-yyngo 'to the civet' kyy-yna 'to harvest it'
    aty-yyni 'he spit on us' kwj-iya 'to hide then'
    wanga-ándjka 'without writing' twaa-ákite 'we hunted'

The nonlinear theory provides an apparatus for distinctive syllabification at the phonetic level, and in particular, the nonlinear analysis of Kimatuumbi phonology independently predicts the distinctive syllabification of the forms aty-yyni and kyy-yna. In the case of aty-yyni, the root initial vowel is underlyingly long, so the surface syllabification reflects the underlying syllabification. In the case of kyy-yna, the initial long vowel derives from the combination of the vowels of the infinitive prefix ky- and the object prefix y- into one syllable, so that phonetic kuu-6na derives from underlying ky-yy-na.

Lastly, the nonlinear theory allows us to describe the language game Chaanchuúguú with considerable ease. In the nonlinear theory, the segments under one syllable node are permuted with the segments under another syllable node. This then explains why all of the segments of a syllable must be permuted, and why parts of syllables cannot be permuted.

(11) Kimatuumbi  Chaanchuúguú  Gloss
    nguku         kúngu          'chicken'
    kjíwikíyíyo  kíliyówiki     'cover'
    mbaká        kambá(*mkaba)   'cat'

Moreover, nonlinear representations explain why tone and vowel length are not permuted when the segments bearing them are permuted.

(12) Kimatuumbi  Chaanchuúguú  Gloss
    ljíteénga    ngaljíte       'basket'
    ljíbíjí     baaílj          'wound'
    mbáango     ngoómba         'warthog'

The independence of the tonal syllabic tiers from the segmental tiers is explainable in the nonlinear theory, since syllable structure and tone are not inseparable from the segmental tier, but are merely associated with that tier.
The title of this paper derives from F.D.D. Winston's article, "Polarity, Mood, and Aspect in Ohuhu Igbo Verbs," *African Language Studies*, XIV. 1973. 119-178. In that article, Winston makes some penetrating observations about Igbo verbal suffixes. One of the suffixes he comments upon is the -rv suffix, which simply means a suffix consisting of the consonant /r/ followed by a vowel which duplicates the stem vowel of the verb to which the suffix is attached. The -rv suffix in Igbo performs many different functions and so has to be considered not one suffix but a set of homomorphic suffixes. F.D.D. Winston distinguishes four different suffixes making up the set and simply calls them -rv1, -rv2, -rv3, and -rv4. The present paper is concerned with the meaning of the third suffix in the set, -rv3, the suffix which Ida Ward considered a past tense suffix but which some more recent scholars of Igbo find problematic with respect to meaning.

Modern scholars' problem in stating a meaning for the -rv3 suffix stems from the fact that Igbo verbal expressions containing the suffix are sometimes construed as referring to the present time and sometimes construed as referring to a past time. The three sentences below illustrate the situation:

(1) ō gbùrù jí 'he planted yams'
(2) ō nwèrè jí 'he has yams'
(3) ō sòrò ụso 'it is sweet'

According to the English glosses of the three Igbo sentences just cited, the -rv3 suffix could have a present-tense or a past-tense meaning. Consequently modern scholars of Igbo hesitate to call it a past tense suffix. Instead, they posit a "portmanteau" category, variously named of course, to explain the meaning of the suffix, the idea being to pack into the portmanteau both the present tense and the past tense.

W.E. Welmers designates his "portmanteau" category the "factative" construction. The category comprises all Igbo constructions featuring the -rv3 suffix; according to Welmers, such constructions express "the most obvious fact about the verb in question, which in the case of active verbs is that the action was observed or took place [i.e., past tense], but for stative verbs is that the action obtains at present," i.e., present tense. (Welmers, *African Language Structures*, 1973. pp. 346-47).

F.D.D. Winston in his article referred to above proposes a similar position but uses the term "definite" to designate his "portmanteau" category. The meanings which Winston describes for the -rv3 construction (i.e., his portmanteau category, the "definite") bears very close resemblance to the meanings which Welmers describes for the factative category (see Winston's article, pp. 145, 151).
But these portmanteau categories are not acceptable as ways of explaining the meaning of the -rV3 suffix. The portmanteaux presuppose a two-tier analysis of the tense/mood factor in Igbo, a superordinate and a subordinate tier, the superordinate tier of which could be termed the major tier and the subordinate tier, the minor tier. The superordinate tier combines tense and modal consideration and its categories are based on the distinction between statements of fact and statements of potentiality, i.e., factative/definite statements versus non-factative/non-definite statements. Each of these major tier categories can then be analyzed into two or more minor tier categories -- present tense and past tense coming under the factative/definite category and the future tense, including all unactualized potentialities (i.e., imperatives and suppositions of all sorts) coming under the non-factative/non-definite category. See the tree diagram below:

```
Tense Factor

<table>
<thead>
<tr>
<th>factative/definite</th>
<th>non-factative/non-definite</th>
</tr>
</thead>
<tbody>
<tr>
<td>past tense</td>
<td>present tense</td>
</tr>
<tr>
<td>future tense</td>
<td>unactualized potentialities</td>
</tr>
</tbody>
</table>
```

The weakness of this scheme in general and of Welmers' and Winston's portmanteaux in particular becomes evident upon a close scrutiny of the part of the scheme where the portmanteaux occur, namely, the factative/definite portion of the scheme. As represented by both Welmers and Winston, the -rV3 suffix is the morphological exponent of the factative/definite construction. But it is clear that Igbo has many statements of fact which qualify as factative statements according to the gloss given for the terms factative and definite but which do not come within the domain of the -rV3 construction, for example, the stative construction, the progressive construction, and the nascent past construction (Green/Igwe's subject-verb form 11 construction). The four sentences below are all factative statements in one way or another but only one of them is an -rV3 construction. If Igbo really had a factative category and a factative construction, such a construction would be different from any of the constructions (4 to 7) below and its meaning would be broad enough to encompass the grammatical meanings of the verbs in the four sentences.

(4) `Adâ r`iri ji 'Ada ate yams'(rV3 construction)
(5) `Adâ bu ji 'Ada has a load of yams on her head'
    (stative construction)
(6) `Adâ na-`erí ji 'Ada is eating or eats yams'
    (continuous/habitual construction)
(7) `Adâ `erìe ji 'Ada takes a bite of yam'(nascent past)

But Igbo has no such construction. Therefore, a factative/definite category, that is, a single portmanteau category which expresses the mere factuality of an event or situation irrespective of tense consider-
ations (present or past) and irrespective of aspectual considerations (perfective or imperfective), is untenable for Igbo. In contrast, Ida Ward's point of view that the -rV3 suffix is an indicator of past time appears justified after all.

It is a well known fact to anyone who is familiar with Igbo that the -rV3 suffix has a past time meaning in the large majority of its occurrences. What is not so often pointed out is that on those occasions in which verbal expressions bearing the -rV3 suffix appear to have a present tense meaning (as in examples 2 and 3), the present tense meaning of the overall expression is invariably quite consonant with a past tense meaning for the -rV3 suffix; moreover, in these exceptional cases, not only is a past tense interpretation of the -rV3 suffix consonant with a present tense interpretation of the overall verbal expression but quite significantly, such a past tense interpretation of -rV3 is mandatory if one is to account for certain contrastive constructions affecting these verbs.

If one takes example (2) above for illustrative purposes, there is a contrast between the uses of nwere and nwe to suggest that the -rV3 suffix in the expression "nwere" definitely refers to past time even though both nwere and nwe can be translated into English as "has". Similarly, with regard to example (3), there is a contrast between the uses of soro uo and na-aso uo to suggest that the -rV3 suffix in the expression "soro uo" refers definitely to a past experience even though both soro uo and na-aso uo can be translated into English as "is sweet".

The four examples below illustrate the contrastive uses of nwere and nwe:

(8) Ada nwere ji 'Ada has or owns yams'
(9) Oko nwere manya 'Oko has or owns some wine'
(10) Ada nwe ji ndi a 'Ada owns these yams'
(11) Oko nwe manya nké a 'Oko owns this wine'

In sentences (10) and (11) where the thing spoken of as being owned is present in the immediate context of the utterance, in the here and now so to speak, the verb inwe is used without the -rV3 suffix, but in sentences (8) and (9) where the context clearly suggests that the thing spoken of as being owned is not present in the immediate context of the utterance but in some other place and time, definitely in some past time, the -rV3 suffix is used with the verb inwe.

Examples (12) and (13) below may be taken to illustrate the contrastive uses of soro uo and na-aso uo:

(12) Ofé egwusi nké a soro uo 'This egwusi soup is delicious'
(13) Ofé egwusi na-aso uo 'Egwusi soup is delicious'
Example (12) is a particular affirmation of quality while example (13) is a generic affirmation of quality. It can be fairly easily shown that particular affirmations of quality refer to some past experience, hence the -rV3 suffix in sọrọ, while generic affirmations of quality refer to universal time (past, present, and future), hence the use of the habitual form, nà-àsọ-ùsọ.

ON THE SCOPE OF THE SERIAL VERB CONSTRUCTION IN YORUBÁ

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I. ARGUMENT AGAINST pé 'say' as COMPLEMENTIZER

1. In common Yorùbá, pé, like sọ, wi, ní, means 'say'.
   a. Each may be used as the unique verb in mono-verbal sentences:
      i. Òjó fọ (gẹ̀nsì) 'Ójó speak (English)'
      ii. Òjó sọ gẹ̀nsì 'Ójó speak English'
      iii. Òjó wi ëjó 'Ójó state (his) case'
      iv. Òjó pé wọn dé 'Ójó say they arrive'
      v. Òjó ní wọn dé 'Ójó say they arrive'

   These verbs therefore subcategorize as follows: fọ: [+ (NP)]; sọ: [+ (NP)]; wi: [+ (NP)]; pé: [+ (S)]; ní: [+ (S)].

   b. pé combines with one or more of sọ, wi, ní:
      i. Olú sọ (wi) pé (ní) wọn dé
         'Olu relate say assert they arrive'
      ii. Olú ní pé wọn dé
         'Olu assert say they arrive'

   c. pé also follows other verbs and phrases:
      i. Olú gbìyàn jú (pé) kí wọn lọ
         'Olu try ( ) (COMP) they go'
      ii. O dára (pé) kí wọn lọ
         'It (be) good ( ) COMP they should go'
      iii. Ó dùn pé wọn lọ
         'It (be) sweet say they go'
      iv. Olú rò pé wọn lọ
         'Olu think say they go'
      v. Ò jọ (bí (ẹni) pé) wọn lọ
         'it seem (manner (one) say) they go'
      vi. bí ó tìlè jé (pé) ìyè fun po, kò tò
         'manner it from ground be(say) flour plenty, not enough'
         'though flour is plentiful, there still isn't enough'
The foregoing suggest that whenever a serial verb construction (SVC) (e.g., b and c) or any other construction (d) involves the assertion of a proposition, that proposition is predicated as object of pe as in (a.iv).

2. Certain Yoruba dialects use other verbs meaning "say", some without SVC.

Ijọṣà (w): ̀ùn é wààà '(he) say he (won't) come'

Ijàrọ: fọ

Oǹdọ: fọ ̀fì

Ilè-Ólújì: ̀fì (fì)

Ilèbú: fọ ̀̀fì

Èkitì: sù

II. CAUSATIVE CONSTRUCTION (LORD 1974; AWOBULUYI 1978)

1. NP2 is not always subject of V2:

wọn jẹ ẹran yen dún mì 'they eat meat that pain me'

Here it is the fact of eating, and not the meat that pains me.

2. "Both same subject and causative readings" are not possible for just any serial construction:

i. Ò gá pìn 'it tall stop' (It stops growing)

ii. Ò sọ̀rọ̀ tān 'he talk finish' (he completed talking)

iii. Bọ̀là ra ẹran jẹ 'Bola buy meat eat' (B. buys meat for eating)

iv. Splitting verb construction as causative SVC:

pamọ 'clean'; patì 'abandon'

Olú pa ilè mọ 'Olú cause the floor (be) clean'

3. The so-called causative verbs dá, fí, mú are either not subject to constraints enumerated in Lord (1974) or share syntactic characteristics with other verbs such as gbé, 'put', jẹ, 'make', sọ 'do'. When not the only verb in the sentence, they participate in SVC:

Ọba rán mì fì àákò gbé igi 'king send me use axe cut tree'

III. SERIAL VERB CONSTRUCTION TYPES IN YORUBA

Adverbial

i. Olófòofó rò wá ká 'gossip tell us (be) abroad'

ii. Ọkánjúà dá ẹran jẹ 'greedy (be) alone meat eat'
Benefactive

i. Olú ra asọ fun mi 'Olu buy clothes give me'
ii. Olú ra èwù bùn mi 'Olu buy garment present me'

Causative

i. Olú pe Ojó dé iilé 'Olu call Ojo reach home'
ii. Àwọn ọ̀sìṣẹ pa ise tì 'they workers (cause) work fail'

Circumstantial

mo jọkọ ka iwe 'I sit read book'

Comitative

i. Olú bá mi lo sì Kano 'Olu accompany me go to Kano'
ii. Olú kún mi òtọ̀ kọ̀ ebè 'Olu assist me to make heaps'

Complement

i. wọn rò wá pin 'they think us finish'
ii. wọn so pé Olú yọ̀ dé 'they tell say Olu (PROSP) come'

Comparative

ọmọ náa gbọ̀n jọ̀ bàbá rẹ́ 'child the clever resemble father his'

Consecutive

i. ó wí bẹ̀ se bẹ̀ 'he say so do so'
ii. ó nà mi lọ́ 'he hit me go'

Instrument/manner

wọn fì suùrù to ù̀rò náa 'they apply patience settle affair the'

Locative

aláàárù sọ ẹ̀rù kà ẹ̀nì 'porter bring-down load rest mat'

Purpose

i. a pàdè yanjú ù̀rò náa 'we meet settle affair the'
ii. mo wà ù̀rò mi lọ̀ sì New York 'I seek friend my go to N.Y.'

