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Tense is one of those verbal categories relatively unexplored in Bantu languages. In this study the author endeavors to differentiate and describe the temporal functions of those verbal prefixes directly or indirectly relevant to the expression of tense in Kinyarwanda. These morphemes are shown to constitute diverse semantic (temporal) systems—labeled vector and segmental—which, when juxtaposed, determine the particular tense of any verbal expression. Of particular significance, the analysis demonstrates that these morphemes do not, in all cases, have a unique, absolute meaning or function, but shift according to the semantic context in which they are used.

1. Introduction

The temporal analysis of a verbal expression must take into account two complementary phenomena: tense and aspect. In Kinyarwanda the category of TENSE is particularly complex, embracing several semantic systems each of which characterizes the relationships among events in a different way. The expression of tense relations depends both upon the choice of morphemes belonging to these different systems and the combination of morphemes in the verbal construction. The analysis of the syntactic and semantic interdependence among the morphemes of these various temporal systems constitutes the focus of this article.

The category of tense is not easily analyzed in Kinyarwanda. The verbal

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expression represents a complex unit characterized by the interaction of several diverse grammatical categories. Moreover, these categories are not clearly distinct, but intersect. Nevertheless, we can represent the structure of the verbal expression in the following general terms:

\[
\text{Concordial Prefix} \pm \text{Mode} + \text{Tense} + \text{Verbal Focus} + \text{RADICAL} \pm \text{Radical Extensions} + \text{Aspect}^1
\]

In order to explain the systematic manner in which temporal relations are marked in Kinyarwanda, it is necessary to examine in detail the ways in which the categories of MODE, TENSE, and FOCUS interact to produce the observed surface structures and to convey particular temporal links among events.

Over and above the morphological and syntactic description of the structure of these verbal categories, the essence of this study is the analysis of the meaning and function of each temporally associated morpheme. Before examining these morphemes individually, though, it is necessary to consider first the generic role of tense. Semantically, tense denotes the ordered relation of an event\(^2\) to an established event of reference. In relations of the first order (notably "simplex"\(^3\) tense) this reference event is established by the speech event (R1). For second order relations ("complex" tense) the reference event to which the narrated event is temporally situated is determined by an event (R2) other than the speech event (R1); this event is, in turn, temporally linked to the speech event.

We can distinguish two common types of semantic system that may serve to

---

\(^1\)In this analysis I have been concerned almost exclusively with indicative constructions, though the claims made here hold for all "moods". For indicative constructions a negative mark may precede the concordial prefix. The category MODE should not be confused with Coupez's [1980] use of the term. The category proposed here expresses primarily the point of view of the speaker towards temporal relations. The category FOCUS has not been completely explored, the name being applied here because of similarities with functions illustrated by Givón [1972] and restated in Kimenyi [1980].

\(^2\)Although I will speak of events throughout, the notions of tense expressed here are relevant to states, processes, etc.

\(^3\)I am using the terms "simplex" and "complex" to refer only to semantic phenomena, the terms "simple" and "compound" for syntactic phenomena.
express these ordered temporal relations between events. The first can be designated a "vector" system, the second a "segmental" system. Both types are manifested in Kinyarwanda and constitute an essential part of the analysis.  

A "vector" system is based on the notion of "direction" with respect to the point of reference. A particular direction may be said to delineate a temporal domain, of which there are four: that domain anterior to the point of reference, posterior to it, simultaneous with it, or disjunct from it. The schemas in Figure 1 depict graphically these four potential relationships between an event and the point of reference. The shaded areas indicate the domain in which the event may be narrated with respect to the reference event (R).

Figure 1. Potential relations in a vector system

a. anterior

b. posterior

c. simultaneous

---\n
\[\text{See Bull [1960] for a similar discussion of tense.}\]
A vector system can manifest itself in two ways. In the first type, each of the four domains cited above is morphologically marked by a distinct morpheme. In such an "equipollent" system, each morpheme is attributed a "positive" meaning, and, consequently, may be considered to be semantically marked. The second type of vector system is founded on the notion of "privative" semantic opposition. In contrast to the first type, only one domain is distinctively marked morphologically. The remaining three domains are grouped together under the same morphological marker (possibly null, $\emptyset$). By virtue of its "positive" meaning, the morphologically distinct domain may be considered the semantically marked case; the other, which derives its meaning from its opposition to the marked case, may be considered semantically unmarked. It is this second type of vector system that is found in the tense category of Kinyarwanda.

The second type of temporal system mentioned above, a "segmental" system, is based on the concept of temporal intervals or segments. These segments are anchored to a point of reference, but at varying "distances". In Kinyarwanda they are invariably anchored to the speech event. It appears to be the case that frequently the morphemes marking these temporal segments create an alternating pattern (very regular) from remote past to remote future. Such a case, drawn from ChiBemba, is presented in Figure 2.\textsuperscript{5} The tonality of the verbal expression changes according to the temporal segment in which the speaker has placed the narrated event. Thus, for example, the tone will be low (') when the narrated event is situated earlier in the day (1a), and high (') when it is situated on the day preceding the speech event (1b).

\begin{footnotesize}

(1) a. \textit{ba-\textsuperscript{a}-c\textsuperscript{a}l\textsuperscript{a}-bomb-a} \\
\text{"they were working (earlier in the day)"

\end{footnotesize}

\textsuperscript{5} See Botne [1980: appendix] for a more complete and precise analysis; see Givón [1972] for the original data.
b. ba-á-léé-bomb-a 'they were working (yesterday)'

Other morphemes serve to differentiate tonally identical expressions, such as -ci- in (la).

Figure 2. Segmental system (ChiBemba)

<table>
<thead>
<tr>
<th>Before Yesterday</th>
<th>Yesterday</th>
<th>Today</th>
<th>Tomorrow</th>
<th>After Tomorrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>V</td>
<td>V</td>
<td>(V)</td>
<td>V</td>
</tr>
</tbody>
</table>

In the following analysis, I will demonstrate how these two types of semantic system, vector and segmental, are integrated in the category TENSE in Kinyarwanda.

2. "Simplex" Tense in Kinyarwanda

By "simplex" tense is to be understood those temporal relations which establish a particular order between the speech event (primary reference point) and the narrated event. In Kinyarwanda these relations are systematically and obligatorily marked in all verbal constructions. In this section I will examine those morphemes which function to express these relations, with a view towards describing explicitly their semantic range. As the point of departure, we can consider first problems associated with the form -ra-.

There are two morphemes in Kinyarwanda having the form -ra-. One of these two falls under the category MODE and will be considered in conjunction with the discussion of "complex" tense. The second is more dynamic in nature, belonging to either of two categories, TENSE or FOCUS, according to the syntactic/semantic context. In one sense, as the examples in (2) and (3) indi-

---

6 More precisely, the foregrounded aspect of the narrated event. See Botne [1983] for a more detailed discussion of tense, aspect, and event structure in Kinyarwanda.

7 This is not completely accurate. While it is true that all verbal expressions will have temporal relations marked, when it is a question of a long narrative text, only the first verbal expression is marked with respect to the speech event; others are marked with respect to that reference point established by the first expression.
cate, this morpheme is associated with the absence of an external complement, and consequently, with focus on the verb as new information. This function of -ra- will be noted by the subscript -ra_c-. 

(2) a. à- sòm- à l'Imvaho 'he reads Imvaho (habitual action)'
   3s read asp (newspaper title)
   b. à-ra_c-ỳl-sòm-à 'he reads it (habitual action)'
   c. à-ra_c-sòm-à 'he reads (habitual action)'
   d. *à-sòm-à

(3) a. y- à- sòm- yè l'Imvaho 'he read Imvaho (action having taken place before today)'
   3s ant read asp
   b. y-à-ra_c-ỳl-sòm-yè 'he read it (action having taken place before today)'
   c. y-à-ra_c-sòm-yè 'he read (action having taken place before today)'
   d. *y-à-sòm-yè

The second function of this morpheme differs from the first in two respects. Syntactically, it is not associated with complementation; semantically, it is not associated with verbal focus, but rather denotes a temporal interval extending from (and including) the speech event to the end of the day. This function of -ra- will be noted as -ra_s-.

---

Certain complements such as cyaane 'a lot, much', neeza 'well, good', and koko 'truly, really' do not figure in this correspondence. Note furthermore that with what Coupez calls the "conjunctive mode" there is a different correspondence between temporal intervals and syntactic usage of FOCUS (compare Figure 3, page 242) than there is for the indicative. With the conjunctive, we find the following:

<table>
<thead>
<tr>
<th>Before Today</th>
<th>Today Earlier</th>
<th>Today Later</th>
<th>After Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

That is, there is no syntactic distinction made in the remote past as there is in the indicative, but there is in the remote future. Thus, although this syntactic feature differs between indicative and conjunctive, it still maintains a temporally based phenomenon.
Tense in Kinyarwanda

(4) a. à- ràs- sòm- à Imvaho 'he is reading Imvaho'
   3s tns read asp 'he is going to read Imvaho (later in the day)'

b. à-ràs-yò-sòm-à 'he is reading it'
   'he is going to read it (later in the day)'

c. à-ràs-sòm-à 'he is reading it'
   'he is going to read (later in the day)'

Although the functions of -ra₉- and -ra₈- are decidedly different, there exists a common feature between them: both refer events to specific temporal intervals. As noted above, -ra₈- denotes an interval delimited by the speech event and the end of the day. -ra₉- denotes an interval bounded by, but not including, today, i.e., up to but not including the day of the speech event (see examples in (3)).

This functional differentiation noted in -ra- is found again in the use of the morpheme -a-. Like -ra₉-, -a₉- is associated with the absence of an external complement and puts the verb in focus. Furthermore, it denotes a temporal interval extending from the beginning of the day up to, but not including, the speech event. The sentences in (5) illustrate the nature of this morpheme in syntactically appropriate contexts.

(5) a. y'- à- sòm- yè Imvaho 'he read Imvaho (action having taken place earlier in the day)'
   3s ant read asp

b. y'-à-à₉-yò-sòm-yè 'he read it (action having taken place earlier in the day)'

c. y'-à-à₉-sòm-yè 'he read (action having taken place earlier in the day)'

d. *y'-à-sòm-yè

Just as -a₉- is in complementary distribution with -ra₉-, -a₈- is in complementary distribution with -ra₈-. Like -ra₈-, -a₈- denotes a temporal interval. The lower bound of this interval is delimited by the day of the speech event, but not including it. This may be observed from the examples in (6).

(6) a. à- zà- à₈- sòm- à Imvaho 'he is going to read Imvaho (action to take place after today)'
   3s rm pos tns read asp
b. ə-zà-ə-sə-gəl-səm-à  'he is going to read it (action to take place after today)'
c. ə-zà-ə-sə-səm-à  'he is going to read (action to take place after today)'

The temporal distribution of these forms can be perceived more clearly by means of the graphic representation in Figure 3. Recall that the forms anterior to the point of reference have as their primary function the marking of verbal focus.

Figure 3. Distribution of the forms -ra- and -a-

<table>
<thead>
<tr>
<th>Before Today</th>
<th>Today Earlier</th>
<th>Today Later</th>
<th>After Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>rₐ c</td>
<td>aₐ</td>
<td>rₐ s</td>
<td>aₙ</td>
</tr>
</tbody>
</table>

The systematic alternation that we observe in the above schema immediately suggests a "segmental" semantic structure, even though the primary function of those forms associated with the past is not temporal in nature. The problem we face here is how to explain this functional distinction and how to incorporate this difference into a synchronic analysis.

Before considering a solution to this problem, it is necessary to examine other morphemes relevant to tense and their semantic functions. There exists a second morpheme in Kinyarwanda having the form -a-. This morpheme occurred in (3) and (5) illustrated earlier. It functions to express a relationship of "anteriority to"; in (3) and (5) this relationship is understood to hold between the narrated event (E) and the speech event. More specifically, -aᵥ- marks a vector domain, which we can graphically represent as in Figure 4.

Figure 4. The temporal domain of the morpheme -aᵥ-

This morpheme represents the semantically marked case in a vector system op-
posing "anterior" to "non-anterior". The semantically unmarked case (morphologically null, $-\emptyset_v$) embraces all three of the other domains (posterior, simultaneous, disjunct) and can be said to have meaning only by virtue of its opposition to $-a_v$. Consequently, a verbal expression incorporating $-\emptyset_v$ will have three potential interpretations, the exact interpretation depending upon the semantic context.

Tense in Kinyarwanda is complicated by the fact that it has not just one vector system, but three. In addition to the principal vector system outlined above, there are two parallel sub-systems. The example in (6) illustrates the semantically marked domain in a system that can be characterized as "remote posterior vs. non-remote posterior". That is, the morpheme $-\text{za}$ marks that domain posterior to the day of the speech event. For all events non-posterior to the day of the speech event, the verbal expression will incorporate the complement of $-\text{za}$, that is, $-\emptyset\text{za}$. This semantic opposition is graphically presented in Figure 5.

Figure 5. Vector sub-system "remote posterior/non-remote posterior"

The second, and parallel, sub-system incorporates two tones, HIGH vs. LOW, in semantic opposition. The H tone (') marks that domain anterior to the day of the speech event. Like $-\text{za}$ it represents the semantically marked case. In opposition to this H tone we find the L tone (') which subsumes in its semantic range all those temporal domains not included in the range of the H tone. The following examples illustrate this difference in function.

(7) $\text{yásómye kiliya gitabo}$
/a- $a_v$ $\emptyset$ $\emptyset\text{za}$ $\emptyset$ som- 1r..e/
3s ant rm ant nonrm pos focus read asp

'he read that book (action having taken place before today)'
(8) yàsòmyè kiliya gitabo

\[ /a- \overset{\_}{\overset{\_}{\phi}} - \overset{\_}{\overset{\_}{\phi}}_{za} - \overset{\_}{\overset{\_}{\phi}} - sòm- lr..e/ \]

3s ant nonrm ant nonrm pos focus read asp

'he read that book (action having taken place earlier in the day)'

(9) a. àràsòmà iki gitabo

\[ /a- \overset{\_}{\overset{\_}{\phi}} - \overset{\_}{\overset{\_}{\phi}}_{za} - ra_{s} - \overset{\_}{\overset{\_}{\phi}} - sòm- a/ \]

3s non ant nonrm ant nonrm pos tns tns read asp

i) 'he is reading this book (action taking place now)'

ii) 'he is going to read this book (action to take place later in the day)'

b. àràkàmà inka

\[ /a- \overset{\_}{\overset{\_}{\phi}}_{v} - \overset{\_}{\overset{\_}{\phi}}_{za} - ra_{s} - \overset{\_}{\overset{\_}{\phi}} - kàm- a/ \]

3s non ant nonrm ant rm pos tns tns milk asp

i) 'she is milking the cows (action taking place now)'

ii) 'she is going to milk the cows (action to take place later in the day)'

(10) àzààkàmà inka

\[ /a- \overset{\_}{\overset{\_}{\phi}}_{v} - \overset{\_}{\overset{\_}{\phi}} - zà- a_{s} - \overset{\_}{\overset{\_}{\phi}} - kàm- a/ \]

3s non ant nonrm ant rm pos tns tns milk asp

'she is going to milk the cows (action to take place after today)'

Notice that among those examples expressing a "non-remote anterior" relation (examples (8-10)) only the construction in (9b) does not manifest a low tone on the "tense" morpheme(s). This unexpected high tone derives from the interaction of the lexical high tone on the radical kàm (while sòm has a L ) with a grammatical high tone from the category FOCUS particular to this type of construction. This interaction of tones will be discussed shortly.

The semantic opposition discussed above between H and L tones can be graphically represented in a manner parallel to that sketched for -zà-.

Figure 6. Vector sub-system "remote anterior/non-remote anterior"

\[ \begin{array}{c c c}
\text{Before} & \text{Today} & \text{After} \\
\text{Today} & \text{Today} & \text{Today} \\
\end{array} \]

\[ \begin{array}{c c c}
\overset{\_}{\overset{\_}{\phi}} & - & - \\
\overset{\_}{\overset{\_}{\phi}} & - & - \\
\end{array} \]
I have referred to tones above as either "lexical" or "grammatical" (floating). They are not, however, inherently different in nature. The morpheme -kám-, for example, includes a high tone as part of its constituent structure in the same sense as the segment [k]. A "floating tone" morpheme, such as -Ø- indicating remote anterior, is quite simply a morpheme lacking segmental constituents in the same way that other morphemes lack tonal constituents.9

We have seen so far four paradigmatic/semantic oppositions: (i) -ra-/ -a-, (ii) -aₐ/-Øₐ-, (iii) -zá/-Ø-zA-, (iv) -Ø/-Ø-. These four pairs constitute sub-divisions of the category TENSE. From the morphological arrangements that can be observed in the preceding examples, we can establish the following structural ordering:

Figure 7. Tense

![Diagram](image)

The temporal meaning of a verbal expression derives, for the most part, from the sum of the meanings of the morphemes incorporated in it from these four sub-categories. However, this analysis still fails to resolve several problems. We have observed previously the double functions of the morphemes -ra- and -a- which have not been adequately treated above. Furthermore, there has been no explanation offered of how tones are distributed over segments. In order to present a satisfactory solution to these problems, it is necessary to consider a second verbal category, that of VERBAL FOCUS.

Consider the five examples below (11-15) which include pronominal complements in syntactically different verbal constructions.

---

9A different use of tone is found at the syntactic level, in which certain H tones are assigned to the verbal expression as a whole, depending upon its relationship to other elements [Botne, in preparation, a].
We can observe in these examples two important phenomena. Notice, first of all, that the absence of an external complement (11, 13, 15) is marked not only by the morphemes -ra_c- or -a_c-, but also by a high tone on the pronominal complement. Secondly, the high tone of the radical -tem- is neutralised when there is an external complement (12, 14). These observations suggest that the category VERBAL FOCUS comprises three sub-divisions as outlined in Figure 8.

Figure 8. Verbal focus

```
  v
 a +    pronominal complement(s) +
  ra
```

The high (floating) tone correlates with the absence of an external comple-
ment, the low tone with the presence of such complements. Stated somewhat differently, the H tone indicates that the focus is on the verb itself; the L tone indicates the lack of such focus.

At this point in the analysis, we have seen two verbal categories that affect the temporal interpretation of a verbal expression. From the separate analyses proposed above, we obtain the following combined syntactic structure of morphological prefixes.

Figure 9. Tense and focus combinations

<table>
<thead>
<tr>
<th>TENSE</th>
<th>FOCUS</th>
<th>RADICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEC₁</td>
<td>VEC₂</td>
<td>SEG</td>
</tr>
<tr>
<td>aᵥ</td>
<td>ṭ</td>
<td>zā</td>
</tr>
<tr>
<td>φᵥ</td>
<td>ṭ</td>
<td>φ₂a</td>
</tr>
<tr>
<td>a</td>
<td>pronominal complement(s)</td>
<td>φ</td>
</tr>
<tr>
<td>ra</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recall that the morphemes -ra- and -a- have two distinct semantic functions according to the temporal context: (i) when correlated with the temporal notion "anterior", the use of these morphemes indicates primarily the absence of an external complement; (ii) when correlated with the temporal notion "non-anterior", they denote distinct temporal intervals. The dual nature of these morphemes suggests that they shift category and behave as morphemes of a particular category according to semantic criteria. The distribution of tones over the verbal expression supports this hypothesis.

The distribution of tones proceeds in a systematic and predictable manner, contrary to the assertions of Kimenyi [1978:303].¹⁰ Four rules suffice to account for the observed surface phenomena. These rules are essentially morphophonemic in nature.

¹⁰See Coupez [1980] for a description that is morphologically, syntactically and semantically different from this one.
Rule 1: LOW TONE SHIFT

Underlying low tones are displaced, or shifted, onto all following morphemes (that include vocalic segmental constituents) belonging to the same verbal category. Any high tone in the category will be replaced by the low tone.

(16)  n + a_v - ̂ʊ - ̃Ω_za + mu- ̂ʊ_c + tēm + lr..e  igi'f
ls ant nonrm ant nonrm pos cl.1 inf focus cut asp tree
TENSE FOCUS RAD

nàmùtèmèy'igi't
'I cut the tree for him (earlier in the day)'

Notice in (16) that the low tone found in the TENSE category is distributed over all morphemes in the FOCUS category, and that the low tone of the FOCUS category replaces the high tone on the radical.

Rule 2: HIGH TONE SHIFT

Underlying high tones are displaced, or shifted, onto all preceding morphemes (that include vocalic segmental constituents) belonging to the same verbal category. Any low tone in the category will be replaced by the high tone.

(17)  n + a_v - ̂ʊ - ̄Ω_za + a_c - kī- mu- ̂ʊ_c + tēm + lr..e
ls ant nonrm ant nonrm pos focus cl.7 inf cl.1 inf focus cut asp
down

Application of Rule 1

n + a_v + a_c - kī-mù + tēm + lr..e
down

Application of Rule 2

n + a_v - a_c + kī-mù + tem + lr..e

nààkímùtèmèyè
'I cut it for him (earlier in the day)'

Because tones are distributed over all morphemes included in one verbal category, a problem arises as to where morphemes of the SEG category are to be grouped. As with other aspects of this category, the solution lies in a dynamic shifting according to the rule applied and the number of high tones in

---

\[1\] The discontinuous morpheme \( lr..e \) is manifested in different ways according to the phonological context. See Botne [1980] for a more detailed discussion.
the construction. Thus, for the application of Rule 1 (LOW TONE SHIFT) SEG behaves as though it were part of the FOCUS category. For the application of Rule 2 (HIGH TONE SHIFT) the category to which SEG will belong depends on the number of moras\(^{12}\) which will eventually have a high tone in the TENSE category. If there is an odd number of moras which will receive a high tone, SEG will behave as though it were part of FOCUS; if, on the contrary, there is an even number of moras which will have a high tone, SEG will behave as though it were part of the TENSE category.

We see in (17) that the morpheme \(-a_c-\) behaves as part of the FOCUS category for the application of Rule 1. With Rule 2, we note that TENSE has an even number of moras that will receive a high tone (in this case zero), and consequently \(-a_c-\) behaves as though it belongs to TENSE. The derivation in (18) illustrates a similar case (though with two moras to carry high tone in the TENSE category), while that in (19) illustrates a case with an odd number of moras in the TENSE category that will receive high tones and in which the morpheme \(-ra_c-\) behaves as though it were part of the FOCUS category.

(18) \[ba + a_v - \dot{\theta} - \emptyset_{za} + ra_c - ki - mu - \dot{\theta}_c + t\dot{e}m + \dot{lr}..e\]  
\[3p \text{ ant rm ant nonrm pos focus cl.7 inf cl.1 inf focus cut asp}\]  
\[\uparrow \text{ Application of Rule 1 (vacuous)}\]  
\[b + aa_v - \dot{\theta} - ra_c - ki - mu - \dot{\theta} + t\dot{e}m + \dot{lr}..e\]  
\[\uparrow \text{ Application of Rule 2}\]  
\[b + \dot{\alpha}_v - ra_c + k\dot{i} - mu + \text{tem} + \dot{lr}..e\]  
\[\text{ba'araka'mu'temeye}e\]  
'they cut it for him (before today)'

---

\(^{12}\)The number of moras is usually the same as the number of syllables, or, in Kinyarwanda the number of morphemes affixed to the verb. It is necessary to speak of moras here rather than syllables because of examples like (18) in which we find lengthened vowels.

\(^{13}\)There is a rule in Kinyarwanda for lengthening vowels when consecutive. In this case, the first is deleted. See Botne [1980].
The third rule, like the second, concerns the number of high tones in the verbal expression. All verbal expressions in Kinyarwanda have an even number of high tones. Rule 3 assures that after the application of Rules 1 and 2 there will be an even number of high tones.

Rule 3: HIGH TONE COPYING

If in any verbal category there is an odd number of high tones, a high tone is placed on the first mora of the following category.

(20) n + a_v - \( \dot{o} \) - \( \dot{\theta} \) za + k\( \iota \) - mu- \( \dot{\theta} \) c + temp + lr..e n'umuhoro

1s ant rm ant nonrm ant focus cl.7 inf cl.1.1 inf focus cut asp

Application of Rule 1

\n
n + a_v - \( \dot{o} \) + k\( \iota \)-mu + temp + lr..e n'umuhoro

Application of Rule 2

n + a_v - k\( \iota \)-mu + temp + lr..e n'umuhoro

Application of Rule 3

n + a_v - k\( \iota \)-mu + temp + lr..e n'umuhoro

nákíímútèmèyè n'umuhoro

'I cut it for him with the bill hook'

Rule 4: LOW TONE ASSIGNMENT

Each mora that has not been attributed a tone by the preceding rules will be assigned a low tone.

This last rule is necessary to insure that each mora of the expression has a tone. In Kinyarwanda, the unmarked, or general, tone is the low tone. The high tone is always associated with a unique meaning. Thus, the presence of a high tone is significant, while that is not necessarily the case with a low tone.
The analysis to present has been limited to expressions having an "anterior" meaning. We have noted already that for "non-anterior" relationships the morphemes -ra$_s$- and -a$_s$- do not have the syntactic/semantic function of verbal focus. Moreover, I have argued that the "floating" tones of the FOCUS category do not have this function either in this temporal context, but correspond in function to the SEC morphemes, high tone correlating with functions of -ra$_s$-, low tone with -a$_s$-. The following examples (21-23) illustrate how tone is distributed over moras of "present" and "habitual" constructions. Note that the floating tone of the FOCUS category must be a high tone and is not affected by the presence or absence of external complements.

(21) $n + \phi - \phi - \phi_{za} + r_{s} - k\- m\- \phi_{s} + t\-m + i\-r + a$
    $\downarrow$
    $n + r_{s} - k\- m\- + t\-m + i\-r + a$
    $\downarrow$
    $n + r_{s} - k\- m\- + t\-m + i\-r + a$
    $\downarrow$
    $n + r_{s} - k\- m\- + t\-m + i\-r + a$
    $\downarrow$
    ndakimutemera (n'umuhoro)$^{14}$
    'I am cutting it for him (with a bill hook)'

(22) $n + \phi - \phi - \phi_{za} + r_{c} - b\- m\- \phi_{c} + t\-m + i\-r + a$
    $\downarrow$
    $n + r_{c} - b\- m\- + t\-m + i\-r + a$
    $\downarrow$
    $n + r_{c} - b\- m\- + t\-m + i\-r + a$
    $\downarrow$
    $n + r_{c} - b\- m\- + t\-m + i\-r + a$

$^{14}$In Kinyarwanda /r/ is realized as [d] after a nasal.
Low Tone Assignment (R4)
\[ n + r\hat{a}_c - b\acute{i} - m\check{u} - t\acute{e}m + \mathring{r} + \hat{a} \]

ndâbîmûtêmêrâ
'I cut them for him (habitually)'

(23) \[ n + \emptyset_v - \mathring{\hat{\hat{o}}} - \emptyset_{za} + m\hat{u} - \mathring{\hat{o}}_c + t\acute{e}m + \mathring{r} + a \text{ ibiti} \]
\[ \text{ls non ant nonrm ant nonrm pos cl.1 inf focus cut ben asp trees} \]

↓
Low Tone Shift (R1)
\[ n + m\hat{u} + t\acute{e}m + \mathring{r} + a \text{ ibiti} \]

↓
Rule 2 (vacuous)
↓
Rule 3 (vacuous)
↓
Low Tone Assignment (R4)
\[ n + m\hat{u} + t\acute{e}m + \mathring{r} + \hat{a} \text{ ibiti} \]

mûtêmêr\'l\text{ibiti}^15
'I cut the trees for him (habitually)'

The high tone (FOCUS) is semantically parallel to the morpheme \(-ra_s\) in the temporal context "non-anterior". Both denote that time interval delimited by the speech event and the end of the day. Comparable to this correspondence between \(H\) and \(-ra_s\) is the correspondence between \(-a_s\) and \(L\). Consider the following example of a "remote future" construction.

(24) \[ n + \emptyset_v - \mathring{\hat{\hat{o}}} - z\acute{a} + a_s - b\acute{i} - m\hat{u} - \hat{o}_s + t\acute{e}m + \mathring{r} + a \]
\[ \text{ls non ant nonrm ant rm pos tns cl.1.8 inf cl.1.1 inf tns cut ben asp} \]

↓
Low Tone Shift (R1)
\[ n + z\acute{a} + a_s - b\acute{i} - m\hat{u} + t\acute{e}m + \mathring{r} + a \]

↓
Rule 2 (vacuous)
↓
Rule 3 (vacuous)
↓
Low Tone Assignment (R4)
\[ n + z\acute{a} - a_s + b\acute{i} - m\hat{u} + t\acute{e}m + \mathring{r} + \hat{a} \]

nzâàbîmûtêmêrâ (n'umuhoro)
'I am going to cut them for him (with a bill hook) (action to take place after today)'

\[ ^15/n/ + /\text{nasal}/ is realized by most speakers as the second nasal, by others as a geminate nasal. \]
The low tone is maintained whether or not there is an external complement. Thus, we see here that two morphemes act in concert based on the same semantic criteria for the shift in syntactic/semantic function. A slight revision of the schema in Figure 3 captures this relationship of SEG morphemes and FOCUS tones (Figure 10).

Figure 10. Temporal Distribution of the forms -ra-/a- and the tones -∅- and -∅-.

<table>
<thead>
<tr>
<th>Before Today</th>
<th>Today Earlier</th>
<th>Today Later</th>
<th>After Today</th>
</tr>
</thead>
<tbody>
<tr>
<td>raₐ...∅</td>
<td>aₐ...∅</td>
<td>raₕ...∅</td>
<td>aₕ...∅</td>
</tr>
<tr>
<td>∅...∅</td>
<td>∅...∅</td>
<td>raₕ...∅</td>
<td>aₕ...∅</td>
</tr>
</tbody>
</table>

I have established in the preceding analysis of simplex tense that Kinyarwanda manifests a principal division "anterior/non-anterior" which is supplemented by secondary temporal systems. Furthermore, according to the temporal domain expressed, certain morphemes ( -ra/-a- and ∅/∅ ) may shift from one syntactic/semantic function to another. Having outlined the syntactic/semantic functions of the major morphemes involved in simplex tense constructions, we can turn now to the problems of complex tense constructions.

3. "Complex" Tense in Kinyarwanda

Complex tense differs from simplex tense in the number of reference events necessary for interpretation of the verbal expression. In simplex expressions, the event is narrated with respect to a single reference event, the speech event (R₁). In complex expressions, the narrated event is oriented to the speech event only indirectly, being mediated by a second, intervening reference event determined from the grammatical context.

Semantically complex expressions can be, from a syntactic perspective, either simple or compound. Simple constructions are those that consist of a single radical and its affixes; compound constructions involve more than one radical. I shall consider first those constructions that are syntactically "simple". This will involve a discussion of two morphemes of the form -ka-
and examination of the structure of the MODE category and its link to the TENSE category.

Based on Whorf's [1956] proposed analysis for Hopi, the category MODE can be conceived of as that generic category which indicates both the nature of the connection and the perspective the speaker has of that connection, established between the narrated event (E) and a mediating event (E_m) or between events expressed in consecutive propositions. Thus, the morphemes in this category function to indicate the meaning relationship that is perceived to hold between one event or proposition and another.

Both of the -ka- morphemes fall into this category of MODE (cf. Coupez [1980:328]). I will differentiate them here by use of subscripts, hence -ka_m- and -ka_t-. The first, designated "subsequent" by Coupez, can denote three semantic relations between consecutive events or propositions: (i) a relation of consequence in which the second event or proposition is narrated as a consequence or result of the first; (ii) a relation of sequence in which the event in the second clause is chronologically sequent to the first and dependent upon the realization of the first for its own realization; (iii) a relation of similarity in which the second proposition expresses an idea, a concept, similar to the first. These three potential functions of -ka_m- are illustrated by the examples below:

(25) ubwo Kangabo yàlf átúuyà muli Kenya, yáràkòrágà cyàane àKábóñà amafaraanga meenshi.
    'while Kangabo lived in Kenya, he worked a lot and (consequently) earned a lot of money'

(26) amaazi yààshyà, umuteetsi àGàtúlìrà, àKàvúgà umutsima.
    'the water is heated, then the cook adds the flour, then she prepares the dough (paste)'

(27) buli muunsi abasore bàràgìrà inka bàGàhìngà mu murìma
    'every day the young boys tend their cows and cultivate their fields'

The second morpheme, -ka_t-, also includes as part of its semantic range certain "modal" qualities. It may introduce into the verbal expression (i) the notion of contrast (unexpected by the speaker), (ii) an element of surprise on the speaker's part, or (iii) an additional commentary on the preced-
ing proposition.

(28) yààKÁánylbyè náramucùmbiKìyè
   'he robbed me, and yet I gave him lodging'

(29) wààKÁbáâyè mweene waabo
   'it's no wonder that you are his relative!'

(30) aherako akora uko yákÁmàzè kuvuga
   'then he did (just) as he said he would do'

In addition to the above possibilities, -kaₚ- also has certain temporal functions. Comparison of the sentences in (31-33) clearly shows the nature of this function.

(31) a. ntlìbáàkòzè
    'they did not work (before today)'
   b. ntlìbáàkòzè
    'they did not work (earlier in the day)'

(32) ntlìbáàrâkóòà
    'they have not worked yet (but their working is still expected)'

(33) ntlìbáàrâGàkóòà
    'they did not work (as expected)'

In example (31) we find a simple negation of the relation "anterior to" attributed to the event -kó- . In (32) we see that, in addition to negation of this temporal relation "anterior to", there is also a notion of expectation. This notion is evident in (32) as well, in which it is relegated to the past. From a morphological analysis of these expressions, we are led to conclude that this notion of expectation derives from the presence of the morpheme -raₚ- .

This morpheme -raₚ- , different from the -ra- that we have seen previously, indexes a mediating event (Eₚ) . By this term is meant a "testimonial" event on the basis of which the speaker reports the course of the narrat-

---

16 The term "mediating event" indicates an event to which the speaker attaches some significance with respect to the narrated event. That is, it establishes some type of semantic link between itself and the narrated event. Furthermore, it carries the notion that the speaker can in some manner testify to the occurrence of the mediating event. The event indexed as Eₚ is not necessarily expressed in discourse, but may be understood from context.
ed event (E) (see Jakobson [1963:136]). By use of \(-r_a^m-\) in the examples above, the speaker puts forward a perspective from the mediating event towards the narrated event. Thus, in (32) and (33) we find expressed the relationship \(E_m + E\) by virtue of \(-r_a^m-\); that is, the speaker is taking a perspective from the mediating event which was instantiated toward the expected event which has not been instantiated. The use of \(-k_a^t-\) in (33) indicates that the "potential for the instantiation of E" no longer exists, that is, it is anterior to the speech event. In (32), by contrast, the potential for the instantiation of E still exists, that is, it is non-anterior to the speech event. We can propose a null morpheme, \(-\emptyset_{k_a}-\), in opposition to \(-k_a^t-\) which would convey this meaning. In summary form, then we would have the following readings of (32) and (33):

\[
(32') \ E \text{ anterior to } R_l \ by \ -a_v- \ (negated \ by \ nti-) \\
' E_m + E'/\text{potential for } E \text{ extant at } R_l \ by \ -\emptyset_{k_a}-
\]

\[
(33') \ E \text{ anterior to } R_l \ by \ -a_v- \ (negated \ by \ nti-) \\
' E_m + E'/\text{potential for } E \text{ non-extant at } R_l \ by \ -k_a^t-
\]

In the preceding examples we have noted that the morpheme \(-r_a^m-\) presents the speaker's perspective from the mediating event towards the narrated event. If, rather than \(-r_a^m-\), the morpheme \(-a_m-\) is incorporated into the verbal construction, we find the opposite perspective, i.e. from the event (E) towards the mediating event (\(E_m\)). The following sentences illustrate this shift in perspective:

\[
(34) \ \text{wààkààntùtsè nàrágúhāyè inka} \\
' \text{you have insulted me, and yet I gave you a cow}'
\]

\[
(35) \ \text{wààntúkà nàrágúhāyè inka} \\
' \text{you would insult me, and yet I gave you a cow}'
\]

\[
(36) \ \text{wààntúkà nibye aliko sinibye} \\
' \text{you could insult me if I had stolen (something), but I haven't}'
\]

In these sentences, as with those found in (31-33), we have the proposition "E anterior to R_l" by virtue of the vector morpheme \(-a_v-\), although in the present examples this proposition is not negated. In addition, we have
narrated a perspective from this E to a mediating event, 'give a cow' in (34) and (35), 'steal' in (36). This shift in perspective correlates with the speaker's perception of the event as either "potentially coming to be" (-rₐₘ -) or "actually having occurred" (-ₐₘ -). Thus, in (34) -kaₜ - indicates that the event (E) is anterior to R₁ and has actually occurred. In (35), the lack of -kaₜ - or the occurrence of -₀ₖₐ - indicates that the speaker treats the event "insult" as having occurred but at the same time places it after the speech event (or simultaneous with it); that is, he behaves as though the event had already occurred. In (36) the event has occurred, but the speaker indicates that it should only have occurred after a particular mediating event, in this case "steal". If we consider in summary form the interpretation of (36), we have the following:

(36') E anterior to R₁ by -ₐᵥ -

'Eₘ + E' /actual instantiation non-posterior to R₁ by -₀ₖₐ -

The understood meaning of this sentence is that the event (E) has occurred, but the speaker indicates that he believes it should have occurred only after the appropriate mediating event.