Respect

ọmọ náa ga wù mi 'child the tall please me'

Result

i. ọ̀pàà na olè náa bẹ̀ 'police whip thief the bleed'
ii. ìgbò̀ ro oko là 'farmer cultivate field rich'
Simultaneous Events

Miscellaneous

i. wọn mú iṣẹ se 'they take work do'
ii. wọn bu iṣẹ se 'they slice work do'
iii. wọn je iṣu nàa gbé 'they eat yam the (be) irremediable'

Observations

i. The class of miscellaneous is large and hard to pigeonhole conceptually: (i) they set to work; (ii) they have virtually completed the job; (iii) they got away with eating the yam.

ii. all the SVC types above may be accounted by the SD:

###NP V NP PP V NP PP###

iii. (1) No paraphrase to suggest underlying coordinate (conjoined) or embedded structure for Benefactive, Causative, some purpose, some complement.

(2) Circumstantial, comitative, comparative, purpose, result, simultaneous, may be provided with synonymous embedded sentence paraphrase only.

(3) Respect, comparative, some adverbial, may be provided with paraphrases with nominalized VP involving the second verb.

(4) Some adverbial, consecutive, instrument/manner, may be provided with paratactic construction as underlying structures.

In the case of (2), (3), and (4), no transformation describable to account for SVC either without changing meaning, or without violating recoverability constraints, or both. Given (i) and (ii), therefore, it is meaningless to try to define a closed set of SVC in Yoruba. It appears that for the language, SVC must be considered to be a syntactic device at the disposal of speakers for expressing a large variety of logical possibilities.

IV SVC DERIVATION

Certain syntactic and morphological processes treat verbal series in an SVC exactly like a simplex VP in a mono-verbal construction, that is, as a sentence VP. These processes include:

i. Syntactic formatives for modals, negation, aspect, and modifier type, all with [+ VP] as subcategorization feature: tì, PERFECTIVE, yòò, PROSPECTIVE; ṵ, PROGRESSIVE; kò, NEG; kùkù, MODIFIER; lè, MODAL.
ii. Selectional restrictions: verbal series in a SVC bear unique selectional restrictions independent of the selectional restrictions for the individual verbs in the series.

iii. Deverbalization processes through reduplication and prefixation which treat SVC verbal series like a sentence VP.

iv. Verbal reiteration for plurality of action.

v. Topicalization and relativization.

vi. Verb Phrase Modification.

IMPLICATION

The phrase structure of Yorùbá must include at least the following rewrite rules:

1. \( VP \rightarrow V \ (NP) \ (PP) \ (VP^*) \)

2. \( VP \rightarrow V \ (NP) \ (PP) \)

Sentences like

iii. \( ó \ pè \ mì \ wè \) 'he call me bathe'

iv. \( ó \ wò \ mì \ sé \ lòpò (ènì \ òòò) \) 'he look (at) me do harm'

may therefore have the following underlying structural description:

v. \( NP \ V \ NP \ V \ NP \ PP \)

iii' \( ó \ pè \ mì \ wè \ ara \ mì \) 'he call me bathe my body'

iv' \( ó \ wò \ mì \ sè \ mì \ lòpò \) 'he look me do me harm'

A transformational rule, forward object deletion, must then apply to derive (iii) and (iv). This transformation turns out to describe a very productive process in the language. It accounts for the deletion, without trace, of relativized as well as topicalized NPs, just in case they are objects of verbs or prepositions before topicalization or relativization. It explains, too, the uselessness of using transitivity as a classificatory criterion for Yorùbá verbs, since the objects of virtually all transitive verbs may not surface, just in case they represent old information in the discourse.
THE INFINITIVE IN KINYARWANDA

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Introduction

The purpose of this paper is to determine the distribution of clauses generally called infinitives. The distribution of infinitives is of particular interest in the study of Kinyarwanda complementation in that they function as noun phrases, verb phrases, subjects and objects of verbs, and objects of prepositions. They also undergo the rules of movement and deletion generally associated with noun phrases. But there is also evidence that they exhibit sentential properties, suggesting that they may be derived from sentences. We shall, therefore, attempt to determine the underlying structure of the infinitive and to account for its surface realization.

The paper is organized into three parts. The first part provides evidence that infinitives function as subjects of sentences. The second part shows that they function as objects of verbs and objects of prepositions. In the third part we show that the infinitive may be moved and deleted like any other noun phrase.

1. Infinitives & Subjecthood

In Kinyarwanda, the infinitive is generally identified as a verb, a phrase or a clause introduced by the preposition ku or gu in expressions like the following:

(1) a. ku-geenda
    to walk

b. ku-ambura abaana
   to rob children

c. inyungu yo gu-tsinda
   the reward of winning

All the expressions in (1) may occur in sentence initial position and function as subjects of sentences. In many languages, there are certain morphosyntactic properties associated with subjecthood (cf Andrews, 1970; Keenan, 1976; Cole, 1977). One such property is the ability of subjects to control verb agreement. In Kinyarwanda, as in many Bantu languages, the subject of a sentence obligatorily triggers the placing of a subject prefix which agrees in noun class and number, on the verb.

Similarly, when an infinitive occurs as a subject, it triggers agreement. Just as in simple sentences, when the subject prefix is absent, the sentences are ungrammatical, as in (2) below.

(2) a. ku-geenda gu-teera amabavu
   to walk ag causes blisters
   walking causes blisters

b. *kugeenda ø teera amabavu
   to walk causes blisters

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(3) a. ku-ambura abaana gu-teera umwaaku
to rob children ag-cause bad luck
b. ≠ku-ambura abaana ø teera umwaaku
to rob children cause bad luck

In order to establish conclusively that infinitives control verb agreement, we have to show that the prefix gu in (2a) in guteera amabavu must be a subject prefix, while in subject position it is an infinitive prefix. The evidence in support of the case that gu/ku is an agreement marker is as follows: infinitive subjects have either ku gu or bi as the subject agreement prefix on the verb. Thus, in (3) above, bi may be substituted for ku gu without loss of grammaticality, as we show below:

(4) a. kugenda {bi [gu] -teera amabavu
walking ag cause blisters
'walking causes blisters'
b. kuambura abana {bi [gu] teera amwaaku
to rob children ag causes bad luck
'robbing children causes bad luck'

2. Infinitives and Objecthood

Infinitives may function as direct objects and objects of prepositions. In clear cases, infinitives function as object NP's to verbs like kunda, 'like'; anga, 'dislike'; and shaaka, 'desire/want'. Evidence that infinitives function as objects is provided by the operation of the rules of passivization and Left-dislocation.

2.1 Passivization. In the following examples we show that an infinitive can be passivized.

(5) a. Kareera akunda kuroba
Kareera ag like to fish
'Kareera likes fishing'
b. kuroba gukudwa na Kareera
fishing as like-poss by Kareera
'fishing is liked by Kareera'
c. abasonda baanga gutongana
soldiers dislike to quarrel
'soldiers dislike quarrel'
d. gutongana ku-angwa na abasoda
'quarrel is disliked by soldiers'

In (5) above the (b) and (d) sentences are passive variants of the (a) and (c) sentences. As in most other languages, the passive in (K) involves inversion of the subject and object NP's in simple sentences, in such a way that the logical object becomes the formal subject, while the logical subject becomes the object of the preposition -na. The argument being
made here is of the following form:

A. In (5b) and (d) passive has been successfully applied.

B. In (5b) and (d) an infinitive has been moved from object to subject position.

C. Therefore, infinitive phrases are NP's in (1b) and (d).

The argument from passivization establishes that infinitives function as object noun phrases.

3. Left-Dislocation. The rule of Left-dislocation is known to move NP's to the sentence initial position (Ross, 1967). The data from Kinyarwanda supports Ross's claim that Left-dislocation can only move NP's, although evidence from certain central Bantu languages (e.g. Dzamba, Lingala, Likila, and perhaps Swahili) shows that topicalization and Left-dislocation can move verbs and VP's as well as NP's (cf. Bokamba, 1981: Aspects of Bantu Syntax, ch.3). Now, if Left-dislocation moves only NP's and it moves infinitives, then infinitives must be noun phrases. In the following examples we show that the infinitive functions like a primary object, in that it triggers object agreement, in:

(6) a. Kareera akunda kuroba
    Kareera likes fishing

b. *kuroba, Kareera a-ra-kunda
   fishing, Kareera ag-TA-likes

c. kuroba, Kareera a-ra-gu-kunda
   fishing, Kareera ag-TA-it-likes
   'fishing, Kareera likes it'

d. abasoda baanga gu tongana
   soldiers dislike quarreling

e. *gutongana, abasode ba-ra-anga
   quarreling, soldiers ag-TA-dislike

f. gutongana, abasoda bara-ku-anga
   quarreling, soldiers ag-TA-it-dislike
   'quarreling, soldiers dislike it'

The ungrammatical sentences in (6) show that Left-dislocation is allowed only when there is an object clitic on the verb, and this object clitic must be of the same noun class as the phrase moved to the sentence-initial position. Now, since only nouns induce agreement, the agreement between the infinitive and the pronominal clitic must be achieved by the rule of object agreement, which is very common in Bantu languages.

Theoretical Implications

Reanalysis. Keenan (1976) and Trithart (1975) have observed that in Bantu languages noun phrases are generally reanalyzed in the course of a transformational derivation. In Chichewa (Trithart, 1975), for instance,
oblique NP's, e.g. locatives, may be passivized and once in subject position, they control verb agreement. Keenan observes that what is happening here is not an ordinary case of promotion from oblique status to termhood but a reanalysis of a prepositional phrase as a unitary noun phrase. It appears that the transition from an infinitival verb phrase to infinitival noun phrase can be characterized in similar fashion. With respect to the data in this paper we may assume that a sentential subject or object is reduced to an infinitive and then is reanalyzed as a simple NP. Where an infinitival subject still triggers the bi agreement, we may assume that a trace of its sentential character still exists when agreement applies. In fact, the process of reanalysis has become grammaticalized to the extent that a regular noun class, class 15, is allotted to infinitival nouns.

A STRENGTH HIERARCHY FOR TSWANA*

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Phonological processes subsumed under the traditional labels strengthening and weakening have emerged over the last decade or more as issues confronting synchronic generative phonology. Cole (1955) has claimed that a morphophonemic pattern in Tswana reflects a strengthening process. The alternations manifesting this pattern, shown below, occur in initial position in verbal, nominal and adjectival root forms. In addition, Cole has referred to this morphophonemic pattern:

\[
\begin{align*}
\text{b} & \rightarrow \text{p}' \\
\text{š} & \rightarrow \text{tš} \\
 -(\text{vowel}) & \rightarrow \text{k}' \\
\text{f} & \rightarrow \text{ph} \\
\text{x} & \rightarrow \text{kxh} \\
\text{r} & \rightarrow \text{theta}
\end{align*}
\]

as Nasalization, since he posited the class of nasal consonants, occurring in prefix final position adjoined to root forms (e.g., xo-rátà : xo-n-thátà), as its motivating condition. With respect to this pattern, a strength hierarchy is postulated which attempts to answer two questions. First, why does this particular subset of phonemic segments change in strength value? And secondly, what accounts for the specific changes in strength value?

The Tswana strengthening process is considered in light of three models, these being Lass and Anderson (1975), Hooper (1976) and Foley (1977). For Lass and Anderson, certain positions within a word are subject to a particular phonological process, or with sufficient time, a sequence of processes. The segments manifesting these processes give rise to the Lass and Anderson strength hierarchy. Certain aspects of the Tswana process are highlighted by this hierarchy but in general, it fails to answer either of the questions raised above. First, the values on their hierarchy fail to characterize in a principled fashion the strengthening of most segment types, for example the strengthening of liquids to two different values. Secondly, the effect of the strengthening process on individual segments according to the Lass and Anderson hierarchy seems arbitrary and
inconsistent. The segment \( \text{ph} \), for example, fails to strengthen even though a segment assigned a greater strength value, \( b \), and a segment assigned a lesser value, \( h \), do strengthen.