What is clear from these examples is that the morpheme -kaₜ - has both a temporal and a modal function, thus belonging to both the TENSE category and the MODE category. As a temporal morpheme, -kaₜ - functions as a vector temporal marker denoting that domain anterior to R₁ (similar to -ₐᵥ -). Having established the functions of -kaₜ -, we are in a position to complete the structural description of temporal morphemes affixed to the verb. Before presenting this structure, it is necessary to note briefly that the tonality of -kaₜ - changes in a significant manner according to context. If it has a low tone, as in (37), it indicates the speaker's belief in the reality of the event. If, on the other hand, it has a high tone, as in (38), it indicates that the speaker questions the reality of the event (hence the notion of incredulity or surprise).

(37) wààgàkòzè nka Kangabo!

'it is not surprising that you act like Kangabo!'

(38) wààkàbàayè umwaana wa Kangabo, wààkòzè nka we.

'if you are Kangabo's child, why don't you act like him?'
(lit. if you were really Kangabo's child, you would act like him)
Incorporating this information into the analysis, we arrive at the schema in Figure 11 which shows the relative positions of those morphemes that have been analyzed here and the verbal categories to which they belong. 17

Figure 11. Tense and focus prefixes

\[ \begin{array}{cccccccccc}
\hat{a} m & k_{l} & a_{v} & k_{a t} & \hat{o} & z_{a} & a & \hat{o} \\
+ & + & + & + & + & + & \text{complement(s)} & + \\
\end{array} \]

\[ \begin{array}{cccccccccc}
\hat{a} m & k_{m} & a_{v} & a_{t} & \hat{o} & \hat{o} & z_{a} & r_{a} & \hat{o} \\
\end{array} \]

MODE \hspace{1cm} TENSE \hspace{1cm} FOCUS

It should be noted here that not all verbal constructions include all three of these categories. In particular, the category MODE is limited in distribution and is not found, for example, in "simple past" constructions such as those in (31). We might consider this category as differentiating semantically "autonomous" propositions (non-modal) from semantically "conjoined" propositions (modal).

Turn now to a consideration of complex tense as expressed in syntactically compound constructions. The compound structure consists of a primary verb and its affixes plus an auxiliary verb and its affixes of MODE, TENSE and ASPECT. TENSE morphemes function in the same manner in compound structures as that outlined previously for simple structures, with one exception. SEG morphemes do not occur as affixes on the primary verb because they indicate relations with respect to RI (the speech event); in compound constructions, the primary verb is subordinate to the auxiliary verb, and all tense relations between event and reference event are with respect to that event indexed by the auxiliary event, not the speech event. The focus of this part, then, will be the

17 The H/L tone opposition that is proposed in conjunction with \(-k_{a t}\) can be accounted for by proposing that the H/L tonal opposition previously determined in the TENSE category functions in a new way when there are MODE morphemes present. However, we note that the \(H\) never occurs on all of the morphemes that precede it in the same category, that is, \(-a_{v}\) and \(-k_{a t}\), but on only one of them. Consider the following example:

waakábayě umwaana wa Kangabo, waakožè nka we

'if you were really the child of Kangabo, you would act like him'

By the rules proposed in this analysis, we would expect a \(H\) as well on the \(-a\) preceding immediately \(-k_{a}\). I have no explanation at present for this discrepancy.
role of the auxiliary verb in the interpretation of temporal relations. The
discussion here will be limited to constructions having the auxiliary verb
-bá- 'be'.

The use of the auxiliary verb -bá- indicates that an event in addition
to the speech event has been indexed as a reference point. It is with respect
to this reference event (R2) that the narrated event (in Kinyarwanda) is tem-
porally oriented. This reference event is directly related to the speech
event (R1). Consider the following examples:

(39) jyà kwíفتègùùrà 'go (and) get ready'
(40) bá úgîlyè kwíفتègùùrà 'in the meantime, go (and) get ready'

In (39) we note a simple imperative command. However, in (40), in addition to
the command, there is the notion of waiting for some other event to occur.
This interpretation derives from the relations specified between the narrated
event -gîlyè (kwíفتègùùrà) and the reference event indexed by bá (which
cannot be identified out of context). The relation of -gîlyè to bá is ex-
pressed by the underlying low tone (TENSE) and completive aspect (marked by
-ye on surface).18 This relationship can be visualized as follows:

Figure 12. Complex temporal ordering with -bá

The narrated event -gîlyè may occur at any time after the speech event (R1)
and before the secondary reference event (R2) which will take place at some
time in the near future.

It is necessary to emphasize here that auxiliary -bá- does not "carry
the temporal modality" of the primary verb (cf. Kimenyi [1973:69]); rather,

18Completive aspect marks the completion of the nuclear phase of an event,
though the final coda phase may be in progress at the specified point. By nu-
clear phase is meant that phase of the event that is characteristic of the ac-
tivity of that event. See Botne [1983] for a discussion with respect to Ki-
nyarwanda; see Freed [1980] for a discussion of English and a general theoret-
ical framework.
there are in these compound constructions two sets of temporal relations: those between (R2) and (R1) ("indexical" relations) and those between (E) and (R2) ("cardinal" relations). Furthermore, the compound construction does not indicate "un état durable pendant lequel peut survenir un événement" [Coupez 1980:420], but more precisely, a temporal interval delimited by the speech event and the instantiation of the secondary reference event. The narrated event may or may not occur during this interval depending upon the nature of the tense relations expressed. The following examples lend support to these claims:

(41) úzé kùgàrùkà nimugorooba, ndába nábònyè amafaraanga yawe
'come back this evening; I will have obtained your money'

(42) amahoro Ndeju, nzààbá nkúbwilìrà icyo náábìtèkèrèjènò ni nkúbònà19
'peace Ndeju, I will tell you what I think when I see you'

(43) ...kaandì nímùtǎàmbônà nzààbá nâápfuuyè uwo nuunsi20
'...and therefore, if you do not see me, I will be dead already that day'

(44) bavuga ko iyo wishe igikeri itwìite ùbà úzààkìbyàaàrà
'they say that when you kill a toad while you are pregnant, you will give birth to one'

In these four examples we find three different relationships expressed between the secondary reference event (R2) indexed by -bà- and the speech event (R1). In (41) it is situated later in the day ( /n + ş + ra_s + ọ_s + bá + a/ ); in (42) and (43) it is situated after the day of the speech event ( /n + ş + zá + a_s + ọ_s + bá + a/ ); in (44) it is disjunct with respect to R1 ( /u + ş + bá + a/ ).21 The narrated event is subsequently interpreted with respect to this indexed reference event. Notice that it can be anterior to the R2 (41 and 43),

19Drawn from Ntuzakundi Intati by Nsabimana Seruhuga.
20Drawn from Indyohesha-birayi by Alexis Kagame.
21For "past tense" constructions we find comparable constructions, but the use of -bà- as an auxiliary verb is almost completely replaced by the defective form -i. Nevertheless, there is an important distinction between them that merits further research.
simultaneous (42), or posterior (44). Consequently, we must conclude that compound constructions incorporating auxiliary -bó- determine two sets of temporal relations in which three events are linked, i.e. the speech event, the reference event, and the narrated event.

In sum, we have seen in the analysis of complex tense that there is invariably a second reference event to which the narrated event is directly linked. This secondary reference event may be of two types: (1) as a mediating event, it introduces the speaker's perspective of the narrated event; (2) as a secondary referencing event, it establishes a second axis of orientation. In the first case, the relationship is marked by morphological affixes, in the second by auxiliary verbs such as -bó-.

4. Conclusion

I have tried to demonstrate in this study of the verbal category TENSE in Kinyarwanda that tense relationships are not derived from one unique, monolithic, absolute semantic structure. Rather, they depend upon the connections and intersections of various semantic domains whose morphological reflexes are dynamic in nature, shifting meaning in a marked manner as we move among these domains. Previous analyses of verbal expressions have arrived at impasses because they have tacitly assumed a static, homogeneous nature for individual morphemes and for the temporal system. The present analysis has shown that such an approach is untenable, that we must search for models that are more flexible and dynamic in scope.

Several aspects of the analysis raise questions relevant to more general considerations in linguistics and merit comment here. First, the analysis presented in this study demonstrates that tone need not be considered as simply a phonetic, syntactic, or lexical phenomenon. In Kinyarwanda tones have the same phonological status as other segments, but are distributed over verbal structures according to morphological/semantic criteria. In addition, we find further support for the notion of "floating" tones which may, in themselves, be considered to constitute morphemes. These tones, designated perhaps as "morphophonemic" tones, can be contrasted with "syntactic" tones which link two or more verbal expressions. The first type establish the "quali-

ties" a speaker perceives in an event (or state, etc.), the second the type of relationship that holds between events (or states, etc.).

A second salient characteristic of this analysis is the tripartite function of the paradigmatic opposition -ra-/-a-. We saw initially that a major function of these morphemes is verbal focus in which they intersect the semantic domain of the morphemic opposition H/L tones. This function was shown to hold only for "anterior" constructions, a broader range of meaning, segmental temporal divisions, being applicable to all autonomous (modal) constructions. For those "non-anterior" constructions we saw that the -ra-/-a-opposition corresponded exactly to a H/L opposition. Finally, we saw that -ra-/-a- (tones now constituents of the morpheme itself) are associated with a "modal" distinction which itself is indirectly related to temporal relations. The remarkable reappearance of this same opposition again and again would appear to be a striking example of the syntactic/semantic evolution of a morphemic paradigm. Naturally this observation raises questions: Why should such a change take place? How does the semantic structure contribute to, or bring about, such syntactic change, or vice versa? Further consideration of similar cases could present us with new understanding of linguistic change.

A third aspect of the analysis, secondary reference events, raises interesting questions for the study of discourse. I have shown for Kinyarwanda that the auxiliary verb -bá- indexes a secondary reference event. The primary, or cardinal, relationship of an event is interpreted with respect to this point. In Botne [1981; in preparation, b], I have argued for a similar semantic function of the modal will. What may be of potentially more interest than their pure temporal functions is the manner in which they function to "tie together" narrative texts. Do all languages have similar mechanisms for indexing these "secondary points of reference"? What other mechanisms are there?

This study represents an attempt to map a specific semantic terrain that Whorf might have considered "primitive physics of time". As with all studies exploring semantic domains from a novel point of view, this one raises as many questions as it resolves. If nothing else, this approach may suggest new lines of inquiry that may contribute to a more profound understanding of the semantic structures underlying our expression of temporal relations.
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ERGATIVITY AND THE ACTIVE-STATIVE TYPOLOGY IN LOMA

Noel Rude
University of Oregon

Ergativity would seem to be non-existant or at least quite rare in Africa. This lack, however, may be related to another continent-wide areal phenomenon: there is a paucity of morphological NP case marking according to either ergative or accusative typologies. It is thus possible that other more subtle attributes of the ergative organization of syntax are what should be sought in Africa. For example, in the Mande languages, as also in Celtic, phonological decay has produced a series of word initial consonant alternations. In Celtic these have come to function as part of a nominative-accusative case marking strategy. The situation is quite similar in Mande, but as this paper details for Lorna, the noun case system is ergative-absolute. And, accordingly, the pronoun system has active-stative characteristics.

0. Introduction

The Mande languages are famous for indigenous syllabaries and peculiar consonant mutations (see Welmers [1971b]). Loma,¹ the language of this investigation, has both a syllabary and consonant mutation. Loma's consonant mutation has received repeated mention in the literature, e.g. Eberl-Elber [1937], Hintze [1948], Manessy [1964], Meeussen [1965], Welmers [1971b], Bird [1971], Hyman [1973], Dwyer [1974]. There is also a grammar by Sadler [1951] and a brief description of the language by Heydorn [1971]. Although the linguistic features that are dealt with in this paper have been documented elsewhere, no one as yet, to my knowledge, has couched his description in the terminology of ergative and active-stative typologies.²

¹The data for this paper was gathered in the autumn of 1976. It was kindly provided by Sewalla Guseh, then a student at the University of Oregon. Mr. Guseh was a native speaker of Loma from Zenalomai, Liberia.

²Heine and Reh [1982] note that "although the 1000-odd African languages display a remarkable extent of structural variation, there are certain struc-
1. **Ergativity**

1.1. **Consonant Mutation.** There is a phonological alternation in Loma that happens only word initially and only in well defined syntactic environments. The alternations are as follows ($\beta$ and $\gamma$ appear before unrounded vowels, $w$ before rounded vowels):

\[
\begin{align*}
p, b & \rightarrow \beta w \\
t, d & \rightarrow l \\
k, g & \rightarrow \gamma w \\
kp & \rightarrow \beta
\end{align*}
\]

1.2. **Syntactic environment for consonant mutation.**

1.2.1. **The noun phrase.** Word initial consonant mutation never occurs initially in a noun phrase. In the following examples, the citation forms of nouns in (a) occur without consonant mutation, while consonant mutation is illustrated in (b) where a morpheme precedes.\(^3\)

<table>
<thead>
<tr>
<th>(1) a. pɛlɛi 'the house'</th>
<th>b. ga pɛlɛi 'our house'</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) a. buli 'the goat'</td>
<td>b. ga wuli 'our goat'</td>
</tr>
<tr>
<td>(3) a. ti 'the work'</td>
<td>b. ga li 'our work'</td>
</tr>
<tr>
<td>(4) a. doi 'the wine'</td>
<td>b. ga doi 'our wine'</td>
</tr>
<tr>
<td>(5) a. ki 'the key'</td>
<td>b. ga y1 'our key'</td>
</tr>
</tbody>
</table>

3The mutated $b$ is described by Sadler [1951] as a labio-dental stop, as opposed to $v$ which also occurs in the language. When I collected this data seven years ago, my impression was of a voiced bilabial fricative. But whatever the sound, it is in this paper represented by $\beta$. Tones are not indicated in this paper unless relevant to the argument being made. Most Loma words have high tone inherent in the first syllable. There is no tone contrast, for example, between $\beta a$ and $b a$ as in zunui $\beta a$ 'for the man' and $b a$ 'for him', even though the high tone in $b a$ contrasts with the low tone in $b a$ 'for me'. For common segmentally identical morphemes like $e$ 'he/she/it' and $\hat{e}$ 'you', only the morpheme with low tone will be marked in this paper. The data from other Mande languages was gleaned from various sources in which tones are not distinguished in a consistent manner.
(6) a. guli 'the tree'  b. ga wuli 'our tree'
(7) a. kpugl 'the door'  b. ga ñugl 'our door'
(8) a. foli 'the sun'  b. ga voli 'our sun'
(9) a. siyi 'the cloth'  b. ga ziyi 'our cloth'
(10) a. ziyi 'the hole'  b. ga yiyi 'our hole'

In (11), consonant mutation has occurred word initially everywhere, but not phrase initially.

(11) ta yunu ñai ña 'for their good man'
their man good-the for

The following two examples restore the non-mutated forms of zunu 'man' and ba 'for'. The non-mutated form for 'good' is ña. The 3rd person singular pronoun in (13) is merely the high tone.

(12) zunu ñai ña 'for the good man'
man good-the for
(13) ba 'for him/her/it'

1.2.2. The verb phrase.
1.2.2.1. Intransitive. Consonant mutation occurs in the initial consonant of an intransitive verb when its subject precedes. Compare the following. The toneme in (15) permits the verb to be phrase initial and thus preserve the non-mutated form of its initial consonant.

(14) zunui ña ba 'the man is big'
man-the big ASP
(15) bala ña 'he/she/it is big'
big ASP

The intransitive verbs di 'go', te 'climb', and sili 'arrive' occur in the following examples. A preceding subject in every case is sufficient to bring about consonant mutation. In (19) the verb is preceded by an auxiliary ending in a nasal consonant and still the initial consonant of the verb mutates.

(16) zunui li zu 'the man is going'
man-the go ASP
(17) bali le ne 'the goat climbed'
goat-the climb ASP
If the predicate is not a verb, but instead is initiated by a NP, it should be noted that no mutation occurs between the subject and predicate. The postposition in (21) is initial in the predicate due to the pronominal toneme. Compare the non-mutated \( \text{pEIEi} \) in (20) with \( \text{bEIEi} \) in (1b) above. In (22) neither the copula \( \text{gà} \) undergoes consonant mutation nor the predicate noun \( \text{zunu} \).

(18) see \( \text{ßalai zili ni} \) 'the large elephant arrived'
    \( \text{elephant big-the arrive ASP} \)

(19) \( \text{zunui \( \gamma\varepsilon\gamma \) ßala ne} \) 'the man used to be big'
    \( \text{man-the ASP big ASP} \)

(20) \( \text{zunui pEIEi wu} \) 'the man is in the house'
    \( \text{man-the house-the in} \)

(21) \( \text{zunui bu} \) 'the man is in it'
    \( \text{man-the in} \)

(22) \( \text{ta gà zunu} \) 'they are men'
    \( \text{they be man} \)

1.2.2.2. **Transitive.** Mutation affects the initial consonant of a transitive verb only when a direct object precedes, as in (23) and (24) below. The transitive verb \( \text{tE} \) 'lift, raise' is the same morpheme as the intransitive 'climb' in (17) above. The verb is made transitive by the presence of both \( S \) and \( O \), as can be seen by comparing (23) with (17) above. Note that the initial consonant of the direct object does not mutate even though the subject precedes. Compare the non-mutated \( \text{kòti} \) 'stone' in (23) with \( \text{gà wòti} \) 'our stone'.