In contrast to Lass and Anderson, Hooper appears to answer the why question regarding the strengthening process by interrelating the notions of segment strength and position strength. These notions are in part governed by the Intersyllable Condition. This condition stipulates that the strength value of a syllable initial segment exceed the strength value of the final segment of the preceding syllable. Extending this principle to Tswana, it appears that a conflict may exist between the values inherent to position and segment strength. That is, a conflict appears to exist between the strength value accorded syllable initial position relative to the preceding syllable final position and the strength value accorded segment types occupying those two positions. Nasal consonants are the pivotal segment type in this conflict since they precede the syllable boundary adjacent to the segments changing in strength value.

Though the import of the Intersyllable Condition seems crucial, the remainder of Hooper's framework cannot account for specific changes in strength value. Hooper's Principle of Minimal Feature Change, although it predicts the strengthened alternate for \( b \), does not predict the strengthened alternates for liquids and fricatives, to say nothing of glides and vowels. For instance, it predicts that \( t' \), rather than \( th \), should be the strengthened alternate of \( r \), since only three feature specifications distinguish \( r \) from \( t' \) while four specifications distinguish \( r \) from \( th \). Similar predictions are made for \( l \). Contrary to these predictions, the strengthened alternate of \( r \) is \( th \) and the alternate of \( l \) is \( t' \).

The major weakness of the approach to the Tswana strengthening process based on Hooper is its inability to predict the amount of strengthening undergone by individual segments. In Foley we can identify a possible comprehensive strengthening principle. According to Foley, the internal structure of phonological processes is governed by the Inertial Development Principle. This principle assumes that phonological segments are assigned values reflecting their relative inherent strength and that the positions occupied by segments are assigned relative strength values. In the context of these two assumptions, the Inertial Development Principle stipulates that a process of the type strengthening applies preferentially and most extensively to a strong segment in a strong position. Likewise, it stipulates that a process of the type weakening applies preferentially and most extensively to a weak segment in a weak position. The Inertial Development Principle, hence, governs the relative order in which segments are subject to a phonological process and the relative extent a segment value will strengthen or weaken.

By combining Foley's Inertial Development Principle and Hooper's Intersyllable Condition, a strength hierarchy for the Tswana process can be articulated. This is accomplished by incorporating into a primary hierarchy, secondary and tertiary hierarchies. These hierarchy types are also discussed in Lass (1971) and Foley (1970). A composite hierarchy of strength relations for Tswana in line with the above discussions of strength phenomena is shown on the next page.
Voiceless stop, for example, incorporating aspirated and unaspirated forms, is assigned a single strength value on the primary hierarchy relative to other segment types. On the secondary hierarchy, positions at which the segment type voiceless stop is manifest, velar, alveolar and labial, are assigned relative strength values, velar being the weakest and bilabial the strongest. Finally, on a tertiary hierarchy within the primary and secondary hierarchies, ejective stop is assigned a weaker strength value relative to aspirated voiceless stop.

Despite the fact that the strongest segment types in the hierarchy above do not strengthen, this hierarchy is compatible with the Inertial Development Principle. That is, this principle appears compatible with the fact that segments with the greatest strength value in positions of strength fail to strengthen while segments of lesser value do strengthen. The Inertial Development Principle is stated in terms of absolute agreement between inherent segment strength and inherent position strength, i.e. strong segments in strong positions strengthen before weaker segments and strong segments in strong positions strengthen more than weaker segments in strong positions. In cases of conflict between the values of position and segment strength, such as that postulated for Tswana, the Inertial Development Principle is no less applicable. The order of strengthening, in what might be termed differential strengthening, instead of beginning with the strongest segment on a strength hierarchy, begins with the strongest segment manifesting a value less than the segment type defining the differential condition. For Tswana, the differential condition is posited as the strength value assigned to nasals.

The application of the Inertial Development Principle to the hierarchy above is straightforward. In general, we see that successively stronger segments attributed a value less than nasal consonants alternate with successively stronger segments attributed a value greater than nasals. For instance, the strengthened alternate of the segment type fricative maintains its strength status relative to the strengthened alternates of the other segment types. The alveolar fricative s, consistent with its greater value below nasal in the hierarchy, is strengthened to the greater value above nasal, alveolar affricate. Assignment to this value by itself does not specify the appropriate strengthened alternate however. To achieve the required alternate, s must be strengthened to a value within alveolar affricate. Consistent with the Inertial Development Principle, s is strengthened to the greater value within the tertiary hierarchy at alveolar affricate, which, appropriately, is the segment tʃh.
The segment type liquid follows a similar pattern. The strengthened alternate of the type liquid is a value at alveolar which is greater than nasal but less than the strengthened alternate of the type fricative alveolar. The type liquid is thus strengthened to the type alveolar voiceless stop. This value by itself is insufficient to specify the required strengthened alternates. At alveolar voiceless stop, two alternates are possible. Abiding by the Inertial Development Principle, the segment on the tertiary hierarchy at alveolar liquid with the greater strength value is strengthened to the segment on the tertiary hierarchy at alveolar voiceless stop with the greater strength value. Since r is assigned the greater value within the liquid tertiary parameter, it would strengthen to th, assigned the greater value within the tertiary hierarchy at alveolar voiceless stop. The segment with the weaker value within liquid, l, is then strengthened to the weaker value within alveolar voiceless stop, t'. Though the tentative nature of the preceding must be stressed, it seems that investigation by means of the notion strength may allow initial understanding of morphophonemic patterns in Tswana and allow us to begin recognizing and organizing relationships among these patterns.

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* I am indebted to Ms. Leloba Young, a native speaker of Tswana, and Professor Paul De Wolf of the Institut für Ethnologie und Afrika-Studien in Maniz, West Germany, for assistance in analyzing the data on which this summary paper is based. Preparation of this paper was supported by NIMH Grant #MH14644-04.

TYPES OF GENITIVE CONSTRUCTIONS IN CHADIC

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Within the Chadic language family, a widespread phenomenon is the formal distinction between alienable and inalienable genitive constructions. A typical example can be drawn from Kanakuru, a language of the A Branch of West Chadic (all Kanakuru data are from Newman (1974)):
In the first example, the horn is part of the buffalo's body, i.e. it is a thing for which ownership cannot be renounced, whereas in the second, the horn is an acquired possession. In Kanakuru and many other languages, the alienable vs. inalienable constructions are quite productive and can signal semantic distinctions of the type above, typically with body parts, kin terms, and a few others such as 'name' and '(home)town'. In other languages, the distinction is not productive, being essentially a property of specific lexical items without reference to context, e.g. in Bade (Schuh, 1977) only the words 'wife', 'household', '(home)town', 'in-law', and perhaps two or three others use the inalienable construction type — indeed the grammar requires that these nouns appear in this construction type.

The alienable/inalienable distinction as an at least partly productive construction type is found in languages in all the major branches and subbranches of Chadic. Where it is found, the formal distinction is virtually always the following: the alienable construction requires some sort of overt genitival "linking" morpheme between N₁ and N₂, whereas the inalienable construction involves mere juxtaposition of the nouns, or at most, some phonological modification of N₁ or, less commonly, N₂. Moreover, the "linker" in the alienable construction can virtually always be related, directly or historically, to an element of the determiner system. Thus, in the Kanakuru example above, the linker ma of the second phrase is clearly related to the masculine demonstrative me (cf. gam 'ram', gam-ˈi me 'this ram') and likewise, in the construction tīŋa ra lowo-i 'the boy's ewe', the linker ra is related by well documented sound laws to the feminine demonstrative forms (cf. tīŋa 'ewe', tīŋa-ˈi shē 'that ewe').

Even though the "alienable/inalienable" distinction is widespread in Chadic and is now truly categorial in some languages, a number of facts converge to demonstrate that the distinction in modern languages is not a direct reflex of any proto-Chadic distinction. Recall that the inalienable construction typically involves direct juxtaposition of possessed and possessor. Now, in languages with an alienable/inalienable distinction, there are virtually always constructions other than those where N₁ is an inalienable possessed item which use the same construction type. Typically, these include verbal noun + direct object (seen, for example, where one or more of the verb tenses uses the verbal noun rather than a finite verb as main verb), preposition + complement noun phrase, locative relational word + location, e.g. 'inside the house', and compound nouns. We may again cite examples from Kanakuru:

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Verbal Noun ato dushe kure 'she will pound corn' + Object shii ay-mo-wo 'he is helping you (m.s.)' Loc. word + complement la mana 'in the house' pete mu 'next to us' Compounds yila yero 'pupil' (grain [of] eye) buro dok 'Borno salt' (salt [of] horse)

In none of these constructions is N₁ an inalienable possession of N₂. Obviously, then, it is not the semantic relationship of (in)alienability which accounts for the syntactic distinction noted at the beginning of this paper, at least from a historical point of view.

I venture the following historical hypothesis for how the alienable/inalienable genitive distinction developed: the genitival relation between nouns was originally marked only by juxtaposition of N₁ + N₂. The linking morpheme, "of", seen in modern "alienable" constructions is historically either a definite determiner attached to N₁ or a determiner in apposition to N₁. There is, therefore, no historical difference between "alienable" and "inalienable" syntactic constructions, rather, the distinction is in modifiers on nouns contained in the constructions ("that" in the schemata below is a cover symbol for some definite determiner):

"Inalienable" N₁ Ø "of" N₂

"Alienable" N₁-that Ø N₂ or N₁ that-one Ø "of" N₂

(demonstrative attached to N₁) (demonstrative in apposition to N₁)

To understand why the "direct juxtaposition" construction should be used in inalienable constructions as well as the other classes of constructions noted above, whereas the "demonstrative linked" constructions is used elsewhere, we may turn to another sort of grammaticalization of demonstratives, viz. what Greenberg (1977) calls Stage II articles. A number of Chadic languages require that most nouns in their citation forms have an affix (a Stage II article) which derives historically from a definite demonstrative. Greenberg points out that these Stage II articles are typically absent in just those cases where the noun is inherently definite, e.g. proper names, or where the noun is generic (inherently non-determined), e.g. generic verb object (baby-sit). In these two classes of cases, definite determination is either redundant and/or irrelevant.

Not all languages showing an alienable/inalienable genitive distinction have Stage II articles, nor is the converse true. However, the parallelism between the factors determining the presence or absence of Stage II articles and the factors determining "direct" or "demonstrative linked" genitival constructions should be clear. Inalienable possessions are inherently determined: kin and other similar relations ('friend', 'age-mate') in particular require "possessors", i.e. "determiners", in order to be interpretable; in the same way, a body part as an inalienable
possession is automatically "determined" by its possessor. On the other hand, a typical alienable possession, e.g. a knife, an animal, need have no possessor at all. While associating such a noun with a possessor "determines" it in some sense (indeed, this is a construction where nouns typically drop Stage II articles), the use of a determiner on the possessed noun is not redundant or irrelevant the way it would be for inalienable possessions: we could sensibly speak of "this knife" that John possesses as opposed to any other knife he might potentially possess, but we could not do this in the case of John's mother or his nose.

Nonetheless, possessed alienables are typically definite across discourse, leading to the frequent use of definite determiners to modify such nouns. It is determiners used in this way, where syntactic function has been reinterpreted, which have become grammaticalized as genitival linkers.

Inalienable possessions have no demonstrative-derived linker because they are inherently determined. For the other types of constructions which typically use the direct construction, e.g. verbal noun + object, determination is simply irrelevant. What would a determiner, definite or indefinite, mean in such constructions if it were attached to N1? Many modern Chadic languages do use demonstrative-derived determiners in such constructions, but this development has come about only after the linkers were grammaticalized as such and their demonstrative origins obscured.

In summary, the widespread Chadic distinction between alienable and inalienable genitive constructions is neither a distinction inherited through the course of history from proto-Chadic, nor is the so-called "inalienable" construction strictly limited to certain types of possessed nouns characterizable as semantically inalienable.

I should conclude by pointing out that I am not claiming proto-Chadic or later intermediate proto-stages did not have distinctions between different genitival construction types. Indeed, it is quite likely that such distinctions have appeared, disappeared, and reappeared many times in the history of the family by following exactly the paths that I have hypothesized for the modern languages.

FOOTNOTES

1. Many locative relational words ('in', 'on', 'behind', etc.) derive from body parts ('stomach', 'head', 'back', etc. respectively) and hence would be expected to use the same construction type as body parts, viz. inalienable. However, languages generally have at least some locative terms not related to body parts, e.g. 'tree' = 'above, over', or have differing forms of the same root used as body part or locative word.