(23) \( \text{zunui kòti 1E ne} \) 'the man lifted the stone'
    \( \text{man-the stone-the lift ASP} \)

(24) \( \text{zunui buli ßaa ne} \) 'the man killed the goat'
    \( \text{man-the goat-the kill ASP} \)

When the direct object is realized as only a tone then the subject directly precedes a transitive verb. Unlike the subject preceding an intransitive verb, no mutation ever occurs when an agentive subject immediately precedes a transitive verb. The transitive verb in (25) is distinguished from the intransitive one in (17) above solely by not having undergone consonant mutation. Although both verbs below have inherent high tone, the preservation of
the high tone in (25) and (26) indicates an anaphoric 3rd person singular direct object.

(25) zunui te ne 'the man lifted it'
man-the lift ASP

(26) zunui paa ne 'the man killed it'
man-the kill ASP

Thus Lorna clearly evidences ergativity. The environment for mutation of the initial consonant of the verb is an immediately preceding absolutive NP. And this Lorna absolutive case includes, in the classic sense, both direct objects of transitive verbs and subjects of intransitive verbs. When an anaphoric direct object is realized as zero, the verb is immediately preceded by an ergative NP. And in this environment the initial consonant of the verb never mutates.

1.3. Historical development of consonant alternations.

1.3.1. Phonology. The historical phonology of the Southwestern Mande languages has been discussed by Hyman [1973] and by Dwyer [1974]. Historically, consonant mutation was blocked in Lorna by a preceding nasal consonant. This nasal was later completely lost in Lorna. But in Mende it still survives before voiced consonants, as seen in the following:

<table>
<thead>
<tr>
<th>Loma</th>
<th>Mende</th>
</tr>
</thead>
<tbody>
<tr>
<td>(27) daba</td>
<td>ndamba</td>
</tr>
<tr>
<td>(28) kpade</td>
<td>kpande</td>
</tr>
<tr>
<td>(29) ga</td>
<td>nga</td>
</tr>
</tbody>
</table>

'crocodile'
'gun'
'I'

Before voiceless consonants the nasal was lost in both Mende and Lorna. But it does survive in Kpelle, although the consonant that it shielded from weakening in Loma and Mende is in Kpelle lost completely. All clusters N+C are simplified to N in Kpelle, as can be seen below. The correspondence set in (31) suggests the reconstruction *kontu with the cluster nt, this on analogy with correspondence set (30).

---

'Mende examples are from Innes [1967,1969], Kpelle from Welmers [1962, 1969]. See Manessy [1964] for a description of the blocking of consonant lenition by word final *ŋ"

The only permissible word final consonant in Proto-Southwestern Mande was \( \eta \). This consonant was lost in Loma but survived in Kpelle, as is illustrated below.

<table>
<thead>
<tr>
<th>Loma</th>
<th>Mende</th>
<th>Kpelle</th>
</tr>
</thead>
<tbody>
<tr>
<td>(30) ( \text{kp( \ddot{a} )c} )</td>
<td>( \text{kp( \ddot{a} )d} )</td>
<td>( \text{kp( \ddot{a} )n} )</td>
</tr>
<tr>
<td>(31) ( \text{k( \ddot{o} )t} )</td>
<td>( \text{k( \ddot{o} )tu} )</td>
<td>( \text{konu} )</td>
</tr>
</tbody>
</table>

Word final \( \eta \), however, does have a reflex in Loma. When a vowel is suffixed to such a word, the \( \ast \eta \) surfaces as \( \eta \). The following examples contrast nouns with and without this final nasal. The Loma nouns \( \text{pe\( \ddot{e} \)l} \) 'house' and \( \text{za\( \ddot{a} \)l} \) 'lion' did not end in a nasal in the proto-language. The word for 'house' in Kpelle, for example, is \( \text{pe\( \ddot{e} \)c} \), not \( \ast \text{pe\( \ddot{e} \)n} \). The nouns \( \text{kp\( \ddot{a} \)l} \) 'farm' and \( \text{da\( \ddot{a} \)b} \) 'crocodile' have cognates in other Mande languages with final nasal, and in examples (36) and (37) this nasal surfaces in Loma when a vowel is suffixed, as in (36b) and (37b).

<table>
<thead>
<tr>
<th>Loma</th>
<th>Kpelle</th>
</tr>
</thead>
<tbody>
<tr>
<td>(32) ( \text{to} )</td>
<td>( \text{to( \ddot{n} )} )</td>
</tr>
<tr>
<td>(33) ( \text{kp( \ddot{a} )l} )</td>
<td>( \text{kp( \ddot{a} )l( \ddot{a} )n} )</td>
</tr>
</tbody>
</table>

The point of all this, as the following examples show, is that this nasal blocks the otherwise expected lenition in the initial consonant of a following word. In example (39), lenition of the initial consonant was blocked, as is evident from example (36), by an immediately preceding nasal consonant.

| (34) a. \( \text{pe\( \ddot{e} \)l\( \ddot{e} \)} \) | 'house' | b. \( \text{pe\( \ddot{e} \)l\( \ddot{e} \)} \) | 'the house' |
| (35) a. \( \text{za\( \ddot{a} \)l} \) | 'lion' | b. \( \text{za\( \ddot{a} \)l\( \ddot{a} \)} \) | 'the lion' |
| (36) a. \( \text{kp\( \ddot{a} \)l} \) | 'farm' | b. \( \text{kp\( \ddot{a} \)l\( \ddot{a} \)g} \) | 'the farm' |
| (37) a. \( \text{da\( \ddot{a} \)b} \) | 'crocodile' | b. \( \text{da\( \ddot{a} \)b\( \ddot{a} \)g} \) | 'the crocodile' |

Lenition of the first consonant of a verb is also blocked when a direct object that once ended in a nasal precedes, as the following examples show. The initial consonant of \( \text{p\( \ddot{a} \)b\( \ddot{a} \)} \) 'kill' does not weaken after \( \text{da\( \ddot{a} \)b} \) 'crocodile', because that noun ended in a nasal in the parent language, as example (37)
above indicates.

(40) za'la βaa 'kill a lion!'  
(41) daba paa 'kill a crocodile!'

This phenomenon also affects the aspectual morpheme su which normally mutates to zu after verbs, but not after all verbs. The same verbs that block the lenition of su also regularly occur with final ə when the aspect marker a is suffixed. Examples (42) and (43) below show verb stems that do not block lenition, while the verb stems in (44) and (45) do.

(42) a. gà li zu 'I am going'  b. gè li a 'I have gone'  
I go ASP  I go ASP  
(43) a. gà ke zu 'I am doing it'  b. gè ke a 'I have done it'  
I do ASP  I do ASP  
(44) a. gà bæle su 'I am sweeping'  b. gè bæleg a 'I have swept'  
I sweep ASP  I sweep  
(45) a. gà bø su 'I am helping'  b. gè bøg a 'I have helped'  
I help ASP  I help ASP

Kpelle, which preserves word final *ŋ, preserves the final ŋ in those verbs that block lenition in Loma. The Kpelle cognates of Loma li 'go' and ke 'do' are li 'go' and ke 'do', both without final ŋ. But Kpelle has kpɔŋ 'help' where Loma has kpɔ 'help'. The verb for 'sweep' in Loma also occurs as a noun, viz. kpale/kpaleŋi 'broom/the broom'. And so as a noun the reflex of *ŋ, the ə, also surfaces before a vowel suffix.

1.3.2. Morphology. The two major syntactic environments that block consonant lenition in Loma are (1) the initial position in a NP and (2) the initial position in a transitive verb when no direct object NP precedes. There is ample comparative evidence that historically both environments were marked by a nasal prefix that blocked consonant lenition.

1.3.2.1. Lenition blocked in verb. In Loma, all that survives of the 1st and 3rd person singular direct object pronouns is non-lenition of the initial consonant of the verb and a low or high tone on the first syllable of the verb, as shown below:

(46) e buli lúli ni 'he called the goat'  
he goat-the call ASP
The prefixed pronouns that blocked lenition in the Lorna verb are reconstructed as *N- 'me' and *N- 'him/her/it'. There has been a reversal of tones in Lorna, for which see Welmers [1971]. As one would predict (see again examples (27-29)), the nasal prefix survives before voiced consonants in Mende, as can be seen in the following examples. In some of them the transitive versus intransitive use of the verb illustrates the presence of the direct object prefix in (b), in other cases, e.g. (49) and (52), a direct object NP precedes and thus lenition occurs in (a).

(49) a. ngi waa 'kill him/her' b. paa 'kill it'
(50) a. lë 'climb, rise' b. të 'lift it, raise it'
(51) a. gutu 'be short' b. kutu 'shorten it'
(52) a. ndo gboe 'drink palm wine' b. kpoe 'drink it'
(53) a. be 'dry' (intransitive) b. mbe 'dry it'
(54) a. la 'lie down' b. nda 'lay it down'
(55) a. yei 'descend' b. njei 'lower it'
(56) a. wua 'enter' b. ngua 'insert it'

Historically, initial consonant lenition in the verb was blocked by the same phonetic environment as elsewhere; it was blocked by a preceding nasal consonant. The fact that this consonant was a grammatical morpheme explains the syntactic behavior of verb initial consonant lenition in modern Lorna.

1.3.2.2. Lenition blocked in noun. Greenberg [1977] hypothesizes that the Niger-Congo noun class markers originated as definite markers, whether prefix or suffix. The process involves three stages: definite markers > referentiality markers > substantive markers. All three stages of this develop-
ment are observable in various of the Niger-Congo languages for both prefixal and suffixal systems. Greenberg [1977:97] observes that "almost every branch of Niger-Congo, except of course Mande, has some languages which are simultaneously prefixing and suffixing." In the West Atlantic languages, Greenberg notes, the prefixes have advanced to the last stage, and in some languages of the group they gave been reduced to noun initial consonant alternations. But suffixed articles have been innovated, and in various of these languages the different stages of their development are visible. Greenberg also notes how the Southwestern Mande noun suffix -i is in the first stage in Loma but more advanced in Mende.

All this provides a very helpful context for viewing the historical development of the Loma noun initial consonant alternations. Welmers [1971b] hypothesizes that the 3rd person pronominal now realized in Loma simply by its blocking consonant lenition in the verb is also responsible for blocking consonant lenition initially in the noun. And thus the Mande languages do indeed, along with the other branches of Niger-Congo, evidence both prefixing and suffixing. Loma do 'palm wine' is made definite by suffixing -i: doi 'the palm wine'. The lenition of the d, which should have become l, was blocked by a nasal prefix that has been lost in Loma. This nasal prefix was an obligatory final stage substantive marker. It has survived in Mende before nouns with initial voiced consonants, as the following examples indicate.

<table>
<thead>
<tr>
<th>Loma</th>
<th>Mende</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>(57)</td>
<td>bala</td>
<td>mbala 'sheep'</td>
</tr>
<tr>
<td>(58)</td>
<td>do</td>
<td>ndo 'palm wine'</td>
</tr>
<tr>
<td>(59)</td>
<td>zie</td>
<td>nja 'water'</td>
</tr>
<tr>
<td>(60)</td>
<td>gulu</td>
<td>ngulu 'tree'</td>
</tr>
</tbody>
</table>

Nouns are derived from verbs by the nasal prefix. Consider the following examples from Mende. Remember that in Mende a nasal consonant plus voiceless obstruent simplifies to just the voiceless obstruent but with lenition being blocked, as seen in (61b). The nasal survives, though, before voiced consonants, as in (62b) and (63b).
In Kpelle the prefixed nasal was not generalized to mark all nouns. It still functions as a definite marker, but redundantly along with the suffix -i. The presence of the nasal prefix has had the opposite effect in Kpelle as in Loma and Mende: it has provided the environment for consonant lenition. Its effect was to voice a voiceless consonant and to bring about the total loss of a voiced one. The nasal itself survives only where it was prefixed to a voiced consonant. The original low tone of this prefix survives in Kpelle, where definite nouns begin with a low tone. The suffix -i has been lost after nouns ending in n, as can be seen in (65), (67), and (74).

In the Mande languages, unlike in the rest of Niger-Congo, there is no evidence for noun classification. However, the Mande substantive marking prefix may be cognate to a Niger-Congo noun class marker. The Mande prefix was a homorganic nasal just as was the Bantu class 9 prefix. Further, as Givón [1971] shows, the Bantu class 9/10 probably originally marked animates, class 1/2 having arisen later to mark the subcategory human. If Mande were to have generalized one of the Proto-Niger-Congo class markers to all nouns, the animacy marker would obviously have been the best candidate. And, according to Greenberg [1977], this would also have been a definite marker, as it still is
in Kpelle. The Mande substantival prefix and 3rd person object pronoun are phonetically identical, and Welmers [1971b] assumes the object pronoun to preserve the original function of the morpheme. But would this not indicate that the first nouns to be marked definite were objects? To believe so one would need more Niger-Congo evidence, for to my knowledge no one has yet reconstructed noun case marking in any of Niger-Congo. According to Welmers [1971a], morphemes of class 1 and 9 in both Bantu and the closely related Tiv manifest low tone, while for all other noun classes the tone is high. Significantly, the Mande nasal prefix is also reconstructed with low tone.

1.3.3. Emergent ergativity. Synchronically, Loma clearly displays an ergative syntax. The subject of an intransitive verb and the direct object together provide the syntactic motivation for verb initial consonant lenition. Although no morphemes are involved, the syntactic organization reflected by the phonology is ergative-absolutive. The ergative NP sits outside the phrasal unit which comprises the absolutive NP and the verb, as illustrated in (75). The # shows where consonant lenition is blocked.

(75) (#ERGATIVE NP) [#(ABSOLUTIVE NP) VERB]

Here is an ergative-absolutive system that has arisen quite by accident. There was no reanalyzed passive with marked agent, nor nominalization with genitive agent. The first prerequisite in the development of the Loma system was the rigid SOV word order with, of course, SV for intransitive clauses. This allows for a syntactic organization as follows:

---

6The prefix '*N-' evidently also served as a kind of resumptive subject pronoun in Loma. Compare βa 'come' with ba 'come' in the examples below. Consonant mutation occurs as expected in (a), but not in (b) where the verb is preceded by a relative clause. The verb koa does not mutate to woa because it is transitive.

(1) zunui βa ne
   man-the come ASP

(2) zunui gè koa ne ba ne
   man-the I him-know ASP come ASP

'the man came'

'the man I know came'

(76) a. Intransitive \[ S \quad V \]
b. Transitive \[ S \quad O \quad V \]

ERGATIVE ABSOLUTIVE VERB

The second prerequisite in the development of the Loma system was the fact that \(^*\tilde{N}\) was both a substantive marker as well as direct object pronoun, as diagrammed below.

(77) a. Intransitive \[ \tilde{N} \quad S \quad V \]
b. Transitive 1) with d. o. noun \[ \tilde{N} \quad S \quad \tilde{N} \quad O \quad V \]
2) anaphoric d. o. \[ \tilde{N} \quad S \quad \tilde{N} \quad V \]

When the Loma consonant lenition occurred, \(^*\tilde{N}\) provided a syntactic environment for its non-occurrence. Then, after \( \tilde{N}+C \) was everywhere simplified to \( C \), only the famous consonant alternations were left as syntactic indicators of transitivity.\(^7\) Another factor in the development of the system is the Mande characteristic of coding transitivity as NP NP V. With a transitive verb the NP in the sequence NP V must be interpreted as a patient. Bird and Shopen [1977] describe this system for Maninka, where it is extremely productive. Consider, for example, the following Maninka sentences.

(78) \[ \text{an be sogo dumu} \]
we ASP meat eat

'we are eating meat'

\(^7\)It is peculiar that the world's most outstanding examples of grammaticalized consonant alternations should hug the western extremities of the Old World. Celtic, Berber, West Atlantic and Mande are all famous for consonant alternations tied to syntax/semantics. The same observation cannot be made, for example, with regard to the eastern extremities of the Eastern Hemisphere. Northwest Semitic, which includes the Phoenician carried west by sea, is also famous for its syntactically linked spirantization of consonants. Even in Romance it is in the West that syntactically linked phonological processes developed; spirantization in Spanish, liaison in French. Even Germanic, that other western extension of Indo-European, is famous for spirantization, though there is no record of it ever having been grammatically linked. The Hopper [1977] analysis of Proto-Indo-European makes Grimm's Law look exactly like the Northwest Semitic spirantization. Of course similar phenomena have arisen spontaneously all over the globe. There may have been more coincidence than Phoenician in the Niger-Congo, Berber, and Indo-European West. Nevertheless, in no other region of the world has grammatically linked consonant alternation been carried to such extremes over such a large area.
In Lorna, when a single NP stands before a mutated transitive verb, it also must be the patient, as the following illustrates.

(80) e koti le zu
    he stone-the rise ASP
    'he is lifting the stone'

(81) e te zu
    he rise ASP
    'he is lifting it'

(82) e le zu
    he rise ASP
    'he/she/it is rising'

2. Active-Stative Typology

2.1. Pronoun system. There are two basic pronoun sets in Lorna that I shall label active and stative. I list them below as pronounced by my informant. Each set has two pronouns for 1st person plural which, in the order listed, mark the exclusion and inclusion of the addressee.

<table>
<thead>
<tr>
<th>ACTIVE</th>
<th>STATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1st person</td>
<td>gà, gá, dá</td>
</tr>
<tr>
<td>2nd person</td>
<td>já, wá</td>
</tr>
<tr>
<td>3rd person</td>
<td>tóa</td>
</tr>
</tbody>
</table>

2.2. Function of pronoun sets.

2.2.2. Subject and object. One function of the two sets of Lorna pronouns is to mark subject and object. The "active" set marks subject, the "stative" set object. However, the order of morphemes is rigid and thus these morphological case distinctions are redundant. The following examples illustrate the case function of the two sets of Lorna pronouns. In (85) and (86) the object pronouns are simply high and low tones in the first syllable of the verb. The stative set also functions as object of postposition, as (87) shows.

(83) gá té ya zu
    we them see ASP
    'we see them'

(84) tá gè ya zu
    they us see ASP
    'they see us'
(85) gà ká zu  
   I him-see ASP  
'I see him/her/it'

(86) tôa ká zu  
   he me-see ASP  
'he/she sees me'

(87) gà bó su té ma  
   I it-tell ASP them to  
'I am telling it to them'

2.2.2. Aspectual split. The case distinction marked by Loma pronouns is not maintained in the perfective aspect, as illustrated below. Examples (88) and (89) should be compared with (83) and (84). The pronouns are all from the stative set.

(88) gé té ya ne  
   we them see ASP  
'we saw them'

(89) té gé ya ne  
   they us see ASP  
'they saw us'

Obviously the two tonemes from the stative set cannot mark both subject and object on the same verb. In the perfective aspect gé 'I' and é 'he/she/it' are substituted for subject pronouns, as in the following examples:

(90) gé ká ne  
   I it-see ASP  
'I saw him/her/it'

(91) é ká ne  
   he me-see ASP  
'he/she saw me'

2.2.3. Alienable and inalienable possession. As illustrated in (92) and (93), the active set of pronominals functions to show alienable possession, the stative set to mark inalienable possession.

(92) gà pêlei  
   our house-the  
'our house'

(93) gé ye  
   our father  
'our father'

For the 1st and 3rd person singular members of the active set nà 'my' and ná 'his/her' are substituted as alienable possessors. As seen below, they block consonant mutation. For this reason Manessy [1964] suggests that they once ended in nasal consonants.

(94) nà pêlei  
   'my house'
2.2.4. **Active versus stative subject.** It is their function as subject of intransitive verbs that provides the justification for calling the Lorna pronoun sets active and stative. The following four sentences contrast an active/agentive versus a stative subject, both with intransitive predicates.⁸

⁸No negative sentences were elicited during the brief period of my field work on Lorna. But according to Sadler [1951], no matter what the verbal aspect, the subject pronoun of a negated clause is always from the stative set, but with what appears to be vowel harmony with the negative marker ɪɛ.

Sadler gives two forms for the 3rd person singular pronoun of the active set: tòwàa, which occurs with the future, and tò, which occurs with the progressive. The following examples from Sadler illustrate this contrast. For (b), my informant had the pronoun tòa (see example (100) of the text).

(a) tòwàa l’i
    he go
    'he/she will go'

(b) tò lìììžú
    he go-ASP
    'he/she is going'

(c) gà l’ì
    I go
    'I will go'

(d) gà lìììžú
    I go-ASP
    'I am going'

Sadler also has a third set of pronouns for the habitual aspect. Both the habitual and future are marked by the absence of an aspectual suffix. While the future employs pronouns from the active set, the habitual has its own set of pronouns. The following examples have been gleaned from Sadler:

(e) gà lì
    I go
    'I will go'

(f) gò lì
    I go
    'I go (habitually)'

(g) tòwàa l’ì
    he go
    'he/she will go'

(h) sò lì
    he go
    'he/she goes (habitually)'

There is much more, to be sure, that can be said about the Lorna pronominal system. However, it must suffice for now merely to point out the active-stative typology evident in the system. Sadler is a gold mine of data for anyone interested in pursuing the matter further.
The active-stative distinction for intransitive subjects does not hold in the perfective. There intransitive verbs take the same subject pronouns from the stative set, including gè 'I' and é 'he/she/it', that function as subjects of transitive verbs in the perfective. Compare (102) with (98) and (99). Example (103) has the subject pronoun é, the same as the transitive verb in (91).

(102) gè li ni 'we went'

(103) é li ni 'he/she went'

The contrast between perfective event and inactive state is illustrated by comparing the example below with (101).

(104) é bala ne 'he/she grew'

Subjects that take pronouns from the stative set are not simply patient, as opposed to agent, but more narrowly patient of state. The patient of change in the following requires a subject pronoun of the active set.

(105) é lo ne 'he fell'

(106) tóa lo zo 'he is falling'

The patient subject of a nominal predicate also selects pronouns from the active set.9 Example (22) from the text above is repeated here, where tóa is

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9In Ashanti Twi predicate adjectives require no copula ((a) below), locative predicates require the copula wo (b), and nominal predicates the copula...
Ergativity in Loma

from the active set of pronouns.

(107) tá gà zunu 'they are men'
      they be man

γε (c). The copula γε is also the verb 'do' and 'make' as in (d) and (c). Could it be that nominal predicates are somehow more "active" than adjectival?

(a) Kofi so
    Kofi big
    'Kofi is big'

(b) Kofi wɔ efie no mu
    Kofi be house the in
    'Kofi is in the house'

(c) Kofi γε ɔsɔfoɔ
    Kofi be priest
    'Kofi is a priest'

(d) Kofi γε adwuma no
    Kofi do work the
    'Kofi does the work'

(e) Kofi γε abodoo
    Kofi make cornbread
    'Kofi makes cornbread'
REFERENCES


THE ANALYSIS OF COMPLEX PHONETIC ELEMENTS IN BURA 
AND THE SYLLABLE*

Ian Maddieson
University of California at Los Angeles

This paper examines those complex phonetic elements in Bura 
(and related languages such as Margi) which have been de­
scribed by earlier scholars as unitary segments having a 
labial-alveolar double articulation. Several kinds of ob­
servations at the phonetic level show that this descrip­
tion is incorrect. Instead these segments are shown to be 
composed of a phonetic sequence of a labial articulation 
and an alveolar one. The analysis of the "labial-alveolars" 
as a sequence of phonological elements is also shown to be 
appropriate. If they are viewed as unitary segments repre­
sented by a single matrix of features there are problems 
with selecting correct feature values. If they are repre­
sented as two feature matrices linked to a single segmental 
position an invalid distinction is introduced between this 
representation and the same two matrices linked to separate 
segmental positions. On the other hand, representation as 
two independent segments accounts for vowel length adjust­
ments and for resyllabification. Although unusual syllable­
initial consonant clusters are posited in this analysis, 
these clusters are heterosyllabic when an appropriate envir­
onment occurs and violations of the universal syllable can­
on are minimized.

1. Introduction

The linguistic literature on Bura and closely related Chadic languages in 
the Bura-Margi cluster appears to maintain unanimously that certain types of 
word-initial complex phonetic elements\(^1\) are monosegmental [Hoffmann n.d.,

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and by the UCLA African Studies Center.

\(^1\)In order to avoid prejudicing the discussion to follow, the term "ele­
ment" will be used instead of talking about "segments" or "clusters". Di­
graphs and trigraphs are used to represent these elements, again, without 
prejudice to their eventual analysis.
The elements concerned are those involving both a bilabial and an alveolar or palatal-alveolar articulation, as well as those elements which are prenasalized. The tradition of regarding these elements as single segments can be traced back to the work of Carl Hoffmann some 20 to 30 years ago. After completing a doctoral dissertation on Bura, he published a grammar of Margi in which he stated his views:

A peculiar feature of Margi as well as the whole Bura-Margi group... are the labial-alveolars, which in this respect are comparable with the labio-velars of so many languages in the West Sudan. That these labio-alveolars (and the labio-alveopalatals) are simple phonemes and not casual juxtapositions of two separate phonemes can be concluded from their behaviour in reduplications [Hoffmann 1963:28].

Subsequent writers have accepted this phonological interpretation of Bura and Margi. For example Paul Newman, in his monograph on Chadic classification, echoes Hoffmann's opinion:

The most striking phonological feature of the Bura group is the existence of simultaneously articulated labio-alveolar and labio-palatal consonants ... Although written as digraphs, these have to be treated as unit phonemes like the labio-velars kp and gb so common in West Africa [Newman 1977:17].

More recently, Russell Schuh, following first-hand work with a speaker of Bura during 1981/2, gave the opinion:

These [the labial-alveolars] are phonetic and phonemic units, not word initial clusters [Schuh 1982].

Besides Chadic specialists, linguists interested in the range of phenomena found in natural languages have accepted that "labial-alveolars" are possible segments, e.g. Chomsky and Halle [1968] and Ladefoged [1971].

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2Chomsky and Halle [1968:310-311] treat "labial-alveolars" in Margi as coronal segments with an extreme degree of rounding. (Labial-velars are classed as either labials with extreme velarization, e.g. in Nupe, or as velars with extreme rounding, e.g. Temne). The Stanford Phonology Archive, however, interprets all the complex elements in Margi as being composed of sequences. No explicit reasons are given for this reinterpretation of Hoffmann [1963].
Complex Phonetic Elements in Bura

A full list of the relevant complex phonetic elements is given in the appendix at the end of this article. The most straightforward examples are stops which have been written with the letters "pt" and "bd" in a way that is analogous to the use of /kp/ and /gb/ in transcriptions of labial-velars. In addition there are various elements involving fricative, nasal or lateral articulations which must also be considered. In particular, prenasalized elements in which both a labial and an alveolar or palato-alveolar articulation are involved also occur. Ladefoged, in his authoritative *Phonetic Study of West African Languages* [1968:xviii, 64-5], accepted Hoffmann's view that the two articulations in these elements occur simultaneously and provided phonetic descriptions and transcriptions of them such as those in (1) which directly express this view.

(1) 
- \( \overline{pt} \) voiceless labial-alveolar plosive
- \( \overline{bd} \) voiced labial-alveolar plosive
- \( \overline{mnpt} \) prenasalized voiceless labial-alveolar plosive
- \( \overline{mnb}d \) prenasalized voiced labial-alveolar plosive
- \( \overline{bd} \) laryngealized voiced labial-alveolar plosive
- \( \overline{pt}ts \) voiceless labial-alveolar affricate
- \( \overline{pt}f \) voiceless labial-palato-alveolar affricate

Naturally, prenasalized elements with only a single place of articulation, such as /nt/, /mb/, etc., have also been regarded as phonemic units.

Despite the unanimity with which it has been maintained, the monosegmental hypothesis bears re-examination. We will show phonetic evidence which demonstrates that the so-called labial-alveolars are in fact a simple sequence of a bilabial and an alveolar articulation, and we will argue that a sequential interpretation is the correct analysis from a phonological point of view as well. In short, we will show that these elements are neither phonetic nor phonemic units. The principal material on which this reanalysis is based comes from one speaker of Bura from the town of Garkida. This speaker is identified as speaker S. Extensive data was elicited by Schuh⁴ who pre-

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⁴The very generous assistance from Russell Schuh in making his data available and in introducing me to Elisha Shalangwa is very gratefully acknowledg
pared a selected wordlist for this study. Three readings of this wordlist were recorded in a sound-attenuated environment in the UCLA Phonetics Laboratory. This recording constitutes our primary data. Besides the material due to Schuh, tapes of speakers of Bura and Margi collected by Ladefoged in 1961 and 1962 have also been examined. Ladefoged's Bura speaker is identified as M. Unless specifically mentioned, the remainder of this paper focusses on the facts of Bura, but there is every reason to believe that the conclusions presented apply to Margi and the other languages involved.

2. **Phonetic Analysis**

The phonetic evidence for the sequential nature of the elements under discussion is of several different kinds. All of these elements involve a closure of the lips. We can show in several different ways that the bilabial closure is made before any alveolar closure is formed, and often we can show that the bilabial closure is released before the alveolar one is made. Bear in mind that the lips are further from the glottis than the alveolar ridge is and hence air flowing from the lungs will encounter an alveolar closure, if it is present, before it has a chance to encounter a labial one. Now, where stops and affricates such as /pt/, /bd/ and /pts/ are concerned, separate release bursts can often be recognized for the labial and alveolar closures. The spectrograms shown in Figure 1 are examples of this kind of phenomenon. The spectrograms show readings of the words /bda/ 'gather honey' and /ptsa/ 'roast' by Bura speaker S. In order to produce a plosive burst, air pressure must be built up in the oral cavity behind the articulatory closure. For two separate bursts to be seen in these two tokens, the alveolar closure must not be formed until after the bilabial closure is released, since the presence of a simultaneous alveolar closure would prevent the air-flow from reaching the location of the bilabial closure.

Even when separate bursts cannot be seen, it can still be shown from an examination of the formant transitions in adjacent vowels that we are dealing with sequential articulation. Whenever a vowel precedes a bilabial closure there is typically a lowering in frequency of both the second and third form-

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Without his assistance this paper would not have been possible.
Complex Phonetic Elements in Bura

Release for [b]

Speaker S

'b d a
'gather honey'

Release for [p]

Speaker S

'p t s a
'roast'

Figure 1. Separate releases in labial and alveolar clusters.
ments. This lowering can be seen in the preconsonantal vowels in both utterances in Figure 2, where the example on the right has a plain /b/ and the example on the left contains the complex element /bd/. This confirms that a bilabial closure is found in both words. On the other hand, the postconsonantal transitions in these two examples differ. On the right, in /ba/, the transitions are typical of a bilabial release. The transitions to and from the consonant are approximately symmetrical. On the left, in /bda/, the postconsonantal transition is typical of an alveolar release, and the pre- and post-consonantal patterns are not symmetrical. We can thus conclude that the bilabial articulation precedes the alveolar one in this case (although there may be a brief period of coarticulation during which both closures are maintained). The alveolar place of the second part of the complex elements is confirmed by the data in (2), showing mean values in Herz for F2 at the onset of the postconsonantal vowel in six tokens of the syllables /ba/, /bda/ and /da/ spoken by speaker S.

(2) /ba/ /bda/ /da/  
F2 1142 1614 1584

Note the similarity in the mean vowel-initial values of F2 for the /bda/ and /da/ syllables and the substantially different value for /ba/.

As for the "doubly-articulated" prenasalized elements, explicitly transcribed by Ladefoged as having simultaneous bilabial and alveolar closures during both the nasal and stop portions, it can be shown that the nasal portion is simply bilabial; that is, it is not homorganic with the claimed double articulation of the stop. In this case it is not necessary to refer to evidence from the surrounding phonetic context such as formant transitions, since the nasal itself contains the information. There is a clear acoustic distinction between the nasals in words with the supposed double articulations like /ŋta/ 'death' and words with a prenasalized alveolar segment such as /ʃtə/ 'tear'. Compare the spectral shapes of the nasal portions from tokens of these words in Figure 3. (Note that the nasal portions are voiceless in this context and the transcription is modified to reflect this fact.) The location of the second peak in the spectrum is distinctly higher
Figure 3. Spectra of contrasting voiceless nasals before /t/
in frequency for /m/ than for /n/. Simply watching the speaker's mouth as he produces /m\textsubscript{ta}/ shows that there is a bilabial articulation. However, if an alveolar articulation coincided with it, then the effective oral cavity shape would be the same as in the alveolar nasal in /n\textsubscript{ta}/ 'tear'. A closure at the lips makes no acoustic contribution if the oral cavity is already closed off behind the lips. Since the nasals are not the same acoustically, we may assume that there is only a bilabial closure at the beginning of a word like /m\textsubscript{ta}/ 'death'.

Equally, just as the nasal portion of these prenasalized elements is not doubly articulated, neither is the stop portion. In most instances /m\textsubscript{ta}/ and similar words contain a straightforward alveolar stop. However, on occasion, the velum is raised early for the stop /t/ before the bilabial articulation for the nasal is ended, producing a brief bilabial stop segment with a separate release, i.e. phonetic [m\textsubscript{pt}]. (This phenomenon is similar to the introduction of the "epenthetic" [p] in English words such as "dreamt".) An example is shown in the spectrogram in Figure 4. (Note that the nasal is voiced in this case.) The auditory impression given by this variant pronunciation is probably responsible for the perception of the stop portion as a doubly articulated "labial-alveolar". But in fact it provides further evidence that the bilabial and alveolar articulations are not simultaneous, since again there could be no intra-oral pressure build up behind the bilabial closure if an alveolar closure had already been formed behind it. If the bilabial release is audible, it must precede any alveolar articulation and not overlap with it. The transcription /m\textsubscript{t}/ is thus a more phonetically appropriate one, rather than /m\textsubscript{pt}/.

In addition to the phonetic evidence of an articulatory sequence, examination of the relative timing of utterances indicates that there are in fact two segments to be recognized at the phonetic level in the places where the alleged labial-alveolars occur. In intervocalic position, for example, when preceded by a vowel-final morpheme, such as the person/tense marker /t\textsubscript{sa}/, the consonantal duration for /p\textsubscript{t}/ is considerably longer than the duration for a single /t/ or /p/. In Figure 5 we compare this with the situation in a language with genuinely doubly-articulated stops, such as Yoruba with
Figure 4. "Epenthetic" [p] in /mt/ sequence.
Figure 5. Comparison of stop closure durations in Yoruba and Bura.
its labial-velars. In Yoruba, the duration of a doubly-articulated stop closure is about the same as the closure duration of a stop with a single articulation. Figure 5 shows waveforms illustrating closure durations of intervocalic /pt/, /p/, and /t/ from speaker M of Bura and intervocalic /kp/, /k/, and /t/ from one speaker of Yoruba. Whereas all the Yoruba closures are of approximately equal duration (about 130 msec) regardless of whether they have single or double articulation, the closure for the complex element /pt/ in Bura is about 180 msec whereas that for a simple /p/ and /t/ is only about 130 msec long. This longer duration, while not conclusive by itself, is an indication that there may be more than one segment between the two vowels in the phrase containing /pt/.

Another important phonetic fact concerning the "doubly-articulated" elements becomes apparent as soon as one examines them in an intervocalic context. This is a voicing change. The labial first portion in all the cases we are discussing is voiceless when the second (alveolar or palato-alveolar) portion is voiceless, at least as far as initial position in citation forms goes and our transcriptions have generally reflected this voiceless pronunciation (as /mt/ and /pt/). However, when a voiced segment, such as a vowel, precedes, the bilabial portion is voiced. The waveform for /-pt-/ in Figure 5 shows greater perseveration of voicing into the closure than for simple /p/ or /t/, and in Figure 4 voicing can be seen throughout the nasal /m/ in intervocalic /mt/, whereas this nasal would be a voiceless utterance initially. This alternation in voicing does not directly bear on the phonetic unity or otherwise of these elements—after all, segments which are phonetically speaking partially voiced are quite commonly found in languages—but it has an importance for the phonological analysis we will discuss below.

There is also another durational effect to notice. A vowel before a "doubly-articulated" stop is shorter than one before a simple following stop. A representative illustration of this is shown in Figure 6. In these examples the vowel before simple /p/ is about 180 msec long, whereas that before the complex element /pts/ is about 150 msec long. In many languages vowels are typically shorter in a closed syllable than in an open syllable.
Before a simple consonant:

Before a complex consonant:

Figure 6. Vowel Shortening.
For example, in Tamil lexically long vowels are about 50 msec longer in CV syllables than in CVC syllables [Balasubramanian 1981]. Such length variations have been readily phonologized in numerous languages, for example in rules requiring short vowels in closed syllables in Hausa and Arabic or before geminate consonants in Finnish, Italian, etc., and in the Middle English sound change known to historical linguists as "lengthening in open syllables". If there is other evidence to support an analysis which treats the phonetic sequences such as /pt/ in Bura as heterosyllabic consonant clusters in intervocalic positions, then these durational facts would be accounted for also. We will return to the issue of syllabification below.