2. The close syntactic nexus of N₁ + N₂ could be expected to have phonological consequences such as tone perturbations, stress shift, or modification of vowels across the N₁ + N₂ boundary. Where such phonological changes, originally a secondary outcome of the syntax, exist, they could easily be reinterpreted as the actual indicator of a genitive relation. Hebrew סמלְเกษตร is a case in point.
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RETHINKING INALIENABLE POSSESSION IN SWAHILI: THE EXTENSIVE CASE

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This paper's overall purpose is to argue that there are special syntactic constructions in Swahili which contain a slot which will accommodate only nouns which specify the EXTENT to which the state or action referred to by the verb applies to the patient-noun of the sentence. Nouns which appear in this slot are said to be in the EXTENSIVE CASE. Nouns denoting inalienability form a sub-class of extensive case nouns. (A limited survey of other Bantu languages shows the same syntactic encoding of inalienable possession-nouns and other nouns in the extensive case, with seemingly minor differences.)

In making this argument, the paper makes explicit claims about permissible syntactic constructions in Swahili and their case configurations. These claims take account of data cited in Whiteley (1972), but go beyond Whiteley's aims 'to expose the diversity of surface patterns' (1972:41) by attempting to explain differences in surface structure. The paper argues against the claim of Hinnebusch and Kirsner (1980) that the message of inalienability is an inference which the hearer makes, based on those meanings which are explicitly signaled syntactically, rather than a message which is explicitly and therefore uniquely encoded itself. While I agree that the message of inalienability is NOT uniquely encoded syntactically, I only do so because I argue that nouns of inalienability form a sub-class of the larger natural class of nouns which signal extensiveness.

The Semantic Characteristics of the Extensive Case

How may we characterize the membership of the extensive case if it is claimed that nouns signalling inalienable possession form only a sub-class of this membership? Other writers on inalienable possession in Bantu, such as Voeltz (1976) and Hyman (1977), have noted that nouns IN ADDITION TO THOSE SIGNIFYING INALIENABLE POSSESSION seem to be able to occur in the same special constructions which appear to accommodate primarily nouns which are inalienably possessed. These writers have explained this occurrence by extending the domain of the inalienable possession construction to such nouns which are NOT body parts, but which refer to 'parts' of 'wholes' (such as 'water' is to 'river').
The characterization of the extensive case suggested here is such to include nouns referring to 'part-whole' relationships, as well as nouns which are inalienably possessed, BUT MORE GENERALLY ALSO NOUNS which stand in a 'real world affinity' relationship to the patient-noun of the sentence. Thus, the extensive case includes nouns which satisfy the following requirements: (1) Their meaning is such, in relation to that of the verb, that they limit or particularize the extent to which the action or state referred to by the verb applies. (2) Their meaning is such that they stand in a 'real world affinity' relationship to the patient-noun in the sentence. That is, the patient-noun is typically limited in the real world in terms of the extensive case noun. Therefore, such patient-nouns and their verbs as the following take these extensive case nouns: persons and their being affected in reference to specific body parts, houses and their entering by rats, or dust, or people, vessels for liquids and their being filled by liquids, food and its cooking by using certain utensils, natural physical areas or objects (such as gardens or rivers) and their being affected in terms of objects which are naturally associated with them in the real world.

The Syntactic Characteristics of the Extensive Case

The sentence types which accommodate the extensive case and no others are:

(1) Sentences expressing an agent:

NP1 (agent) + verb + NP2 (patient) + NP3 (extensive)

Watu hawa wa-li-m-ziba mtoto huyu mdomo.
'These people plugged up this child's lip.

*Watu hawa wa-li-m-ziba mtoto huyu shimo.
'These people plugged up this child's hole/excavation/mine.'

Except for nouns expressing time, nouns other than those showing extensive case are only possible in the NP3 slot with special case markings. The instrumental as NP3 is always marked with kwa. Locative nouns in the NP3 slot are case marked in some way, or are place names.

Note: this pattern may have only NP1 and NP2 if the agent is also the patient, as in:

Ni-li-oga mguu. 'I washed (myself) as to leg.'
Ni-li-kata-kidole. 'I cut (myself) as to finger.'
Ni-li-oga kata moja. 'I bathed (myself) as to one ladleful.'
(Note contrast with instrumental case: Ni-li-oga kwa kata. 'I bathed, using a ladle.)

(2) Sentences not expressing an agent:

NP1 (patient) + verb + NP2 (extensive)

Ni-me-fura jino. 'I am swollen as to tooth.'
Mtoto huyu a-me-vunjika mguu. 'This child is broken as to leg.'
Chungu hiki ki-me-kauka maji. 'This cooking pot is dry as to water.'
Only locative or time nouns, other than extensive case nouns, can occur in the NP2 slot in this construction; and, as noted above, the locative noun has an overt case marking.

In sentences with verbs taking a non-agentive subject, NP1 and NP2 can be flip-flopped. For example:

Mvi zi-me-enea kichwa kizima.
'Grey hairs cover the entire head.'

Kichwa (kizima) ki-me-enea mvi.
'The entire head is covered as to grey hairs.'

'Dust has entered as to all the people.'

Watu (wote) wa-me-ingia vumbi.
'(All) the people are entered as to dust.'

The following criteria (which Hyman (1977) invokes) show that NP3 is NOT an instance of patient case, as Hinnebusch and Kirsner argue. 
(1) NP3 has no access to the object prefix position. This access goes only to NP2, which is patient case. (2) NP3 has only marked access to the immediate post-verbal position to which NP2 has unmarked access.
(3) NP3 does have access to becoming the subject of a passive transform, but this is a rather marked access, and not possible with all instances of extensive case. (In Haya, which Hyman studied, NP3 has no access to subject position.)

Hinnebusch and Kirsner also seem to argue that NP2 (with agentive subject) is an instance of the dative case in constructions including an inalienably possessed noun. Fillmore (1968) does note that the possessor of the body part which is inalienably possessed is encoded in the dative in some Indo-European languages. However in Swahili, there is much more motivation for positing the 'interested person' (to use Hinnebusch and Kirsner's term) or the NP2 in the patient case, not the dative. This is because in Swahili the NP directly following the verb is only dative with verbs in applied extended form, NOT with verbs in the simple, unextended form as those in the examples here. Therefore, if we did accept their argument that NP2 is dative, then we would still have to account for the fact that a unique construction exists (unextended verb form with dative in immediate post-verbal position). And then we would have an excellent piece of evidence to argue that Swahili does have special syntactic constructions for inalienable possession (and for the more general class of nouns in the extensive case)--which is exactly what Hinnebusch and Kirsner try to argue against.

In conclusion, this paper makes the following points: (1) There is good motivation for positing an extensive case in Swahili (and probably in many other Bantu languages). Such a hypothesis explains both (a) why inalienably possessed nouns have a different syntactic distribution from other post-verb nouns, notably patient-nouns; and (b) why inalienably possessed nouns have a similar syntactic distribution to other post-verb nouns (those also in the extensive case). (2) Two different syntactic patterns in Swahili (those with an agentive subject and three NPs in the sentence and those with a non-agentive subject and two NPs in the sentence)
can be characterized by a generalization: They both accommodate extensive case nouns in such a way that the two patterns should be described in the grammar of Swahili as related. (3) Finally, this paper is an argument that while one should assume the simplest relationship possible as an explanation for data, an acceptable theory of language must take account of actual differences in syntactic structures. Such differences are motivated, the paper argues, by more than a desire for syntactic embroidery or simplification; such differences encode differences in meaning.

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TONE AND INTONATION IN LIBERIAN ENGLISH NEGATION*

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Liberian English—the pidginized and creolized dialects of English spoken in Liberia—is an intonational language, but its negative auxiliaries always display raised pitch, a fact that suggests that they must be specified for this in the lexicon. (Examples of NEG AUX’s are given in (1).)

(1)  
   a. mari kę sę.  
   --- ===  
   'Marie can't sing.'

   b. e ná ma wo.  
   --- ===  
   'I'm not the only one.'
   (lit.: 'It's not my one. ')

*This paper developed from research done while I was employed by the African Studies Center of Michigan State University in the preparation of materials on Liberian English for the U.S. Peace Corps. I am grateful to David Dwyer and to others at the Center for their support. I also wish to thank Boima Barclay, my principal consultant on this facet of the research; he was the speaker for most of the examples used here.
The bulk of even the most fundamental work on intonation in Liberian English remains to be done. However, even before, for example, the intonational contours of Liberian English have been established in a systematic way, one can see the special status of negative auxiliaries. While other words vary in pitch according to their position in the sentence and the prominence accorded them, the NEG AUX's will always display a raised pitch. Whether or not the negation is stressed, regardless of the extent to which prominence is attached to other parts of the intonational phrase, it doesn't matter: the NEG AUX is realized with either a high level tone or a rising contour that ends high. Which of the two it will be, high level or rising to high, is sensitive to the syllable structure of the AUX: if the NEG AUX is consonant-initial, then the AUX is more often realized with a high level tone than with a rising tone; on the other hand, if the NEG AUX consists of a nasalized vowel, then the AUX is more often realized with a rising tone than with a high level tone.

The term NEG AUX is here taken to refer to the NEG-words that appear preverbally (as in (1a)) or—in copular constructions—the NEG-words that appear adjacent to the copula itself. (An example of this—with a zero copula—is found in (1b).) There is variation as to the status of NEG-words which appear in NP's; a preliminary investigation suggests that the variation occurs not within individual speech but among dialects, the creolized dialect not assigning invariant raised pitch to them while other dialects do. For the present, only the negative AUX's will be considered.

In three cases, the raised pitch of the NEG AUX is especially important. The first involves *ke*, used to negate the habitual. It contrasts with the affirmative habitual marker *ke* with respect to pitch, as illustrated in (2).

(2)  

<table>
<thead>
<tr>
<th>a. da boy <em>ke</em> sti.</th>
<th>b. da boy <em>ke</em> sti.</th>
</tr>
</thead>
<tbody>
<tr>
<td>'That boy is a thief.'</td>
<td>'That boy doesn't steal.'</td>
</tr>
</tbody>
</table>

(lit.: 'That boy can steal.')

The second case where the raised pitch of the NEG AUX is important involves *na*. It is widely used where Standard English uses not, for example, with copulas, before progressive forms, and with other auxiliaries. For some basilectal and mesolectal speakers, it is also used with the uninjected form of the verb, as in (3b). In this latter environment, it is in contrast with the completive marker *na*, whose use is illustrated in (3a).

(3)  

<table>
<thead>
<tr>
<th>a. a <em>na</em> tɛ hɛ.</th>
<th>b. a <em>na</em> tɛ hɛ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>'I have told him.'</td>
<td>'I didn't tell him.'</td>
</tr>
</tbody>
</table>

(In the *ke/ke* case—but not the *na/na* case—the affirmative AUX, too, is specified for tone, consistently displaying an especially low pitch.)

The third instance where tone is especially crucial involves sentences in which negation is expressed by a lengthened, nasalized, high-toned copy of the final vowel of the subject-phrase, as in (4b) and (5b).
(4) a. a lak e
   b. a-ə lak e
   'I like it.'
   'I don't like it.'

(5) a. hi mine mi
   b. hi-i mine mi
   'He's being mean (or miserly) to me.'
   'He's not being mean (or miserly) to me.'

The negator in sentences like (4b) and (5b) is derived from ədo (≉ 'don't) and/or əe (≉ 'ain't). All three of the sentences in (6) do occur and carry the meaning, 'We don't care':

(6) a. wi ḋo kyɛ.
    b. wi ə o kyɛ.
    c. wi i kyɛ.

An optional ad-hoc rule of Liberian English--given in (7)--deletes the initial d of ḋo and de (≉ 'didn't'). The operation of the rule is what distinguishes (6b) from (6a).

(7) \[ [d] \rightarrow \emptyset / V_1 ] [+ NEG] \]

The assimilation rule which changes forms like (6b) to ones like (6c) is found in (8).

(8) \[ V \rightarrow \begin{bmatrix} + NAS \\ \alpha F_1 \end{bmatrix} / V \begin{bmatrix} + NAS \\ \alpha F_1 \end{bmatrix} \] \[ [+ NEG] \]

Of the three characteristics--raised pitch, vowel length, and nasalization--which establish negation in sentences like (6c), nasalization seems to be less crucial than the other two. Its distinctiveness becomes lost in environments that are already nasal, as, for example, when the vowel it copies is a nasalized one. Indeed, for some speakers at least, nasalization may be optional, resulting in sentences like (9).

(9) yu-ú ḋek ma hɛ, a kekɛ yu stre
    'If you don't shake my hand, I'll kick you right now.'

For such speakers, the feature [+ NAS] is removed from the output of the rule given in (8).

As for the remaining two characteristics--raised pitch and vowel length--they appear to work together. That is, it is the combination of two which signals negation. In very fast speech, it is true, vowel-length may be more difficult to perceive. Thus, in very fast speech--if the environment is nasal and the rule in (8) has operated--raised pitch is virtually the only signal of negation. This is the case in (10).
For the most part, however, it is not pitch alone but the combination of pitch and vowel-length that marks negation in such instances.