3. Phonological Analysis

Now, even if there are not simultaneous bilabial and alveolar articulations in the kinds of elements under discussion here, and, hence they are not phonetically speaking labial-alveolars, it could still be the case that from a phonological point of view these elements should be regarded as single entities. However, whatever phonological account is given must be consistent with the phonetic facts as we have shown them to be. In view of this, it seems that a stronger case can be made for an analysis of these elements in precisely the fashion that Hoffman rejected, namely, as a juxtaposition (albeit not casual) of two phonemes. In other words we will argue that they are phonologically a sequence of a bilabial and an alveolar (or palato-alveolar) consonant.

First let us dispose of two possible counter-arguments to the sequential analysis. Recall Hoffmann's remark about the "labial-alveolars" in Margi to the effect that "their behaviour in reduplication" demonstrates their unity. Hoffmann does not explain this remark, but refers the reader to a list of reduplicated forms for support. I presume that he would have intended the reader to note that when a form like /bdɔ/ is reduplicated, all of the prevocalic material is replicated, i.e. the form is /bdɔbdɔ/, rather than /bəbdɔ/. However, if this is to serve as an argument for the unity of the

4An unnecessary distinction between allophones of /ə/ in open and closed syllables has been eliminated from Hoffmann's transcription.
initial elements, then it is necessary to show that a sequence would have
been reduplicated in some different fashion. Let us suppose that Margi had a
form /tku/, with the reduplicated form /tətku/. We would require an ex-
planation for the fact that on the one hand the whole of the /bd/ element
is repeated in the reduplicated form but that on the other only the initial
portion of the /tk/ element. A logical account of these facts would be to
posit that /bd/ is a unit, whereas /tk/ is a cluster, and the rule of re-
duplication is to repeat the initial consonant. But Margi has no forms such
as the hypothetical /tku/ by which to demonstrate that elements such as
/bd/ are treated differently from "real" clusters.\(^5\) Invariably in Margi,
and in Bura, either complete roots are reduplicated or entire initial syllables. These processes provide no evidence one way or the other for the anal-
ysis of word-initial complex elements as units or sequences.

Equally the sequence analysis cannot be ruled out by pattern conformity. There is no basis for arguing that Bura (or Margi for that matter) disallows
consonant sequences in general. Beside the elements whose analysis in ini-
tial position is in dispute, various lateral + obstruent clusters, e.g.
/kilfa/ 'fish', /kəldəfu/ 'anger', and additional nasal + obstruent clust-
ers occur medially, e.g. /mĩz/ in /umĩzɑ/ 'nine'; /mĩ/ does occur ini-
tially. Consonant sequences are also generated by reduplication, both pro-
ductively and in frozen forms like /warwar/ 'throat'.

On the other hand, a unitary phonological analysis of the "labial-alveo-
olars" raises some difficult problems concerning feature assignments with re-
spect to prenasalized and affricated types. It is self-evident that these
types of elements contain a phonetic sequence of events, and other authors
have argued for representing such elements as complexes of one kind or ano-
ther, because, for example, they have different assimilatory effects on seg-
ments which precede them than they do on those which follow, e.g. Anderson

\(^5\)There is one misleading example in Hoffmann [1963]. The form /tskwar/
'to touch' is given (p. 160) with a reduplicated derivative /tsatskwari/
'to touch many things'. Forms cited elsewhere in the book, e.g.
/ts(u)kwari/ 'to touch' (p. 120), suggest that there is an underlying vowel
between the alveolar affricate /ts/ and the velar stop /k/ in this word.
[1976], Feinstein [1979]. But, beyond these considerations, because two places of articulation are involved, unique problems arise if the prenasalized and affricated elements with bilabial and alveolar components in Bura are regarded as doubly-articulated units, i.e. as a single matrix of features. Given the existence of prenasalized alveolars and bilabials, e.g. /nt/ and /mp/, and the evidence above that the nasal in the "labial-alveolar" /mt/ is bilabial, no simple feature marking all these "segments" as prenasalized will correctly indicate the place of articulation of the nasal, since it is not necessarily homorganic with the stop portion. In a similar fashion, simply marking "doubly articulated" affricates such as /pts/, /ptʃ/, etc. with a familiar feature, such as [+ delayed release] would imply that the fricative portion of these "segments" is both labial and alveolar (or palatal-alveolar as the case may be). This is not so. Such false predictions could be avoided by creation of features which specify which of the two articulations is being prenasalized or affricated, but it seems more appropriate to recognize simply that there is a place contrast in nasal segments preceding alveolars (and palato-alveolars) and a place contrast in affricates (and fricatives) following labials.

A similar situation applies with respect to the voicing changes in the first element of the prenasalized elements and the "labial-alveolars". Recall that before voiceless stop portions the nasal portion of the prenasalized elements is itself voiceless under certain conditions, e.g. initially in citation forms. However, when preceded by, for example, a vowel the nasal portion is voiced: thus [ŋta] 'tear' but [təa: nta] 'he will tear'. If /nt/ is regarded as a prenasalized unit which is underlyingly voiceless throughout, then the voicing assimilation rule must apply only to the nasal portion of this segment which, in such an analysis, has no separate status. Alternatively, if the nasal portion is taken to be normally voiced even in such "voiceless" prenasalized elements (which we would prefer to do on universalist grounds), then an initial devoicing rule must be stated which applies only to

6Note that whatever feature representation of unitary prenasalized segments is preferred there would be no such problem if the "labial-alveolars" were actually doubly-articulated.
the nasal portion. No conventional feature is available which will enable such a rule to be formulated. Naturally, if the nasal is recognized as a separate segment, no such problem arises. Similarly with the voiceless labial + alveolar stop elements. If /pt/ is a unit, then the voicing of the labial portion when this element is in an intervocalic position is difficult to specify. If it is recognized as a cluster then there is no difficulty in the way of having voicing apply to the first segment in the sequence.

The above objections to an analysis in which these complex elements are represented by a single feature matrix might be met by proposing that the correct representation is by means of two feature matrices linked to a single consonantal slot. This is the complement of analyses of geminate segments as single feature matrices linked to two slots in the CV skeleton, e.g. McCarthy [1979], Schein [1981]; cf. also Halle & Vergnaud [1980]. In this account, features whose values are shared by both portions of a complex consonant would appear in a matrix directly linked to the C slot, thus expressing the extent to which the portions of a complex consonant are similar to each other. Features which differ in the two portions appear in separate matrices. By such an analysis, /nt/ would receive the representations shown in (3), with (3) representing the variant with the devoiced nasal, (3b) the variant with the voiced nasal.

(3) a. \[ \ldots \] \[ \ldots \] \\
\[ +\text{nasal} \] \[ -\text{nasal} \] \\
\[ +\text{coronal} \] \[ -\text{voice} \] \\
\[ \text{C} \] \\
\text{nt} \\

b. \[ \ldots \] \[ \ldots \] \\
\[ +\text{nasal} \] \[ -\text{nasal} \] \\
\[ +\text{voice} \] \[ -\text{voice} \] \\
\[ +\text{coronal} \] \\
\[ \text{C} \] \\
\text{nt}

As we will argue more fully below, there is good reason to take the voiced variant as the underlying form. In terms of the proposal being evaluated let us just state that (3a) represents in some sense a simplification of (3b) and is more easily derived from it than vice-versa. If this is the case, then note that in a prenasalized "labial-alveolar" segment such as /mt/ there are no shared features; the two matrices are entirely distinct as in (4).
The lack of any unifying feature value shared by the two matrices in (4) removes the most obvious motivation for this analysis. In its place we would need to show that there was theoretical justification for the distinction between (4) and (5), where the same matrices are linked to two different consonantal slots.

The evidence for this distinction is not forthcoming in Bura. Where we might have expected to see it, e.g. in reduplication, there is no reason to posit a difference between single complex consonants and consonant clusters.

Since representation of /nt/ as (3b) can be justified on the basis of shared features, but representation of /mt/ as (4) cannot, we are left with the question of whether representing /nt/ as (3b) and /mt/ as (5) has any merit. Applying this strategy to all of the relevant elements in Bura (see the appendix) would result in a division into two groups. One group, with shared features, would include the prenasalized homorganic stops (/nt, nd, mp, mb, nk, ng/ etc.) and elements with two articulations but shared manner features (including [±voice]) such as /pt, bd, bdʃ, bdz, bdʒ, mɱ, bw/ etc. The other group would contain voiceless coronals with bilabial prenasalization such as /mt, mts, mʧ/ etc. plus cases where palatal or labial-velar glides follow consonants with which they share no features, e.g. /fŋ/. However, aside from the fact of shared features values on which the grouping is based, these groups have no functional distinction in Bura phonology that we
are aware of. All of the rules we know of (reduplication, voicing assimilation, vowel shortening) do not distinguish between these groups. Whereas, within both groups, it is necessary to distinguish between the elements in which the second portion is a glide (/y/ or /w/) which have no tendency to shorten a preceding vowel, and the rest, which do. Since introduction of a formal distinction between complex single consonants (with shared features) and consonant clusters is antagonistic to a clear account of Bura phonology, we are left with the simplest remaining assumption—that all of the complex elements are consonant sequences.

The hesitancy of earlier scholars to adopt the sequential analysis may have been due to the rather large number of word-initial clusters of a highly unusual type which are created by this analysis, implying many unusual types of CCV syllables. Many of these violate normal conceptions of the sonority hierarchy governing acceptable syllable formation (for discussion of this old-established idea in recent linguistic literature see, for example, Hooper [1972], Lowenstamm [1981], Cairns and Feinstein [1982], Steriade [1982]). These clusters have adjacent segments of equal rank in sonority, e.g. two voiced stops such as b+d/, or a more sonorous segment, i.e. a nasal, preceding a less sonorous one, i.e. a stop or a fricative. However, recent proposals concerning the analysis of the syllable within a metrical framework, originating with Kiparsky [1981] and elaborated by Steriade [1982] and others, have provided a framework within which these clusters can receive a natural account. They recognize that consonants in an initial or final cluster, particularly at the margins of a word may not be part of the syllable onset or coda.

The phonetic evidence on vowel length suggests that the unusual word-initial sequences in Bura are resyllabified where this becomes possible, so that /tsa+bda/ becomes /tsab.da/, /tsa+mta/ becomes /tsam.ta/ and so on. As noted earlier, the vowel preceding the cluster is shortened in such circumstances, as in an originally closed syllable. Note that in these contexts there is no violation of normal syllable structure. Let it be assumed that syllables are constructed in the first instance in strict conformity with the universal syllable template [Lowenstamm 1981], given in (6).
(6) In a string of segments, a syllable is a maximal substring such that:
   a. (i) no segment is of lower sonority than both its immediate neighbors
       (ii) no two segments of equal ranking on the hierarchy are adjacent.
   b. the onset is maximal within the limits of (a). 7

Sonority hierarchy violations are disallowed by the conditions in (a), hence marginal consonants with a segment of equal or greater sonority between them and the nearest candidate to be a syllable peak will not be incorporated into any syllable. This would be the output of the lexical component (cf. discussion by Mohanan [1982], Pulleyblank [1983], and especially Harris [1983:71-80]). Thus items such as /bda/ and /mta/ will initially be syllabified as in (7),

(7) $\sigma$

leaving a stray initial consonant in the segmental skeleton. Postlexically, if the context permits this to be done in conformity with the sonority principles, this stray consonant is adjoined to the preceding syllable, as in (8a). If there is no preceding syllable or it cannot be adjoined to the preceding syllable without violating (6), a postlexical rule incorporates it into the onset of the following syllable, as in (8b). (Stray consonants are never erased in Bura.)

(8) a. $\sigma$

b. $\sigma$

This incorporation, creating surface violations of the universal syllable canon, can be explained if Bura is subject to a language-specific constraint

---

7The more elaborate proposals of Cairns and Feinstein for syllable construction seem unnecessary—certainly for Bura and probably elsewhere. See Steriade [1982] for discussion.
that all syllables must contain a lexically supplied vowel. If no such condi-
tion governs syllable-formation in Bura, it would be expected that the isolat-
ed initial consonant would form a syllable by itself, i.e. become syllabic.
This does not happen, even with segment types such as nasals, which readily
become syllabic. Neither does Bura eliminate the violations by insertion of
a non-lexical vowel (a "schwa-insertion" process). Compare the situation in
Bade, a geographically not-so-distant Chadic language which underwent a some-
what similar historical process to the one in Bura, converting word-initial
CVC syllables into CC sequences. The historical process in Bade, illustrated
in (9), deleted a short high low-toned vowel between many pairs of consonants,
especially non-homorganic obstruents. The details are discussed in Schuh
[1978]. In general the damage to canonical syllable structure is "repaired"
by insertion of a prothetic vowel if the cluster consists of two obstruents,
or by making the initial consonant of the sequence syllabic if it is a liquid
or nasal (9c).

(9) a. Proto-Bade  b. Underlying  c. Surface
*bd(u)    →  bdú    →  ḍbdû  'he asked'
*m̥tú       →  m̥tú   →  ṣmtû  'he died'

Having motivated a sequential analysis of the "labial-alveolars", it now
becomes clearer that the labial + alveolar consonant clusters in Bura should
be regarded as having a voiced labial segment in first position, even though
in citation forms the labial is voiceless before a voiceless second element.
This argument hinges mostly on what happens with the nasals. Although both
voiceless and voiced nasals occur phonetically in Bura, there is no contrast
between them. Voiced nasals are found in a wider range of environments—
everywhere except word-initially between a pause and a voiceless obstruent.
Hence one would mark nasal segments in Bura as underlyingly voiced. This is
also consistent with the universally unmarked status of voiced nasals [Maddie-
son, to appear]. Since the initial bilabial stop segments in what we have
been writing as /pt/, /pts/, etc. take part in the same voicing alterna-
tion as the nasals, we would want to posit an underlying /b/ in these se-
quences and account for the voicing change by the same rule of devoicing.
This direction for the voicing assimilation rule is also motivated by an understanding of universal preferences concerning syllable structure. The degree to which the universal syllable canon is violated is reduced by devoicing the bilabial segments. In other words Bura takes a small step towards repairing the violations of the sonority hierarchy by making the adjoined nasals or stops before voiceless obstruents in a syllable onset into their less sonorous voiceless counterparts. An onset containing two voiceless obstruents is a less severe violation of the sonority hierarchy than one which contains a voiced one before a voiceless one. Similarly with the nasals.

4. Conclusion

In conclusion, we have shown that the elements previously analyzed as doubly-articulated labial-alveolars in Bura are phonetic sequences of a labial and an alveolar. We have also shown that phonetic and phonological arguments converge in favor of proposing that those sequences are present in underlying forms. This may mean that there are no human languages in which underlying labial-alveolar segments occur. Moreover, we have also shown that universal patterns of syllable construction play an important role in explaining the phonological status of these elements as sequences.

The remaining cases in which labial-alveolars have been claimed to occur seem to be allophonic, e.g. Dagbani, or dubious ( Nzema).
APPENDIX

A. A consolidated list of Bura labial + alveolar or palato-alveolar/palatal elements

This list is based principally on the data collected by Russell Schuh, but is supplemented by data from Hoffmann (n.d.). The four columns contain the following:

1. A transcription of the element in the style usually used by Hoffmann and other Chadicists.
2. A transcription which represents the phonetic assumptions implicit in Ladefoged [1968] concerning the realization of these elements. Many of the elements are not given by Ladefoged in his Bura phonemic inventory (even though the inventory was supplied by Hoffmann, who insists on the phonemic unity of many more elements than Ladefoged includes), but I have extended his transcriptional conventions on the basis of the elements he does include and on the basis of those he gives for Margi.
3. A transcription representing what I would propose as the underlying forms of these elements in my analysis of Bura.
4. A word exemplifying the element in question, accompanied by an English gloss. In five instances, this column has a question mark as its entry. This indicates a strong presumption that this element exists given the general patterns of formation, but that no examples are known in available sources. There are further elements which would seem in principle to be possible but are also unattested.

(a) Stop-initial elements

<table>
<thead>
<tr>
<th></th>
<th>(Hoffmann)</th>
<th>(Ladefoged)</th>
<th>(Maddieson)</th>
<th>(example + gloss)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>pt</td>
<td>ŋt</td>
<td>bt</td>
<td>btà (an animal)</td>
</tr>
<tr>
<td>2</td>
<td>bd</td>
<td>bd</td>
<td>bd</td>
<td>bdà 'to collect honey'</td>
</tr>
<tr>
<td>3</td>
<td>bd</td>
<td>ŋbd</td>
<td>bd</td>
<td>bdà 'to eat meat, chew'</td>
</tr>
<tr>
<td>4</td>
<td>ps</td>
<td>ps</td>
<td>bs</td>
<td>bsà 'to mix mud'</td>
</tr>
<tr>
<td>5</td>
<td>bz</td>
<td>bz</td>
<td>bz</td>
<td>bźèr 'child'</td>
</tr>
<tr>
<td>6</td>
<td>pts</td>
<td>ŋtś</td>
<td>bts</td>
<td>btsà 'roast'</td>
</tr>
</tbody>
</table>
### (b) Nasal initial elements

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Hoffmann)</td>
<td>(Ladefoged)</td>
<td>(Maddieson)</td>
<td>(example + gloss)</td>
</tr>
<tr>
<td>bdz</td>
<td>bdz</td>
<td>bdz</td>
<td>bdzà 'to patch'</td>
</tr>
<tr>
<td>pš</td>
<td>pʃ</td>
<td>bʃ</td>
<td>bʃ'arù 'to spread a net'</td>
</tr>
<tr>
<td>bʒ</td>
<td>bʒ</td>
<td>bʒ</td>
<td>?</td>
</tr>
<tr>
<td>pč</td>
<td>pč</td>
<td>bč</td>
<td>'sun'</td>
</tr>
<tr>
<td>bj</td>
<td>bdʒ</td>
<td>bdʒ</td>
<td>?</td>
</tr>
<tr>
<td>pлежа</td>
<td>pлежа</td>
<td>bлежа</td>
<td>bлежа 'to forge'</td>
</tr>
</tbody>
</table>

### B. Homorganic prenasalized elements in Bura

These elements differ less in their transcription than the "labial-alveolar" since there is no basic disagreement on their phonetic nature. Hence only one column of transcription is given, together with an example. Two elements strongly presumed to exist are included in the list, and there are others which might reasonably be expected to occur.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(example + gloss)</td>
<td>(example + gloss)</td>
<td>(example + gloss)</td>
<td>(example + gloss)</td>
</tr>
<tr>
<td>mp</td>
<td>mpà</td>
<td>'to fight'</td>
<td></td>
</tr>
<tr>
<td>mb</td>
<td>mbà</td>
<td>'to burn'</td>
<td></td>
</tr>
<tr>
<td>mj</td>
<td>mfwa</td>
<td>'tree'</td>
<td></td>
</tr>
<tr>
<td>mv</td>
<td>mvwa</td>
<td>'Kanuri person'</td>
<td></td>
</tr>
</tbody>
</table>
Complex Phonetic Elements in Bura

REFERENCES


Hoffmann, C. n.d. "Notes on the pronunciation of Bura." (Ms. in possession of Paul and Roxana Newman.)