The question arises as to how a high tone came to be associated with negation. Sentences such as those found in (2) may provide the explanation. As a general rule for dialects of English, raised pitch is more often attached to heavy or prominent items than is lowered pitch. Further, Bolinger (1978) describes his Accent A as being a "nuclear syllable at relatively high pitch and either a downglide within that syllable or a downskip to the immediately following syllable" (p. 492). It is this Accent A which Bolinger associates with "assertiveness". In affirmative sentences such as (2a), the verb--or a post-verbal element--is ordinarily assigned prominence. On the other hand, in (2b) it is the NEG-word rather than the verb which is focused. The tendency towards pairing focus and raised pitch and the frequency with which focus is assigned to the NEG-word combine to offer a possible explanation for the correlation of raised pitch and negation.

A second question is whether the specification of the tone of NEG-words constitutes an innovation or a vestige. That is, is Liberian English moving to or away from tone? The evidence seems to support the latter. The other pidginized and creolized dialects of English spoken in West Africa are tonal rather than intonational; in them--specifically in the West African Pidgin English of Nigeria and Cameroun and in Krio--all the NEG AUX's take a high tone. This suggests that high tone is not an innovation. As to why--at a time when lexical tone is apparently disappearing from the language--the NEG AUX's of Liberian English retain it, the answer appears to lie in the continued usefulness of pitch in maintaining contrast. In the case of kɛ and kɛɛ, the segmental contrast for the comparable forms in other dialects of English, i.e. between 'can't' and 'can,' has been lost in Liberian English: a diachronic process has deleted alveolar stops in a post-nasal environment. And in the case of the vowel-copy negator, too, pitch seems crucial to the contrast.

Work in the autosegmental framework has pointed to the similarities between tonal and intonational languages. Thus, a grammar of possible phrasal tunes in an intonational language corresponds to the specification of possible tone melodies in a tonal language. The rules that map the phrasal tunes onto intonation phrases parallel the rules that map the tone melodies onto words. More work needs to be done on the intonation of Liberian English in order to see how an autosegmental--or any other--analysis will integrate the requirements of tone on certain words--here, negative auxiliaries--into the repertoire of possible phrasal tunes and the mapping rules of tune onto phrase.
A general issue that must be addressed in the course of a syntactic analysis for any language exhibiting a significant degree of order freedom is the issue of whether the language in question is configurational or flat. That is, is there evidence for syntactic constituents smaller than the sentence but larger than the word? In particular, it is important to resolve which, if any, of the various orders contain a syntactic verb phrase. I argued (in the full version of this paper and in Stucky (1981)) that Makua, a southern Tanzanian Bantu language is configurational rather than flat and, in addition, I argued for an analysis of a particular syntactic phenomenon called "Verb Phrase Topicalization" which suggests the presence of a verb phrase, at least in several of the logically possible orders. While the analysis in the full version of this paper (and in Stucky (1981)) is formulated in Generalized Phrase Structure Grammar as developed by Gazdar (cf. Gazdar (to appear) and references there), I have not attempted to present that formal account in this summary.

The analysis of Verb Phrase Topicalization is intended to account, in part, for the distribution of displaced or topicalized NP's. In other words, it is intended to account for the distribution of NP's which belong semantically to an embedded clause but which are found in some position in a higher embedding clause. In addition to this account of displaced NP's, the analysis will also account for a subset of the possible orders of elements within a clause. It will, for example, account for several of the twenty-four attested orders of a sentence containing a verb, a subject NP, a direct object NP, and an indirect object NP.

Two observations in regard to the analysis of displaced NP's are in order. The first observation is that Makua allows only one NP at a time to be displaced from the clause to which it belongs semantically. This amounts to the claim that Makua permits only one extraction out of a clause. The major evidence for this claim is given in Stucky (1981). For present purposes, it is worthwhile noting that in a sentence like that
in (la) below, one finds a displaced NP, which belongs semantically to the embedded clause, up in front of the matrix sentence. That NP could just as well be found two clauses up, or three or more, with decreasing acceptability, of course, the farther away the displaced NP is from the matrix sentence to which it belongs. Crucially, as illustrated by the example in (lb), the presence of two displaced NP's in these positions renders a sentence unacceptable. The sentence in (la) is analogous to topicalization in English. I will refer to this phenomenon as S-Topicalization in Makua.

(1) a. Mwaón - ólé Aráárima a - ho - káá - minín - a míí child - dem A (mwaón) me

sa-t- oå/convince

wiirá Asáápala ahó - n - ruw - él - á isí'má

that A {ø}

sa/t- oå-prepare-app-t

'that child, Araarima has convinced me that Asaapala prepared porridge for (him)'


A second property of this topicalization in Makua is that the verb in the sentence containing the gap agrees with the displaced NP while the verb in the sentence in which the displaced NP appears does not. This is also exhibited in (la).

We have observed so far that a topicalized NP may appear in front of an embedding clause, potentially, any number of clauses up. In addition, a displaced NP may appear in between the subject and verb of an embedding clause. This distribution is illustrated by the examples in (2). Note that the agreement facts are parallel to those in (la); the topicalized NP triggers agreement on the lower verb but not on the embedding verb. This structure in (2) is due to what I will term Verb Phrase Topicalization.

(2) a. Aráárima mwaón - ólé aho - káá - miníhá míí A child dem (mwaón)

sa/t - oå/convince me

wiirá Asáápala ahó - n - ruw - él - á isí'má

that A {ø}

sa/t-oå-prepare-app-t porridge

'Araarima has convinced me of that child (as expected) that Asaapala prepared porridge for (him)'

It would be misleading to claim that displaced NP's only appear in these two positions mentioned above in embedding clauses. There is a class of verbs in Makua, intransitive verbs of perception and reporting, which govern a kind of raising; as in the topicalized cases, a NP from a lower clause is found in a higher embedding clause. Unlike topicalization, however, the displaced NP may trigger agreement in both clauses and the NP is freely distributed in the upper clause. These two facts serve to distinguish raising from Topicalization. In fact, agreement in the upper clause turns out to be optional, as shown in example (3) below, something which can be attributed to a double analysis, S-Topicalization on the one hand, raising on the other.
The formalization of VP-Topicalization within Generalized Phrase Structure Grammar will account for the distribution of displaced NP's. That account makes use of a syntactic verb phrase in at least two orders, SVO and SOV. The presence of the verb phrase in at least these orders provides some evidence that Makua does not have a flat constituent structure, but, rather, that it has a configurational structure.

Two implications of this analysis come to mind. One is that the presence of the verb phrase argues against an analysis of Makua within other theoretical frameworks for "free" order languages. One, that of Ross (1967), is a scrambling rule within the transformational paradigm. Such a rule has, as Ross notes, several undesirable properties. It is extremely powerful, applying an indefinite number of times, and it can result in completely unspecified constituent structures. Secondly, it argues against simple linear concatenation rules, such as those proposed by Hale (1979) and Lapointe (1981) which simply line up either constituents or words in a flat structure. It appears that Makua may be an instance of a language with a significant degree of order freedom, but one which maintains some hierarchical constituent structure.

NOTES

Special thanks are due John Wembah Rashid who provided the data for this paper. I would also like to thank Chuck Kisseberth and Jerry Morgan for help in the analysis of Makua, as well as colleagues (especially Peter Sells) at both the University of Illinois and the University of Massachusetts. Support was provided by the Research Board at the University of Illinois and by the Cognitive Science Program at the University of Massachusetts.

The adoption of this formalism has some important consequences for the analysis of Makua, particularly in regard to the account of the distribution of topicalized NP's and verb agreement. A discussion of these consequences, is, however, beyond the scope of this short summary.

REFERENCES


In natural languages the expression of quantification covers two ideas: 1) measure in a finite domain (i.e. notions such as totality, recurrence, plurality and enumerative distribution) and 2) non-finite measure (e.g. "whatever the number", "as many as you like", etc.). Typological research done on more than 250 languages by French semanti-cists Coyaud and Ait-Hamou has led to the observation that quantifiers expressing finite state processes are generally typified by some form of reduplication (even though certain languages, notably most of the currently spoken Indo-European languages, have tended to lose this phenomenon), whereas quantifiers expressing non-finite state processes are generally realized syntactically through subjunctive, optative or probable modes and lexically through derivations associated with the desiderative.

The purpose of this paper is to illustrate the above classification of quantifiers with evidence from Baule\(^1\), first by a cursory overview of the finite domain and then by a more detailed examination of the use of modals in the non-finite domain.

Finite state processes, i.e. those that can be enumerated and measured, are lexicalized in Baule for the most part by reduplication. Reduplication is used to express:

- **Plurality** - Lika \(\text{n ti bu\textbf{\text{bu}}\text{bu} ngumin.} \) 'This place is full of holes.'
- **Gradation** - \(\text{t\textbf{\text{i} kende fitafita.} } \) 'She bought very white percale.'
- **Iterative Process** - W'a kpekpe \(\text{n\text{\textbf{\text{e\text{\text{e}}} n' nun.} } \) 'He cut up the meat.'
- **Recursivity** - Bla'n niannin tro mun kunngun. 'The woman tasted each sauce.'

The expression of quantification in the non-finite domain is closely linked to, and it is herein argued made possible by, the use of modals. Expressions such as

- \(\text{cæn kw\textbf{l}aa 'whenever'}}\)
- \(\text{kan kw\textbf{l}aa 'wherever'}}\)
- \(\text{nde kw\textbf{l}aa 'whatever affair'}}\)

\(^{1}\) A Volta-Comoe language of the Kwa family spoken in Ivory Coast
in sentences such as

\[ \text{Kan kwlaa nga a k\textquoteright}n, n \text{ w\textquoteright}n \text{ w}. 'Wherever you go I\textapos;ll find you.' \]

contain the quantifier kwlaa. Kwlaa is in fact the reduplicated form (kwlaakwla) of the modal verb kwla. As a verb kwla is used to express:

- **ability** - 0 kwla nanti. 'He can walk.'
- **permission** - 0 kwla ja n wa\textquoteright{}n. 'He can my daughter.'
- **possibility** - 0 kwla k\textquoteright{}s. 'It is possible that he left.'

The quantifier kwlaakwla, or kwlaa in its contracted form, is used to express the universal quantifier:

\[ \text{C\textquoteright{}En kwlaa nga a ba\textquoteright{}n, a la wa.} \]

'Whenever (whatever day) he comes, he sleeps here.'

\[ \text{Jun\textquoteright{}man benin ye a klo ke a yo \textquoteright{}? I kwlaa.} \]

'What kind of work do you want to do? Whatever.'

The universal quantifier can also be expressed through the use of the modal o. As a modal morpheme o is used to express disjunction:

\[ \text{Wia nun o, kunngnuc o, like ye o di o.} \]

'Day or night, he eats (all the time.)'

\[ \text{I Konan o, i Kuasi o, be wie fi a baman.} \]

'Neither Konan nor Kuasi came.'

As a universal quantifier it occurs in paraphrases of sentences containing kwlaa:

\[ \text{Waka o waka nga a fu su\textquoteright{}n, a w\textquoteright{}n wuo. 'Whatever tree you} \]
\[ \text{climb you\textapos;ll find a snake.'} \]

It should be noted that all sentences containing the universal quantifier meaning of these two morphemes, kwlaa and o, are potential in character, that is, non-actual. The distinction between potential and actual is central to the analysis of the universal quantifier, even though it is not necessarily marked syntactically in every language. In the actual category are all utterances which refer to an actual event, either completed or in progress; all other utterances are potential. The importance of this semantic opposition is demonstrated by the unacceptability in Baule of the cooccurrence of the universal quantifier and the verbal aspects (accomplished, resultative, progressive) which mark an actual event.

To underline the modal-ness of the universal quantifier we consider sentences containing verbs of volition (desiderative modals):

\[ \text{Fa waka mma [kwlaa [nnyon kunngun] nga a klo ke a fa\textquoteright{}n.} \]

'Take [whatever [any two ["any some/few"]] fruit you want.'
The presence of the modal verb klo 'want' allows numerals (i.e., quantifiers in the finite domain) to be formally represented in a syntactic role of universal quantifier, while also allowing the deletion of the quantifier kwlaa.

Fa waka mma nga a klo ke a fa'n. 'Take the fruit you want.'

Without the modal klo the numerals  nylon 'two' and kunngun 'one, one' only have numerative meanings; 'Take these two fruit.' and 'Take one of each kind of fruit.' Take a few of these fruit.'

The data from Baule have significance for the analysis of quantification in English. The status of the quantifier 'any' has long been disputed and variously interpreted as representing the universal quantifier, as being derived from the existential quantifier 'some' and as having both universal and existential meaning. In Baule the numeral kun 'one' can play the role of universal quantifier if it occurs in a modal context such as the injunctive, imperative or intentional:

Fa waka mma kun. 'Take a/any fruit.'

Such utterances are all of a potential nature; in utterances expressing actual events, kun can only have its numerical meaning:

W'a fa waka mma kun. 'He took a/one fruit.'

It is argued that discussions of the status of quantifiers such as 'any', 'all', 'every', 'a/one', or 'wh-ever' should be shifted to an examination of modals. In the case of any the issue can be settled by considering it to be nothing more than a numeral which expresses the universal quantifier only in modal contexts. It is the modal-ness of the utterance which gives it a universal meaning, not the presence of any.

We thus claim that in natural languages no lexical item is sufficient to express the semantic role of the universal quantifier; the universal quantifier depends on the modal structure of the language.

REFERENCES


The Khoisan languages are well-known to phoneticians and phonol­
gists for their unique and complex systems of click consonants. All anal­
yses of these phonetically complex consonants (e.g. Beach (1938), Chomsky
and Halle (1968), Snyman (1975), Ladefoged and Traill (1980)) have assumed
that they are phonological units. A direct consequence of the unit analysis
is to exaggerate the unique position of the Khoisan languages in the
typology of the world's languages, firstly in regard to the size of their
consonant inventories and secondly in regard to the ad hoc descriptive
devices required to describe them.

Under the unit analysis, !Xu has the largest phonological inventory
of segments (i.e. 148) in the UPSID sample (Maddieson, 1980) and the largest
stop system (i.e. 86 stops) (Nartey, 1979). !Xu appears to hold a world
record with 161 segments (80 clicks and 37 non-click consonants - 30
of which are stops - and 44 vowels). Even ignoring vowels, none of the
Khoe-kovap languages has a consonant inventory as small as the mean of 31
segments (i.e. vowels and consonants) in the UPSID sample. Under a unit
analysis Nama has the smallest with 33 consonants and /Gwi the largest with
74 consonants. Clearly, there is an excess of exotica in this linguistic
area.

The unit analysis raises a number of descriptive problems. The best
known attempt to accommodate the Khoisan family in a universal framework
is Chomsky and Halle's (1968-SPE) analysis of Nama and Korana clicks.
These languages require at least one ad hoc feature [delayed release of
secondary closure] for clicks followed by the fricative [x], a feature
that is apparently not required for any other segment in the world's
languages. Moreover, since both the primary and secondary closures of
clicks can be independently [+ delayed release] yielding the distinctions
/x/,x,f,/, it is necessary to extend phonetic theory to include both
[delayed release of primary closure] and [delayed release of secondary
closure], a distinction required only for the unit analysis of clicks.
Snyman's (1975) unit analysis of !Xu freely uses ad hoc features such as
implosive vs. infricative, homorganic vs. heterorganic vs. homoheterorganic,
which do not translate readily into any feature system. Ladefoged and
Traill's (1980) features for their unit analysis of the sixteen effluxes
of the !Xu clicks are more conventional but partly ad hoc. They make the
point that the resulting phonological categorizations must be supplemented
with special conventions ("detail rules") to ensure the correct phonetic
output.

Since the unit analysis leads to these complications it is reasonable
to explore alternatives. Two alternative analyses are available, one in­
volving the proposals of Campbell (1974) and Williamson (1977) under which
sub-segmental structure may be reflected in phonological representations,
the other involving a cluster analysis. Under the former a unit analysis
would be preserved but under the latter it would be questioned. In the
remainder of the paper I explore the appropriateness of a cluster analysis
for Khoisan consonantal complexes, and argue that by examining the entire
consonant systems of these languages (rather than the click sub-system
alone) it is possible to construct a plausible case for the cluster analysis of click and non-click complexes. There are many advantages to such an analysis. Firstly, it leads to a dramatic reduction in the size of the largest Khoisan consonant inventories. Secondly, it removes the need for most of the ad hoc devices that have been mentioned and avoids the extensions to phonological theory proposed by Campbell and Williamson. Thirdly, it permits the proper description of phonetic identities between clicks and non-clicks.

The argument rests on three observations: firstly, that most of the click effluxes that form phonetic clusters with clicks occur as independent consonants. In Korana, for example, \(x\), \(kx\), and \(?\) occur both as click effluxes and as independent consonants. Yet in the SPE analysis their identity cannot be stated given the definitions of the features. Under a cluster analysis, the problem disappears: not only are the identities stated, but the consonant inventory of Korana can also be reduced by 12 segments and that of Nama by 8. The most dramatic effect of this argument is on !X60 with a reduction of 60 segments, trimming the language’s excesses to a mere 56 irreducible consonant contrasts.

The second observation is perhaps more interesting than the first: it is that a click efflux implies the independent consonant. Thus Nama lacks the efflux \(kx\) and the independent consonant \(k\) whereas Korana has both. !X60 lacks both uvular effluxes and the independent uvular consonants, whereas !X60 has both.

The third observation is that there are direct parallelisms between certain click effluxes and \(C_2\) of a cluster of non-click consonants. This situation where a cluster analysis of a phonetically complex segment finds parallels elsewhere in the language may be used in support of the cluster analysis.

It may be objected that the arguments presented in favour of a cluster analysis rely on appeals to simplicity and typological bizarreness, and that it would be desirable to find support for the analysis from wider distributional patterns of consonants in these languages. But this evidence is simply not available for the Khoisan languages because of the uniform restrictions on consonant distribution whereby clicks and virtually all other obstruents are restricted to stem-initial position.

A cluster analysis is not without problems. The main difficulty is to know just how far it should be extended. For instance, basic clicks have a velar component \([k]\), and \([k]\) is an independent consonant. On what grounds could one resist extending the cluster analysis to this case? The same query arises in the case of voiced clicks with \([g]\). A related issue involves the fact that in !X60 a cluster analysis of the two types of aspirated click (click + qh and click + h) requires an independent qh and h, but the latter is not found. Moreover, its distinctive cres­cendo flow suggests it is not the usual kind of independent h. Another problem for the cluster analysis arises with the pre-glottalized nasal clicks of !X60 where a special statement regarding the timing of the components is required, so that the glottal precedes the nasalization.
The dilemma facing the investigator who is searching for an optimal analysis of these linguistic systems is to decide which alternative is the correct one. The unit analysis stands by default so to speak; the cluster analysis appeals to simplicity, distributional patterns and the typology of inventory sizes. Whatever the relative advantages of either, the irresistible question remains, which is the psychologically real one? The problems this raises go well beyond the limits of this paper and it will clearly be no easy matter to construct tests that will solve them.

REFERENCES


**VOESEL NEUTRALIZATION IN (DAMAGARAM) HAUSA**
Accounting for Predictable Unpredictability*

Laurice Tuller
UCLA

Hausa has the basic five vowel system: i, u, e, o, and a. Long vowels are phonemic in all positions. The distribution of short vowels is more restricted. In medial position, the elsewhere existent contrast between the two short high vowels i and u is neutralized. Which of these two occurs is either predictable or totally unpredictable. In the first case, the vowel agrees in backness/roundness with the backness/roundness or labialization of its consonantal entourage. In the latter case, the case of a "neutral" consonantal environment, the vowel in question may vary in backness from i to u in any particular lexical item from token to token.

There is nothing novel in the idea that in Hausa short /i/ and /u/ are non-contrastive in medial position. Parsons (1970) talks about the I/U vowel and Y and W-colored consonants and suprasegmental phonemes.
Salim (1977) and Saní (1978) deal exclusively with aspects of this phenomenon. Schuh (1978) points out that this vocalic situation is common in Chadic. (Cf. also Wolff, this volume.)

Within Hausa, just how the medial short high vowel (MSHV) is affected by its consonantal environment is subject to a certain amount of dialectal variations. In that I am attempting here to develop a way of accounting for these facts in a grammar, I will limit my remarks to one dialect of Hausa, noting what this tells us about what grammars of languages need to be allowed to do. The dialect I will describe is that spoken in the Departement of Zinder of the Niger Republic -- an area which is traditionally called "Damagaram".

The distributional facts of what the MSHV's quality will be can be arranged into a hierarchy showing the relative influence of the various consonantal environments:

<table>
<thead>
<tr>
<th>(1)</th>
<th>CW → w, hW → sh, j, CV → y, c</th>
<th>(ii)</th>
<th>b, b → { (i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>= over-powers whether preceding or following (in case of conflict within a group, following C &quot;wins&quot;)</td>
<td>(i)</td>
<td>= over-powers only when following.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

So, for example, the consonants in group (ii) over-power the effects of all preceding and following consonants except those in (i), w and hW causing a u and y an i. If a u-colored consonant and an i-colored consonant occur together, it is the following one which will over-power the preceding and determine the backness of the vowel. Compare yuowaa 'hunger' with wiyaa 'difficulty'. (Notice also that an optional nasal may intervene. This is because this nasal has "assimilated" to the following consonant. There's actually just one set of articulation features being shared by the two segments and it's with this set that the vowel agrees.)

(2) is a formalization of this hierarchy. That Rule (v) must come after the other rules have applied can be seen by examining words such as mûtûm 'person' and luuluBaa 'cover oneself with a cloth'. In fact, the rules must all not only apply in the order given, but they must also apply disjunctively in order to ensure the hierarchical nature of the process.

(2) Vowel Assimilation Rules

(i) [+syl] → [aback] % [-syl] (n) [-syl,+cons,+rnd,a.back]  
(ii) [+syl] → [aback] % [-syl] (n) [-syl,-cons,+cont,a.back,a.rand]  
(iii) [+syl] → [-back] % [-syl] (n) [-syl,+cont,-back]  
(iv) [+syl] → [aback] / [-syl] (n) [-syl,+ant,-cor,a.lab]  
(v) [+syl] → [aback] / [-syl] [-syl] (-syl) (+syl,+hi,a.back)
Disjunctive ordering within a group (as is needed for the γύνωά/ώλυά cases) is taken care of by mirror image notation (the % in rules (i) to (iii)) with the environment bar placed so that the influential material is following, thereby giving the desired effects discussed above.

However, the disjunctive ordering between the different groups is not reflected in the form of the rules. There's nothing to stop a word like jük‘wǎn (‘jlk‘wǎn) 'instance' from getting a ū in Rule (i) and then an l in Rule (iii). There is a general phonological principle which specifies disjunctive ordering (cf. Anderson, 1974). It states that given two related and adjacent rules, if the more specific is applicable to any form, this precludes the application of the other, where more specific is where the domain of one rule is a proper subset of the domain of the other. This does not help here, however, as can be seen by examining the rules in (2).

A possible solution is to say that the MSHV is [0 back] (and round) in underlying representation and have rules (i) - (v) apply to [0 back] vowels only. Then, disjunctive ordering would follow automatically in that once the vowel received a backness value, it couldn't undergo any more rules of vowel assimilation.

There are processes in Hausa (morphological and phonological) which create new MSHV's and show that the non-specification of [back] would have to be a constraint in the phonological component as well as a constraint on underlying forms. So, for example, in tattábárun/ tattábárin/ tattábárin 'pigeons/ the pigeons', addition of the previous reference marker /n/ closes the syllable, triggering long vowel reduction and creating a MHSV which is variable since it's in a neutral environment. I conclude from this that there is a rule (3) which deletes backness/roundness values of HS vowels in medial position and which applies in the base and in the phonological component whenever its structural description is met. The underline (_) in front of [back] and [rnd] in the output of the rule is meant to indicate an empty slot—the result of deletion.

(3) \[\text{Medial Short High Vowel Rule:}\]

\[
\begin{array}{c}
\text{[}\text{-syl]} & \text{[+syl]} & \text{[-syl]} & \text{[}\text{-syl]} & \text{[+syl]} & \text{[-syl]} \\
\text{[}\text{-cons]} & \text{[+cons]} & \text{[}\text{-cons]} & \text{[+cons]} & \text{[}\text{-cons]} \\
\text{[+hi]} & \text{[+hi]} & \text{[}\text{-hi]} & \text{[+hi]} & \text{[}\text{-hi]} \\
\text{[}\text{back]} & \text{[}\text{back]} & \text{[+back]} & \text{[+back]} & \text{[}\text{back]} \\
\text{[}\text{rnd]} & \text{[}\text{rnd]} & \text{[+rnd]} & \text{[+rnd]} & \text{[}\text{rnd]} \\
\end{array}
\]

This [0 back] solution does more than just allow for the various rules of vowel assimilation to apply disjunctively. The application of the process will leave a residue of [0 back] vowels in just those cases where one would like to express the fact that in these left-over ('neutral') environments, the feature [back] is unspecified and predictably so.