KILBA EQUATIONAL SENTENCES*

Russell G. Schuh
UCLA

Kilba, a Chadic language of Gongola State, Nigeria, has a number of enclitic particles which one can reasonably argue function as copulas in equational sentences. Li and Thompson [1977] have described a widespread phenomenon in language history whereby anaphoric elements become copulas. The copular particles of Kilba present a particularly interesting case of this phenomenon in that, first, proximal/distal distinctions of the demonstratives from which the copulas derive have shifted to tense distinctions in equational sentences, and second, the original pronominal and the innovative copular functions are not clearly separable, creating functional ambiguity.

1. Introduction: Chadic copulas

Li and Thompson [1977] show for a variety of languages how non-verbal copulas have developed from personal pronouns or demonstratives. The general path of development is as follows:

\[ \text{Noun Phrase}_1 \text{ Pronoun}_1 \text{ Predicate} > \text{Noun Phrase Copula Predicate} \]

\[ (\text{topic}) \quad (\text{subject}) \]

For example, in colloquial Hebrew the personal pronoun \textit{hu} 'he' or the demon-

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*I conducted my initial research on Kilba in Los Angeles with Mallam Usman Isyaku, a man 22 years of age from Hong, Gongola State, Nigeria and a student at Columbia College in Hollywood. After we had worked together for about 6 months, Mallam Usman left Los Angeles, and I was unable to complete the present paper because of a few remaining unanswered questions. During 1982-83, while I was a Visiting Professor in the Department of Nigerian and African Languages at Ahmadu Bello University, Zaria, I was fortunate to be able to fill in gaps in the data with the help of Mallam Hamman Wagwakwa, an ABU cafeteria worker about 30 years old and also a native of Hong. Work in Los Angeles was supported by a Research Grant from the UCLA Academic Senate. Field work in Nigeria was supported by a grant from the Wenner-Gren Foundation for Anthropological Research. My thanks to Sandy Thompson and Paul Newman for comments on an earlier version of this paper. Since they did not convince me of the aptness of some of their suggestions, they are to blame for my not incorporating those particular suggestions!
strative 'this' are virtually obligatory in equational sentences with nominal subjects, such as David hu ha-ganav (David "he" the-thief) 'David is the thief', and they can even be used in sentences such as ata hu ha-ganav (you [m.s.] "he" the-thief) 'you are the thief', where hu clearly cannot be anaphoric [Li and Thompson 1977:427-431].

In Chadic languages, copulas of any kind are rather rare. Typically, equational sentences simply juxtapose a subject (noun or pronoun) with a predicate. A few Chadic languages, however, do have morphemes which can be identified as copulas and which have probably developed in a way similar to that outlined by Li and Thompson. A well known and well documented case is that of Hausa (see especially Parsons [1963], Schachter [1966] and Rufa'i [1977:306-311]). Hausa uses one of a pair of morphemes, ne and ce, to form equational sentences as follows:

\[(1)\]
\[\begin{align*}
\text{a. Audu manomi ne} & \quad \text{'Audu is a farmer'} \\
\text{b. Amina sarauniya ce} & \quad \text{'Amina was a queen'} \\
\text{c. tunkiya ce} & \quad \text{'it's a sheep'} \\
\text{d. tumaki ne} & \quad \text{'they are sheep'}
\end{align*}\]

The copula agrees in gender and number with the subject, ne for masculine singular (1a) and any plural (1d), ce for feminine singular (1b,c). There is some fluctuation in agreement where grammatical gender of subject and predicate differ (see Schachter [1966] and Rufa'i [1977] for discussion). In neutral affirmative sentences, ne/ce always follow the predicate. The subject need not be overtly expressed (1c,d), in which case ne/ce may be translated 'it is...', 'they are...'.

I am unaware of any previous account of Hausa ne/ce which explicitly links these morphemes with the Hausa demonstrative or pronominal system, but such a link is obvious, at least from a historical point of view. For example, the n- of ne corresponds to the masculine singular and the plural marker of previous reference, whereas the c- of ce corresponds to feminine -\( \tilde{e} \) in the same function,\(^1\) e.g. manomi-n 'the farmer', tumaki-n

\(^1\)In the dialect illustrated here, essentially that of Kano, syllable
'the sheep (pl.)', sarauniya-ř 'the queen'.

Despite this historical link, however, ne/ce have been entirely grammaticalized as copulas and have no deictic or anaphoric functions. They do raise some questions as to how they may have developed following the paths outlined by Li and Thompson. Perhaps the most vexatious of these is why ne/ce always follow the predicate in a language where constituent order is rigidly Subject-Predicate in all sentence types. If ne/ce were the original subjects as in the Li and Thompson schema, they should precede the predicate. I have no ready answer for this.

Another Chadic language which has copulas derived from the pronominal and demonstrative systems is Kilba. Unlike Hausa, however, where ne/ce are entirely grammaticalized as copulas and their historical link with demonstratives is recognizable only through internal (or comparative) reconstruction, the Kilba copulas still share strong links with the pronominal and demonstrative system.

In addition to adding yet a further case of copula development to those Li and Thompson discuss, the Kilba system has additional points of interest. Two of these will emerge below. The first is the fact that in shifting demonstratives from deictic to copular function, Kilba has exploited the proximal/distal deictic distinction to create a tense distinction for its copulas.

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Final t has changed to ř in a well-known set of sound changes [Klingenheben 1927/28]. The t is still heard in some western dialects. The change of t → c /i,e is a regular morphophonemic change in Hausa accounting for ce rather than *te. For the copula, some western dialects use na and ta rather than ne and ce. In fact, the set of formatives n (m.sg.), t (f.sg.), n (pl.) in the determiner and pronominal system is an ancient pattern reconstructable for proto-Afroasiatic [Greenberg 1960].

As Paul Newman [p.c.] reminds me, the Hausa copula does not always follow the predicate, e.g. shi ne sarki (he COP chief) 'he is the chief'. However, such sentences usually involve subject focus. Since another function of the Hausa copula is to form clefts, such sentences could be viewed as having a clefted subject with no copula per se.

Kilba belongs to the Central or Biu-Mandara branch of Chadic [Newman 1977]. Hausa, a West Chadic language, and Kilba are therefore genetically distant from each other and have been in contact in only relatively recent times through the spread of Hausa as a lingua franca. The copulas of these two languages have clearly originated and developed independently.
Second, Kilba copulas have developed from subject pronouns but have not preempted the position of true subject pronouns (in this case, post-predicate). This creates a transitional sentence type where the function of the demonstrative or pronoun is ambiguous between "subject pronoun" and "copula".

2. Kilba Personal Pronouns and Demonstratives

In this section I present personal pronoun and demonstrative paradigms for reference in the discussion in following sections. There are two personal pronoun paradigms of interest:

(2) a. Independent pronouns

\[
\begin{array}{cccc}
1 \text{ sg.} & \text{nàyà} & \text{ya} \\
2 \text{ sg.} & \text{nàkà/nàkò} & \text{ká/ké} \\
3 \text{ sg.} & \text{nàcà} & \text{cà} \\
\text{we (2)} & \text{nàmà} & \text{má} \\
1 \text{ p.ex.} & \text{nà'yà} & \text{'yà} \\
1 \text{ p.in.} & \text{nàmèn} & \text{men} \\
2 \text{ pl.} & \text{nàhì} & \text{hí} \\
3 \text{ pl.} & \text{nàndà} & \text{ndà}
\end{array}
\]

The full range of environments for these pronouns need not concern us. Suffice it to say that the Independent Pronouns are used where there is not a close syntactic bond with neighboring constituents, whereas the Pronominal Enclitics are used in a number of bound environments including suffixed subjects of equational sentences. The alternates for 2nd person singular are prepausal and medial realizations respectively.\(^5\)

Kilba has two sets of demonstratives, a complex set (3a), which may be used pronominally or adjectivally, and a simple set (3b), used only adjectivally.

\(^4\)The pronouns labelled 'we (2)' specifically mean 'you (sg.) and I'. I have avoided the label "1 dual", which would imply the possibility that these pronouns could also mean 'he and I'. Some researchers have referred to these forms as "first person singular inclusive", making the singular set perfectly parallel to the plural set.

\(^5\)This alternation of some, but not all, word final vowels is a common feature of languages of the Biu-Mandara A group, to which Kilba belongs.
Kilba Equational Sentences

(3) a. Complex demonstratives
proximal
(nά)nάnά 'this one'
κί nάnά 'this house'
distal
(nά)ndάnά 'that one'
κί ndάnά 'that house'
"removed"
(ŋά)ŋάŋά 'that one'
κί ŋάŋά 'that house'

b. Simple demonstratives
'this house'
'that house'
'that house'

In the limited amount of research I was able to do, I could not work out the exact semantic functions of these three forms. The "proximal" forms consistently were said to represent physically near and seen. Of the other two, both were always remote in contrast to the proximal forms, but I was unable to get consistent responses as to what the difference in meaning between them is. I have labelled ndάndά/ndά as "distal" since this was normally the first form volunteered to translate distal forms in Hausa, the language I used for elicitation. I use the vague label "removed" for the other, which frequently seemed to indicate not only distance but also "unseen".

3. Kilba Equational Sentences

3.1. Sentences with "full" subjects. Consider the following sentences:

(4) a. ñgάmόn ndόr zwά 'Ngamin is a farmer'
   person-of farming
   *ndόr zwά ñgάmόn

b. kάtέn sάr shśśhί 'a sheep is an animal'
   sheep thing-of hair
   *sάr shśśhί kάtέn

These examples will help us establish certain facts about Kilba equation-
al sentences. Assuming the language universal principle that subjects in such sentences cannot be logically more inclusive than their predicates, the order of elements must be the following:

Nominal Subject - Predicate (4)
Predicate - Pronominal Subject (5)

The ungrammatical starred sentences in (4) establish that nominal subjects must precede the predicate. In the case of sentences with pronominal subjects, there is some fluctuation. The order *yá nđèr zwà in place of (5a), with the enclitic pronoun before the predicate (and corresponding orderings for (5b-f)), is entirely ungrammatical. Of the two speakers with whom I worked, Usman also did not like sentences such as those in (6), but Hamman accepted them. Here, an independent pronoun appears in sentence initial position as subject:

(6) a. (? ) nàyà nđèr zwà 'I am a farmer'
b. (? ) nàyà tól 'I am the chief'

Both speakers, however, accepted sentences such as those in (6'), with a pre-predicate independent pronoun and a post-predicate pronominal enclitic:

(6') a. nàyà nđèr zwà yá 'I am a farmer'
b. nàyà tól yá 'I am the chief'

I will return to a discussion of sentences such as those in (6) and (6') in section 3.3. Suffice it to say here that the speakers with whom I worked used sentences such as those in (5) as "neutral" equational sentences with pronominal subjects. Whether or not those in (6) and (6') can be interpreted as "neutral" will have to remain an unanswered question, but the development of such sentence types must be understood in the wider context of Kilba equational sentences (see especially section 4).

Turning to another feature of the sentences in (4) and (5), we can say that although they are mostly translated by English present tense, they are essentially unmarked for time, this being determined by context. This is evident from (5f) where the second clause of the sentence indicates that the first clause must refer to past time. Lack of tense marking is typical for
verbless sentences in Chadic languages, but as we shall see in the next section, Kilba can, in fact, mark tense in equational sentences.

3.2. Sentences with "empty" subjects. We may refer to the special type of equational sentences with an empty subject as "identificational sentences". Such sentences might be used in answer to questions such as 'who's that?' or 'what's a pangolin?' or where the real world situation makes expression of a subject unnecessary, e.g. 'it's a snake!' Many European languages which do not allow subjectless sentences utilize some sort of empty subject, e.g. English 'it' ('it's John') or French 'ce' ('c'est Jean'). Chadic languages typically state the noun which would be the predicate without further marking.\(^6\) While Kilba can do this as well, i.e. น่า 'me' or น่ำม 'person's name' would be appropriate answers to the question 'who is it?', translations of sentences like 'it's ...' in English or ... ne/ce in Hausa typically use one of the "demonstrative enclitics" listed in (7):

(7) Demonstrative enclitics

น่า
น่ำด่า
น่ำง

The resemblance of these enclitics to the "simple" demonstratives in (3b) is obvious, but they must be considered as distinct in modern Kilba, both because they differ in tone and because of their different syntactic function: while the simple demonstratives are modifiers of the head of a noun phrase, the demonstrative enclitics are higher level constituents of a full sentence.

Of particular interest is the meaning differences these demonstrative enclitics bring about and the relationship of meanings to the meanings of the

\(^6\)This is possible in languages such as English or French as well of course, e.g. in answer to the question 'who's that?' one can simply answer 'John'. However, this would not be regarded as a full sentence in English, whereas in many Chadic languages it must be considered so since these languages have no further morphemes to "fill out" the sentence. An exception to this general statement about Chadic languages is Hausa, which uses ne/ce (cf. section 1) to "complete" the identificational function of the sentence, e.g. Q: วาน ne wannan? 'who's that?', A: Audu ne 'it's Audu'.
corresponding demonstratives in (3).

(8) a. ƙàtàn nà
    'it's a sheep', e.g. pointing to a visible sheep in answer to a question 'what's that?'
b. ƙàtàn ndà
    'it was a sheep', e.g. referring to damage done by an animal not present
c. ƙàtàn nga
    'it's a sheep', e.g. referring to the sound of an animal seen but not heard

(9) a. ndàr zwà nà âmá ngyàr-tà cá
    'he was a farmer, but he has quit' (referring to a visible person)
b. ndàr zwà ndà âmá ngyàr-tà cá
    'he was a farmer but he has quit' (referring to a person not visible)
c. ndàr zwà nga âmá ngyàr-tà cá
    'he was a farmer, but he has quit' (referring to a person possibly visible but not within hearing distance)

Usman worked out the following examples as a direct result of our being interrupted by a phone call from a mutual friend during one of our interview sessions.

(10) a. ƙàf nà
    'it's Ali', e.g. said referring to someone to whom one is talking on the phone
b. ƙàf ndà
    'it was Ali', e.g. said after speaking to someone on the phone and hanging up
c. ƙàf nga
    'it's Ali', e.g. said by a third person referring to someone at the other end of a telephone conversation taking place

The demonstrative enclitics may be used with pronominal predicates referring to non-third persons:

(11) a. nàyà nà
    'it's me'
b. nàyà ndà
    'it was me'
Kilba Equational Sentences

The consistent response of both Usman and Hamman to the difference between sentences of the type ...ndá and those of the type ...ŋá was that the former were "present tense" and the latter were "past tense". I should emphasize that although most of the interviewing was through Hausa, both men knew English and independently volunteered this "tense" distinction using English, Hausa having no way to mark tense in non-verbal sentences. Neither speaker, however, was able to formulate a consistent meaning distinction between ...ndá and ...ŋá.

While both speakers suggested a tense distinction, the translations of (8-10) show that the differences in meaning are not limited to this dimension. Distance and visibility of referent also play a role. Thus, in (9), the first clause in all three examples must be translated as past tense, given the second clause. The (a) and (c) sentences of both (8) and (10) are translated by present tense with the difference in meaning associated with visibility/distance. On the other hand, in (11) and (12), where the predicates are first and second person and hence would typically be both near and visible, the (b) and (c) examples are translated as past tense, associating the predicate with an event in the past rather than the location of the referent. Indeed in the sentences with third person referents (8-10), the suggested distinction between ...ŋá and the others was spatial rather than temporal. Note also the following:

(13) Q: wà ŋá? 'who is it?'
A: nàyà ná 'it's me'

In the Q the speaker uses ŋá to refer to a person he cannot see, e.g. someone greeting from outside a compound. In the A, the speaker uses ná, the present tense/near form, since obviously the referent (himself) is near, visible, and speaking in the present.
A spatial function for the demonstrative enclitics is not surprising, given their obvious relation to the demonstratives in (3), whose primary dimension is spatial or referential. The interesting feature of Kilba is that in equational sentences the demonstrative enclitics have shifted to what both speakers I worked with seemed to feel is primarily a temporal dimension. The pivot for this shift in focus is undoubtedly the referential use of demonstratives in sentences such as 'this man is a Kilba' vs. 'that man was a Kilba' where 'this' implies not only spatial but temporal nearness and 'that' implies primarily temporal remoteness. Here we would not say that the temporal function is primary for the demonstratives, but it is easy to see how the temporal implications could become the semantic focus once the adjectival and pronominal functions of the demonstrative were lost.

3.3. Demonstrative enclitics in sentences with "full" subjects. This last statement raises an important question: can we really say that the demonstrative enclitics do not have adjectival or pronominal functions? They clearly do not have adjectival function. Sentences such as those in (10), where the referent is a proper name or those in (11) and (12), where it is a personal pronoun, suffice to demonstrate this.

It is not so easy to demonstrate conclusively that the demonstrative enclitics are not subject pronouns. I will say more about this in the final section, but here I will present some arguments against interpreting them as subjects. There is a type of sentence where the demonstrative enclitics are almost certainly not pronominal subjects, viz. in sentences with both a full subject and a predicate. I have also included as the (a) examples of (14-16) sentences with pronominal enclitics, since as I will argue below, they function here in the same way as the demonstrative enclitics.