I would not call this an archiphoneme. For one thing, I'm not suggesting that all predictable features be left out. Also, in the classic example of an archiphoneme, the /T/ in German, it's not the case that whether a word in final t is voiced or not is unimportant—it is phonetically always [t]. Whereas in Hausa, by saying that a vowel is unspecified for backness, I mean just that: it is unspecified—it does not have to be one value or
the other as is the case for the German /T/. Thus, precisely what needs to be expressed is that this vowel has no backness quality of its own and it remains that way unless put into a context where surrounding consonants (or vowels) specify that backness value. It is this very characteristic that the use of [0 back] can express.

Ultimately, I think this "0 back" phenomenon might best be handled in terms of autosegmental phonology. Roughly, if we look at [0 back] not as a third value, but as a feature with an empty slot for its value as was suggested in the MHSV Rule, then we can look at the Vowel Assimilation Rules as conditions on a more general phenomenon of association of empty slots with neighboring slots filled for these values. So, for example, the representation for $\text{yùwà}$ after association might look something like the following (where the separate square brackets are to indicate (some of) the constituent structure of segments):

\[
\begin{array}{cccccc}
(4) & y & u & n & w & a \\
\text{.....} & [+\text{syl}] & [-\text{syl}] & [-\text{syl}] & \text{.....} & \text{.....} \\
\text{[-cons]} & [+\text{cons}] & [-\text{cons}] & \text{[+hi]} & [-\text{hi}] & [-\text{hi}] \\
\text{[+lo]} & [-\text{lo}] & [+\text{ant}] & [-\text{ant}] & [+\text{ant}] & [-\text{ant}] \\
\text{[-cor]} & [+\text{cor}] & [-\text{cor}] & [+\text{cor}] & [-\text{cor}] & [-\text{cor}] \\
\text{[+back]} & [-\text{back}] & [+\text{back}] & [-\text{back}] & [-\text{back}] & [-\text{back}]
\end{array}
\]

NOTES

* Many thanks are due to colleagues at UCLA who listened to a pre-conference rehearsal of this paper and whose comments were very useful in the final preparation of the presentation: S. Anderson, G. Bedell, M. Hammond, D. Platt, R. Schuh, J. Singler, and T. Thomas-Flinders.

1 $\text{u} =$ any [back] vowel and $\text{i} =$ any [-back] vowel. Further phonetic detail ([i], [ː], [o], etc.) would be taken care of by a low-level phonetic rule, as would the non-contrastive variation around short /a/.

REFERENCES


Igbo is the language of the third largest ethnic group living in the eastern States of Nigeria, West Africa, with an estimated number of 50 different dialects for the language. Formal education in Igbo language began about one hundred years ago. Since then at least three successive dialects (Isuama, Onitsha and Union Igbo) have been tried as standard with outright failure, and a fourth - the much diffused Central Igbo - is in use on ad hoc consensus. The absence of a clearly acceptable standard literary dialect of Igbo has, therefore, hampered the development of a formal education in the language.

With this problem confronting those of us concerned with formal education in the mother-tongue, we are convinced that the answer lies not in any haphazard or tinkering approach but in a systematic study of the various dialects of the language. A comprehensive survey of the Igbo dialects was, therefore, undertaken in 1975 and a sample analysis of the dialects is given here to prove the basic point of our argument.

Three objectives were set for the dialect survey: to determine the number and boundary delineations of the dialects; to assess the levels of mutual intelligibility and acceptability among the speakers of the dialects; to identify the dialect that stands the best chance of being the most widely acceptable standard literary dialect of the language.

To determine the number and boundaries of the dialects, a new instrument which we called (for want of better term) Lexico-Semantic Technique (LST) was developed. LST follows basically the same technique as employed in traditional dialect geography. Forty-two lexical items made up of twenty-five basic and seventeen culture words were selected, all of them chosen from carefully balanced categories such as numerals, parts of the body, universals, crops and implements introduced from outside, etc. A good sample of informants was randomly selected from each settlement or town and the lexical items presented to the informants to elicit the words they use for them. A total of 667 settlements were visited and the informants produced 1680 variations for the 42 lexical items presented to them. The data were processed by computer and the towns with an aggregate fifty percentage agreement and above were found to belong to the same dialect.

We have applied this technique of analysis to the data collected from about the third of the area natively inhabited by the Igbo people and identified twenty distinct dialects with clear-cut boundaries and without the usual transition zones.
To assess the levels of mutual intelligibility, the same materials (sentences and short passages) were dubbed in the different dialects under study. The dialects, now on tape, were played to a set of respondents who speak a dialect different from that played to them. The same set of questions were asked the respondents immediately after listening to a given dialect. The level of mutual intelligibility was found to be between 69% and 88%. To assess the levels of mutual acceptability among the speakers of the various dialects, another passage was dubbed in each of the dialects under study. The dialects, now on tape, were played to a set of respondents and their reaction to the dialects were recorded as scores. The mutual acceptability ranged between 27% and 76%.

Among the interesting observations on the dialect intelligibility and acceptability is the fact that there is no direct relationship between the level of intelligibility of a dialect and its acceptability. That is to say, the most intelligible is not necessarily the most acceptable and vice versa. The intelligibility and acceptability rankings of nine sample dialects (A, B, C, D, E, F, X, Y, Z) illustrate the point in the table below.

To identify the dialect that promised to gain the widest acceptance among the various dialect groups two criteria were applied. These were measures of (a) the dialect with the minimum lexical divergence with the rest; (b) the "priority value" of the dialect. The "priority value" of a dialect is the sum of the weighted values of the intelligibility and acceptability scores. For example, the difference (x) between the minimum and maximum intelligibility scores may be stated as a ratio of the difference (y) between the minimum and maximum acceptability scores. This ratio $x:y$ or $\frac{x}{y}$ can be used to weight the intelligibility and the acceptability scores of each of the dialects.

A reconciliation of the two measures of the minimum lexical divergence of a dialect and its priority value ranks the dialects in their order of probable acceptance as standard.

<table>
<thead>
<tr>
<th>Intelligibility</th>
<th>Ranking</th>
<th>Acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>E</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>F</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>X</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Y</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Z</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

The internal and external evidence available on the dialect which came top among those already analysed by means of this technique give high confidence to the treatment of the data. We are so encouraged that we are
beginning to apply the same treatment to the data collected from the rest of the Igboland.

It may however, still be some time before the comprehensive data on Igbo dialects are collected and analysed for publication. We think that our technique would be applicable to languages with problems similar to Igbo. We would, therefore, be quite happy to give further details on Lexico-Semantic Technique to those working on similar problems.

ON THE EVOLUTION OF THE TENSE MARKER NA IN EASTERN BANTU (SUMMARY)

Benji Wald
National Center for Bilingual Research

The paper proposes a general historical scheme for the evolution of the tense marker (TM) NA in Eastern Bantu (EB).

It begins with a recount of the evolution of NA in Northeast Coast Bantu proposed by Wald (1976: supplement to Journal of African Linguistics). According to that proposal, Proto-Swahili started out with a three-past system of Ø IE (Current Past: CP); NA (Near Past: NP); A(-LI) (Remote Past: RP), similar to the current systems of Sagala (E.74) and Kamba (E.55). At an intermediate stage, Swahili bifurcated into a Northern (Lamu-Bajun) and Southern (Mombasa/Tanzania) area, in which the three-past system was reduced to two, and NA survived only in the Southern area. At that point NA shifted from the Near Past to the Current Past. This stage is still reflected in kiVumba, a Kenya/Tanzania border dialect of Swahili. Further development shows a shift of NA from CP to perfect (Pf) as the two-past system further reduces to a single past in the Southern urban areas. A further shift then distinguishes Mombasa and the Kenya/Tanzania border dialects from Tanzanian dialects of Swahili, as NA shifted further to the imperfective (including habitual, progressive, general and iterative) in vernacular speech in Zanzibar and Tanzania, but not in Mombasa. Thus, the proposed evolution of NA in Swahili is:

```
NA:       NP      CP      Pf            Imperfective (Impf)

  cf.  Sagala  Vumba  Mombasa  Zanzibar
        Kamba  K/T border  General Tanz

3-Past  2-Past  1-Past  1-Past
```

In view of Guthrie's reconstruction of *NA (c.s. 2252) with either Future or Progressive meaning, it is necessary to explore more fully the distribution of NA in the Bantu area as a whole, in order to ascertain how the evolutionary scheme presented for Swahili fits into a wider picture of the evolution of NA in Bantu (Guthrie:1971).

At this point, the paper notes that Guthrie himself is unsure of the status of NA in Proto-Bantu, and regards it as a phenomenon with a localized distribution. Although it occurs in some Northwest Bantu languages, the richest data are found in Eastern Bantu, to which attention in this paper is
restricted. It is noted that all tense-marking prefixes reconstructed as progressive by Guthrie, are also reconstructed as future. Therefore, the paper proposes Fut/Impf as one set meaning for NA in EB. It is further noted that throughout EB NA also occurs in Perfect and/or Past contexts, although these are not taken into account by Guthrie. The reason is that Guthrie's methods are too restricted and exacting to recognize the various forms and meanings of NA. A number of approximations are made in the paper in order to obtain a general picture of the distribution of NA in EB, whence inferences about its evolution in EB are made.

Using all available data on all languages, including original research as well as the literature, the paper recognizes variation in the forms and meanings of NA in individual languages. Formally, NA may occur before or after the subject marker (SM) of the verbal complex containing the main verb of a clause. Thus, in Bemba (M.42a), NA occurs only in Pre-SM position. In other Zambian languages, such as Siluyana (K.31), NA occurs both in pre-SM and post-SM positions, e.g. pre-SM with the meaning 'just past' and and post-SM with the perfect, today or before pasts. In all cases its occurrence is restricted to past contexts.

In the zone G of Tanzania, NA occurs either pre or post-SM with the meanings perfect or future. Closely related languages show the ease with which NA moves from pre to post-SM position. Thus, western Sambaa (G.23) shows NE (a form of NA as discussed below) in pre position, while in neighboring Pare (G.22) it is in post position, in both languages with the meaning future. Similarly, in Luguru (G.35) NA occurs in pre position, while in closely related Zaramo (G.33) it has been reported in post position, in both languages with the meaning perfect in a negative context, i.e. 'not yet/before' (one of the most widespread uses of NA across EB).

From such data it is inferred that NA started out in EB in pre position, as an auxiliary, but that in many areas it came to be used in post position according to familiar Bantu processes of incorporation through reduction of redundant affixes. The auxiliary origin hypothesis is also used to explain why NA is found in a variety of tense contexts. That is, as an auxiliary it was originally indifferent to the past/future axis, as is still the case in several languages, e.g. Gikuyu (E.51), where as a marker of indefinite aspect (ever, at some unspecified time) it may combine with either the future or the past. Southern Sotho (S.23) provides further evidence for the auxiliary origin of NA, with three NA-like auxiliaries, having the meanings iterative, habitual and past progressive respectively. It is suggested that these three formally distinct morphemes originate in elaborations of NA with additional morphemes. This same suggestion is applied to the variation between NA and NE found in Tanzania and Kenya, and most apparent in Sambaa where dialectally either NA or NE as a pre-SM element occurs in future contexts.

The paper goes on to plot the geographic distribution of all NA forms discussed above according to two sets: NA in Fut/Impf contexts and NA in Past/Pf contexts. The distribution shows a regular pattern of three north-south strips. The most interior strip shows NA confined to Past/Pf contexts. The coastal strips shows the prevalence of Fut/Impf only contexts. A transitional strip between the two shows both types of contexts for NA.

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According to the auxiliary origin hypothesis, the transitional area would be original. Thus, NA specialized in the interior in past/pf contexts, and along the coast in fut/impf contexts. In order to explain why this differential distribution came about, it is proposed that the other TMs used in past/pf contexts along the coast and fut/impf contexts in the interior must be examined.

Given the time and space limitations on the paper, only one additional marker is discussed, RAA (Guthrie's *DAA c.s. 2244). It is observed that RAA is almost exclusively restricted to the EB interior, where its meaning is either future or imperfective (habitual/progressive). Discussion of RAA in past contexts, occurring exclusively around the interior Northeast Bantu area, is reserved for another paper on the interaction of RAA and NA in that area. Some evidence of the former use of RAA on the coast is found in Digo (E.72), where it is confined to a single verb, edza 'come', as an imperfective. Elsewhere Digo uses NA as an imperfective, as in the rest of the Miji Kenda languages. RAA gives signs of being older as a TM than NA. For example, it is not found in pre position, as opposed to NA. For these reasons, an older distribution of RAA extending to the coast is suggested.

Thus, the general evolution of NA in EB is given as follows. NA began as an auxiliary representing an aspectual distinction whose exact nature is not yet clear. As such it could occur in both past and nonpast contexts. Along the coast, it has largely replaced RAA in Fut/Impf contexts. On the other hand, assuming that NA ever spread to the interior in Fut/Impf contexts, it has not survived. Furthermore, throughout much of the interior area, NA is not only restricted to Past/Pf contexts, but has further deteriorated (through replacement by other markers) so that it is restricted to the negative perfect.

While the above account of the evolution of NA in Eastern Bantu is clearly incomplete, it is proposed as a framework within which the evolution of NA and other tense markers can be more fully investigated in specific geographic areas and in individual Eastern Bantu languages.

VOCALISATION PATTERNS, PROSODIES, AND CHADIC RECONSTRUCTIONS

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Universität Hamburg, Germany

1. Introduction

The paper presents a fresh look at the problem of vowel reconstruction in Chadic. Fundamental to the approach is the recognition of two distinct "vocalisation patterns", referring to the presence or absence of the vowel /a/ in word-medial position(s). Further, use is made of the notion of "prosodies" as abstractions apart from the consonant and vowel systems, i.e. "unplaced" sources of palatalisation and labiovelarisation rather than segmental phonemes within linear structures are assumed to account for vocalic surface realisations other than [ə] and [a]. [ə] and [a] are viewed as neutral representations in lexical bases which reflect the two distinct vocalisation patterns: 0-vocalisation and a-vocalisation. The discussion is confined to one group of languages within the Biu-Mandara branch of Chadic:
the Wandala-Lamang group, comprising the following eight languages: Dghwede (D), Glavda (Gl), Gvoko (Gv), Kdupe/Guduf (K), Lamang (L), Gwara (Gw), Paduko (P), Wandala/Mandara (W). These languages are spoken in eastern parts of Borno State, Nigeria, and adjacent parts of Northern Cameroon within a geographic triangle formed by Bama in the north, Madagali in the south, and Mora in the east.

2. Vocalisation patterns

Proto-Wandala-Lamang (PWL) distinguished two vocalisation patterns which it had inherited from previous stages in Chadic/Afroasiatic linguistic history. These were ø-vocalisation and a-vocalisation. ø-vocalisation means that the crucial position between final and prefinal consonant of the base is not filled by the vowel phoneme /a/. Any vocalic element occurring in phonetic realisations of ø-vocalized bases in that position has to be viewed as being epenthetic in nature. A-vocalisation means accordingly, that that very position between final and prefinal consonant is indeed filled by /a/. The distinction of the two vocalisation patterns is probably morphological in origin, at least for a fair number of lexical items, but not exclusively so. The distinction was used to separate marked and unmarked grammatical categories in dichotomous sub-systems, such as, for instance, plurality with both nouns and verbs. Remnants of the morphological nature of vocalisation contrasts can still be found in Wandala-Lamang (WL):

<table>
<thead>
<tr>
<th>[-pl]</th>
<th>[+pl]</th>
</tr>
</thead>
<tbody>
<tr>
<td>nouns: Kdupe zare zaara 'child/son'</td>
<td></td>
</tr>
<tr>
<td>Wandala zhere zala 'man/husband'</td>
<td></td>
</tr>
<tr>
<td>Dghwede duhwe aghawa 'girl/daughter'</td>
<td></td>
</tr>
<tr>
<td>verbs: Lamang ka la kal 'take'</td>
<td></td>
</tr>
<tr>
<td>tsxura tsaxwara 'sit'</td>
<td></td>
</tr>
</tbody>
</table>

Lexical bases, irrespective of their vocalisation pattern, may show /a/ both in initial as well as in final positions. For the time being, final /a/ is considered to be part of the PWL base, and languages which do not show reflexes of /a/ in that position are assumed to have lost their original base-final vowel. Initial /a/, on the other hand, is tentatively treated as reflex of a petrified prefix which probably goes back to a CV prefix of so far unidentified function(s). P and W show a fuller form na- of the prefix in some lexical items, whereby W is reported to optionally drop the initial nasal, cf. nafa/afa 'tree', naviire/aviire 'rabbit', etc. Lexical bases may therefore be cross-classified according to vocalization pattern and occurrence of base-final vowel /a/, cf.

<table>
<thead>
<tr>
<th>Ø-vocalisation</th>
<th>a-vocalisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Gl aa-vza</td>
<td>Gl a-laba</td>
</tr>
<tr>
<td>ghra</td>
<td>laagha</td>
</tr>
<tr>
<td>P tjaba</td>
<td>P tjama</td>
</tr>
<tr>
<td>W tija</td>
<td>laka</td>
</tr>
<tr>
<td>'blood'</td>
<td>'bark (of tree)'</td>
</tr>
<tr>
<td>'head'</td>
<td>'bow'</td>
</tr>
<tr>
<td>'meat'</td>
<td>'ear'</td>
</tr>
<tr>
<td>'ear'</td>
<td>'bow'</td>
</tr>
</tbody>
</table>
3. Reconstructing PWL vowels and prosodies

Based on observations in a number of WL languages of today, schwa is denied the status of a vowel phoneme in PWL. (Its occurrence plus that of other extra short phonetic vowels such as \( \bar{i} \) and \( \bar{u} \) are viewed as pro- and/or epenthetic, their actual colouring being predictable from the surrounding consonants.) \( \bar{i} \) and \( \bar{u} \) are not separate phonemes beside /\( y \)/ and /\( w \)/ in PWL. /\( y \)/ and /\( w \)/, as well as other sonorants, occur both syllabic and non-syllabic. Where \( \bar{i} \) and \( \bar{u} \) are not syllabic realisations of /\( y \)/ and /\( w \)/, they are segmentalized manifestations of the palatalisation and labiovelarisation prosodies in positions of epenthetic vowels. PWL lexical items are thus reconstructed with one phonemic vowel only, /\( a \)/. This /\( a \)/ is either part of the lexical base or, in medial position(s), is a morphological extension of the base through a-vocalisation. Thus, a number of lexical items in PWL have to be reconstructed with both vocalisation patterns, which we then assume to reflect the non-plural/plural dichotomy. Cognate items in modern WL languages arbitrarily reflect one of the two vocalisation patterns, cf. the examples given above: W \( \text{tjama} \) vs. P \( \text{tjama} \) 'ear', W \( \text{laa}k\)a vs. Gl \( \bar{\text{laa\(g\)a}} \) 'bow', etc.

In order to account for vocalic realisations in modern WL languages, two sources of assimilation or "umlautung" are postulated: palatalisation (Y-prosody) and labiovelarisation (W-prosody). In a relatively small number of lexical items, neither Y- nor W-prosody seem to have had any effect on the vocalic realisations in any of the WL languages. The majority of items, however, clearly show effects of Y-prosody in at least one language of the group. A much smaller number of items, and only in 3 of the 8 languages under analysis, show effects of W-prosody at all. To complicate the matter further, there are items in which palatalisation effects in some languages correspond to labiovelarized realisations in others, so that we have to assume a sound shift from one prosody to the other.

Y-prosody is reconstructed in cases where \( \bar{i} \) corresponds to \( \emptyset \) or schwa (= \( \emptyset \)-vocalisation) or \( e \) to a (= a-vocalisation). As historical explanation, a lost palatal or palatalized segment is assumed to be the ultimate source of assimilation.

\[
(1) \begin{align*}
\text{\textquoteleft head} & \quad (+ \ Y) & \quad (+ \ Y) \rightarrow (- \ Y) \\
\text{D \ \text{ghree}} & \quad \text{Gl \ \text{ghra}} \\
\text{K \ \text{gh\(\bar{\text{a}}\)re}} & \quad \text{Gw \ \text{ken}} \\
\text{W \ \text{\(<\text{\textasteriskcentered e}\text{\textdeg}\text{ra}\)+Y}} & \\
\text{\textquoteleft head} & \quad (+ \ Y) & \quad (+ \ Y) \rightarrow (- \ Y) \\
\text{Gv \ \text{ghar}} & \quad \text{L \ \text{gh\(\bar{\text{a}}\)n}} \\
\end{align*}
\]

(W \( y \) \(<\text{\textasteriskcentered h}\) under Y-prosody in \( \emptyset \)-vocalized base)
There are lexical items which show Y-prosody effects in some languages and W-prosody effects in others, cf.

<table>
<thead>
<tr>
<th>No.</th>
<th>Word</th>
<th>Y-prosody</th>
<th>W-prosody</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>'bow'</td>
<td>$[+Y]$</td>
<td>$[+Y] \rightarrow [-Y]$</td>
</tr>
<tr>
<td></td>
<td>*LKA$^+$</td>
<td>$P$ liiika</td>
<td>$W$ lëka</td>
</tr>
<tr>
<td></td>
<td>*LKA$^+$</td>
<td>$Gv$ laghe</td>
<td>$D$ laagha</td>
</tr>
<tr>
<td></td>
<td>$K$ laghe</td>
<td>$Gv$ laaghe</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$L$ laghe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>'excrement'</td>
<td>$[+Y]$</td>
<td>$[+Y] \rightarrow [-Y]$</td>
</tr>
<tr>
<td></td>
<td>*G$^+$</td>
<td>$D$ gəve</td>
<td>$Gv$ uva</td>
</tr>
<tr>
<td></td>
<td>$Gw$ ubi</td>
<td>$P$ uva</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$K$</td>
<td>$gəve$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$L$ ghuvi</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$W$ ugve</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

W-prosody is reconstructed in cases where rounded vowels in one or more languages correspond to $\emptyset$ or schwa (=$\emptyset$-vocalisation) or a (=$a$-vocalisation) in others, and where the rounding effect cannot be attributed to a (labio)-velar or bilabial consonant of the base itself. Given the fact that throughout Chadic and especially within the Biu-Mandara branch, a number of yet unexplained velar, labial, or labiovelar initial (and sometimes final) consonants are observed, the W-prosody in WL may reflect the former presence of such elements in a given lexical item. (In a good many examples, however, these additional velars/labiovelars/labials can still be found as segments in WL lexical items, thus not having weakened to W-prosody.)

<table>
<thead>
<tr>
<th>No.</th>
<th>Word</th>
<th>W-prosody</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>'hundred'</td>
<td>$[+Y]$</td>
</tr>
<tr>
<td></td>
<td>*DRMKA$^+$</td>
<td>$D$ dirəməke</td>
</tr>
<tr>
<td></td>
<td>$W$ d(rə)məke</td>
<td>$L$ drəmka</td>
</tr>
<tr>
<td></td>
<td>*DRMKA$^+$</td>
<td>$K$ dərməke</td>
</tr>
<tr>
<td></td>
<td>$Gw$ dərməko</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>'bark (of tree)'</td>
<td>$[+W]$</td>
</tr>
<tr>
<td></td>
<td>*LBA$^+$</td>
<td>$L$ luŋu</td>
</tr>
<tr>
<td></td>
<td>*LABA$^+$</td>
<td>$Gv$ robo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$Gv$ a-laba</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$K$ laŋa</td>
</tr>
<tr>
<td>6</td>
<td>'arrow'</td>
<td>$[+W]$</td>
</tr>
<tr>
<td></td>
<td>*XAVA$^+$</td>
<td>$Gv$ xavo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$K$ xava</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$L$ xava</td>
</tr>
</tbody>
</table>
Very few items have been found so far for which no language of the group shows any prosodic influence in terms of palatalisation or labiovelarisation. In these cases we assume 0-prosody for the PWL reconstructed base. It may, however, turn out that by historical accident whatever marked prosody there was in PWL, it was lost independently by all of the languages under analysis.

(7) 'shoulder' *BAGADZA

D bagadza
Gv bəgadza
K bagadza
L ghabadza-k
P bagadza-ŋgara

(8) 'body' *GHVA

D vəgχa
Gl vəgχa
Gv vo
K vgha
L gəvχa
P na-va
W vuwa

(In this example, C₁ = *GH obviously represents a petrified velar prefix which in P, and quite often in W too although not with this item, is replaced by the prefix na. With the exception of L and P, all languages underwent metathesis. The round vowel in Gv is not the result of any prosodic effect but of rounding caused by /w/ in C₂ position: vo < *vwa, cf. W vuwa < *vwa < *vwa; ultimately < *vgha < *ṇvha.)

4. Conclusion

The application of the comparative method to establish sound correspondences between WL vowels fails to yield satisfactory results. The comparison and reconstruction has to be conducted on a high level of abstraction. On the chosen level of abstraction, only one phonemic vowel is needed. All phonetic vowels in modern WL languages can either be derived from this one vowel /a/, or are syllabic manifestations of /y/ and /w/, or are epenthetic vowels. The following is a simplifying illustration of vowel origins in WL.

<table>
<thead>
<tr>
<th>+syllabic</th>
<th>/a/</th>
<th>/ε/</th>
<th>/y/</th>
<th>/w/</th>
</tr>
</thead>
<tbody>
<tr>
<td>[− Y-prosody]</td>
<td>− W-prosody</td>
<td>a</td>
<td>ε, i, u</td>
<td>i</td>
</tr>
<tr>
<td>[− Y-prosody]</td>
<td>[− W-prosody]</td>
<td>e</td>
<td>i</td>
<td></td>
</tr>
<tr>
<td>[− W-prosody]</td>
<td>o</td>
<td>u</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>