(14) a. ñgàmòn ndèr zwà cà 'Ngamin is a farmer'
b. ñgàmòn ndèr zwà ná 'Ngamin is a farmer' (Ngamin is present)
c. ñgàmòn ndèr zwà ndà 'Ngamin was a farmer' (but is not now, e.g. he has died)
d. ñgàmòn ndèr zwà ngá 'Ngamin is a farmer' (Ngamin not present)

(15) a. ùsmàn hàbà cà 'Usman is a Kilba'
Kilba Equational Sentences

b. ुस्मान हाब ना 'Usman is a Kilba' (Usman is present)
c. ुस्मान हाब न्दा 'Usman was a Kilba'
d. ुस्मान हाब न्दा 'Usman is a Kilba' (Usman not present)

(16) a. महळ यळ न महळ हाब न्दा 'these women are Kilbas' (? or 'these women were Kilbas'—see below)
b. महळ यळ न महळ हाब ना 'these women are Kilbas'
c. महळ यळ न महळ हाब न्दा (same translation)

The sentences in (14-16) all have the form:
Subject + Predicate + Enclitic

Since the subject is overtly expressed, these sentences would appear to have the structure of the Hausa sentences in (1a,b), with the enclitic serving purely as a copula. Note that here even the pronominal enclitics may serve this function (the (a) versions of (14-16)), i.e. though these enclitics had to be interpreted as subjects in the sentences in (5), here they would be redundant in this function.7

There are a number of questions about interpreting the enclitics as copulas. First, the sentences in (4), as well as those in (6) for one of the speakers I worked with, show that "copular" sentences do not require copulas in order to be grammatical. This is not a serious problem for interpreting the enclitics as copulas, however. The copular use of enclitics in Kilba is undoubtedly a rather recent development8 and is only in the process of being

7In (16) I have not included a separate sentence for the "past tense" demonstrative enclitic न्दा. This enclitic is identical to the 3rd person plural pronominal enclitic in (2a). Although one would expect (16a) to be ambiguous between "neutral" 'these women are Kilbas' and 'these women were Kilbas', I could not elicit a clear judgement to this effect, the neutral reading seeming to be the stronger, if not the only one.

8There is nothing like a copula at all in Bura, a language closely related to Kilba on which I also did research into the structure of equational sentences. Development of copulas from demonstratives may, however, be a feature of the immediate sub-group to which Kilba belongs. Hoffmann [1963: §137ff.] discusses a particle न्ध ( = न्ठ) in Margi which he calls a "demonstrative" but which in all its productive uses looks much more like a copula. It can be used as an "empty" subject in such sentences as फाती न्ध 'it's a lie' and न्ठ न्ध 'it's me' (§138), but I can find no examples in Hoffmann's
grammaticalized. Even in Hausa, where the copular function of ne/ce is well established and virtually always is adhered to in normal speech, copular sentences do not require ne/ce to be grammatical, as shown by many proverbs, formulaic sentences, etc. which have this structure but no ne/ce, e.g. (Hausa) hali zanen dutse "Character is immutable" (lit: character (is) etching-of stone).

A more serious question is whether even sentences such as (14-16) really do require a copular interpretation of the enclitics. There are two possible alternatives. The more plausible is that the "subject" is, in fact, a topicalized noun phrase, and the "real" grammatical subject is the enclitic, i.e. (14a) might be translated 'as for Ngamin, he is a farmer'. The other alternative is that the initial noun phrase is the subject and that the enclitic is an "afterthought", i.e. (14a) might be translated 'Ngamin is a farmer, he is'. This latter interpretation is almost certainly wrong, since the "afterthought" function would usually be filled by a "stressed" pronominal form, say one of the independent pronouns (2a) or long demonstratives (3a), not an enclitic. Moreover, as Sandy Thompson [p.c.] points out, afterthoughts are usually used to impart fuller information to what precedes, a function pronouns cannot fill.

I have no hard syntactic evidence against the "topic" or "afterthought" interpretations. However, a number of facts persuade me that the copular rather than pronominal interpretation for the enclitics in (14-16) is the most likely. First, nothing in their production suggests topicalization or afterthought—they are uttered with no intonation break or insertion of topicalizing particles typical of Chadic languages. Second, nothing in their use suggests a marked structure. Although all the sentences here arose through direct elicitation from informants rather than from free texts, they were all translations of "neutral" Hausa or English copular sentences. Finally, the grammar where it is used in equational sentences with both subject and predicate expressed. This seems to be a Kilba innovation. Note that Margi nó, though historically related to the demonstratives, has clearly become grammaticalized in a copular function. It is invariable and is phonologically quite distinct from present day demonstratives (kə 'near', tə 'far', nə 'known'), and it has no productive attributive or anaphoric functions, though Hoffmann (§137) does note a few frozen expressions where it is attributive.
difference in meaning between sentences with and without clitics, as well as between sentences with different kinds of clitics, has nothing to do with differences in topic, but with tense, visibility, and distance.

This is not to suggest that topicalization of subject with a pronominal subject "copy" is not the historical source for sentences with copulas in Kilba. Indeed, the Li and Thompson [1977] hypothesis would suggest that this is a likely source. Looking back at (6) and (6'), if topicalized subjects were the source for (6'), i.e. 'as for me, I'm a farmer', etc. then we can understand why all speakers would accept such a sentence—topicalization would have always been part of Kilba grammar. The sentences in (6), however, would seem to lack a direct historical source, since pronominal subjects would have been expressed by enclitics in both "simple" sentences and those with topicalized subjects.

Further support for the copular interpretation of the demonstrative enclitics comes from (17), where the sentence initial pronoun is the only mark of subject and an interpretation such as *'as for me, it's the chief' is untenable.\(^9\)

\[
\begin{align*}
(17) & \quad \text{a. nàyà tòl nà } & \quad \text{'I am chief'} \\
& \quad \text{b. nàyà tòl ndà (hàdà) } & \quad \text{'I was chief (formerly)'} \\
& \quad \text{c. ?nàyà tòl ngà } & \quad \text{'I was chief'} 
\end{align*}
\]

On balance, then, it seems that the enclitics in sentences such as (14-17) are functioning as true copulas. In the next section I will consider the status of these enclitics in a comprehensive grammar of Kilba.

4. The Grammatical Status of the Enclitics

To conclude, we should see whether we can establish some unified grammatical account of the enclitics. There are cases where the pronominal enclitics are clearly the subject of the sentence, e.g. the sentences in (5) with a

---

\(^9\)Hamman preferred the temporal adverb with (17b)—the sentence seemed incomplete otherwise. It is also possible to say nàyà tòl yà hàdà 'I was chief formerly' with the pronominal enclitic. Of (17c), he said "one would not say that about himself". This undoubtedly is a pragmatic rather than a grammatical restriction, since ngà usually has the connotation "not seen".
nominal predicate and a referential subject. There are also cases where enclitics seem best analyzed as copulas, i.e. sentences such as those seen in the last section with both an expressed subject and predicate in addition to the enclitic. Note that not only demonstrative enclitics, but also pronominal enclitics, can serve this function, as in the (a) versions of (14-16) and perhaps (6'). We cannot, therefore, make a distinction, saying that the pronominal enclitics are always subject pronouns and demonstrative enclitics are always copulas.

There is a swing category of sentence, viz. the type illustrated in section 3.2, with only a nominal or pronominal predicate followed by one of the demonstrative enclitics. Here the enclitic fills the same syntactic slot as the pronominal enclitics, but functionally the way these sentences are used as well as the way they are translated back into English or Hausa suggest that the subject is really empty, with the enclitic indicating temporal and/or spatial distance of the referent to which the predicate refers.

I suggest an analysis along the following lines for Kilba equational sentences. The rule in (18) describes the structure of such sentences:

\[
(18) \ S \rightarrow (NP) \ NP \ (enclitic)
\]

Any type of enclitic may fill the "enclitic" position, but there can be no more than one, i.e. sentences with both a pronominal and a demonstrative enclitic are ungrammatical:

\[
(19) \ *nđər \ ẕw̱ə \ y̱á \ \{ná, \ nḏá, \ ŋg̱á\} \quad ('I \ am/\ was a farmer')
\]

The only restriction on surface structures generated by (18) is that the initial NP and the enclitic cannot be in conflict. By "conflict" I mean disagreement between person or number features of the initial NP and the pronominal enclitic. This restriction will preclude sentences such as \*ng̱am̱ən háḇ̱ə̱ y̱á (Ngamin-Kilba-I) or \*ṉ̱y̱á̱ háḇ̱ə̱ cá (I-Kilba-he). There are no co-occurrence restrictions between the initial NP and demonstrative enclitics.

A reasonable interpretation of the enclitics seems to be that they are neither strictly subjects nor strictly copulas. The enclitic position ful-
fills both functions, but Kilba provides a range of morphemes which can appear here. In a sentence such as ḥēbā yā 'I am a Kilba', yā is a full pronominal subject which we could say fulfills the function of a copula since a noun phrase in conjunction with such an enclitic is interpreted as equational. In a sentence such as kēṭā ndā 'it was a sheep', ndā is essentially a copula which we could say also functions as an "empty" subject. In sentences such as ḻumnān ḥēbā cā 'Usman is a Kilba', we could say that the pronominal enclitic is a copula which agrees in person and number features with the subject. In sentences such as ḻumnān ḥēbā ndā 'Usman was a Kilba' we do not want to say that the demonstrative enclitic ndā fulfills a different syntactic function from cā in the preceding sentence, only that it incorporates temporal or spatial features different from those indicated by cā.
REFERENCES


NOTES AND QUERIES

This section is for short remarks on articles dealing with African languages which have appeared in *Studies in African Linguistics* or elsewhere and for contributions which are too short to constitute full articles. These may be short descriptive or historical statements of interesting phenomena in African languages or theoretical comments utilizing African language data.

Contributions to "Notes and Queries" should be less than 1000 words, including examples. No footnotes should be used, but references may be listed at the end.
A NOTE ON DOUBLE NEGATION MARKING IN SISSALA

Regina Blass
Société Internationale de Linguistique
Ouagadougou, Upper Volta

Double Negation Marking in Sissala, a Voltaic language spoken on the Ghana-Upper Volta border, raises some interesting questions about sentence negation and poses some problems regarding semantic interpretation.

There are the following realizations of negative marking (henceforth NEG) in Sissala:

1. Clausal NEG Markers

   Sissala has basically three clausal NEG markers, which are wi for non-copular clauses, to for copular clauses, and ra for noun clauses. Structurally wi is a particle, to a verb, and ra an emphatic particle.

   The word order is complement-verb in non-copular clauses while it is verb-complement in copular clauses:

   (1) o wi ja-á mo he NEG house-IMPERF go 'he is not going home'

   (2) o to pááró he is-NEG farmer 'he is not a farmer'

   (3) Jean ra Jean NEG 'it is not Jean'

2. Constituent NEG Marker

   The constituent NEG marker, which marks noun phrases as being within the scope of negation, is also ra (see (3)). This marking occurs when a noun phrase is negated and in initial position.

   (4) píč ra ja yams NEG-emph I like 'it is not yam I like' (but rather something else)

3. Double NEG Marking

   Whenever the subject is negated, the following VP has to be negated with wi or to depending on the clause type. The semantic result of this double NEG marking is still negative.

   (5) o ra wi jaa mó-é he NEG-emph NEG house go-PERF 'it wasn't he who went home' (lit: it wasn't he, he didn't go home)
(6) o rá to páäró 'it isn't he who is a farmer' (lit: it he NEG-emph is-NEG farmer isn't he, he isn't a farmer)

However, whenever a non-subject noun phrase is frontshifted and marked with rá as being within the scope of negation, no other NEG marking is necessary.

(7) Jean rá ʰ zịŋ 'it isn't Jean who I know' Jean NEG-emph I know

Should an object-negated clause be marked twice for negation the result will be positive:

(8) Jean rá ʰ wị ɪ 'it isn't Jean who I don't know', i.e. Jean NEG-emph I NEG know I do know Jean, but I don't know someone else

The question is why two NEG markers have to be present uniquely whenever the subject is focally negated. The answer may be that the basic scope for non-constituent negation in Sissala is VP and not S. Therefore the subject has to be negated together with the VP whenever the subject is meant to be within the scope of negation. In the case where the object is marked with focal negation, no second NEG marker is necessary, since the object is part of the VP.

4. Conclusion

Double NEG marking in Sissala does not in every case come to the same result. It is semantically negative in the case where the subject is within the scope of negation and it is positive whenever NP's which are part of the VP are especially focally negated. The reason for this uneven result may be the fact that VP is the basic scope of non-constituent negation in Sissala rather than the sentence. How these different results may be explained in semantic terms remains a problem.
A NOTE ON THE KINSHIP SYSTEM OF KENYA LUO

William M. Christie, Jr.
University of Arizona

1. Summary

The kinship terms of Kenya Luo show morphologically plural forms for both singular and plural possessors. This feature is not uniform throughout the system, but is present in some terms, absent in others, and variable in still others. This variability, together with the fact that similar patterns are not found in related or neighboring languages, suggests that the pattern is a residual inheritance in Luo.

2. Possession in Luo

Kenya Luo (central and south Nyanza Province, c. 2,000,000 speakers) has a system of pronominal possession distinguishing three persons and two numbers, with markers as follows (the normal Luo orthography, used here and by my principal informant, Mr. Odhiambo Orlale, does not distinguish tone or the hollow/non-hollow vowel quality; but this is irrelevant to the present discussion):

\[
\begin{array}{ll}
\text{sg.} & \text{pl.} \\
1. & -a \quad -wa \\
2. & -i \quad -u \\
3. & -e \quad -gi \\
\end{array}
\]

These are attached to the possessed nouns in three ways:

(1) Some nouns, generally denoting intimately possessed objects or people (including most kinship terms), take these markers as direct suffixes, e.g. lak 'tooth', laka 'my tooth'.

(2) Some few nouns suffix these markers to a postposed mar (rarely mag), e.g. mo 'grease', mo mara 'my grease'. This form is much more common with nominal possessors than with pronominal.

(3) The large majority of nouns insert an empty morph -n- before the possessive suffix in the singular only, e.g. oslep 'friend', oslepna 'my friend', but oslepgi 'their friend'.

3. Possession and Kinship Terms

Kinship terms in Kenya Luo fall into six classes according to their patterns with the pronominal possessive suffixes:

(1) The first class, the largest, consists of those terms that have the
same pattern of suffixes as do the non-kinship terms. Included in this class are wuod 'son', nyar 'daughter', chieg- 'wife', chuor 'husband', and (with an inserted -n-) mikeyini 'first wife'.

\[
\begin{array}{ll}
\text{sg.} & \text{pl.} \\
1. \text{wuoda} & \text{wuodwa} \\
2. \text{wuodi} & \text{wuodu} \\
3. \text{wuode} & \text{wuodgi}
\end{array}
\]

(2) The second class completely neutralizes number in the suffixes, with the morphologically plural forms being used. Included in this class are won 'father', min 'mother', owad- 'brother' or 'male cousin', and nyamin- 'sister' or 'female cousin'.

\[
\begin{array}{ll}
1. \text{wonwa} \\
2. \text{wonu} \\
3. \text{wongi}
\end{array}
\]

The remaining classes are mixtures of or variations on the patterns shown in the first two classes.

(3) In the third class there is neutralization of number only in the second and third persons, the first person being differentiated. This class contains only the words ner 'uncle' and wayo 'aunt'.

\[
\begin{array}{ll}
\text{sg.} & \text{pl.} \\
1. \text{nera} & \text{nerwa} \\
2. \text{neru} \\
3. \text{nergi}
\end{array}
\]

(4) The fourth class has number neutralization in the second person only. This class contains only the noun mara 'stepmother (father's wife who is not one's biological mother)', which has other morphological irregularities.

\[
\begin{array}{ll}
\text{sg.} & \text{pl.} \\
1. \text{maara} & \text{maar marwa or maro marwa} \\
2. & \text{maaru} \\
3. \text{maar mare or maar margi or maro mare} & \text{maro margi}
\end{array}
\]

(5) The fifth class has number neutralization throughout, save that the first person, when used in direct address, takes a singular suffix. This
class contains only kwar 'grandfather' and da or dan 'grandmother'.

<table>
<thead>
<tr>
<th>sg.</th>
<th>pl.</th>
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<tbody>
<tr>
<td>1. kwara (dir. ad.)</td>
<td>kwarwa</td>
</tr>
<tr>
<td></td>
<td>kwarwa</td>
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<tr>
<td>2.</td>
<td>kwaru</td>
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<tr>
<td>3.</td>
<td>kwargi</td>
</tr>
</tbody>
</table>

(6) The sixth class has the same alternation in the first person singular, while the second and third persons show number differentiation. This class contains only the noun nyakwar 'grandchild'.

<table>
<thead>
<tr>
<th>sg.</th>
<th>pl.</th>
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</thead>
<tbody>
<tr>
<td>1. nyakwara (dir. ad.)</td>
<td>nyakwarwa</td>
</tr>
<tr>
<td></td>
<td>nyakwarwa</td>
</tr>
<tr>
<td>2. nyakwari</td>
<td>nyakwaru</td>
</tr>
<tr>
<td>3. nyakware</td>
<td>[nyakwargi]</td>
</tr>
</tbody>
</table>

The form nyakwargi is recognized by native speakers, but it is not normally used if an alternative syntactic construction can be found that allows it to be avoided.

4. Discussion

It will be observed that, except for the irregular noun maro, when one finds one of the persons differing from the pattern seen in the other persons, it is the first person that is different. It will be observed also that if any person has number differentiation, the first person will have it. It may finally be observed that, except for ner and wayo, if there is differentiation in the first person and neutralization somewhere else, the differentiation in the first person is correlated with direct address. These observations allow one to posit an historically underlying pattern of number neutralization for the kinship terms. This pattern, however, has been subjected to two pressures to alter it. First is the pressure to make the morphology conform to performance in the first person singular. Second is the pressure to make the morphology conform to the pattern found in the other nouns in the language. One can then understand the histories of the classes in the following way.

In class 1, pressure for conformity to the pattern of other nouns has completely worked through, and the pattern is fully regularized. In class 2, neither pressure has had any effect. One may well ask why these forms have escaped completely. The answer is that these forms are never used in direct address. Father and mother are addressed as baba and mama, while siblings are addressed by their first names only.

Skipping to class 5, we find that the pressure of direct address has given
rise to an alternation in the first person singular. Otherwise the neutralization has remained. The alternation has become full differentiation in class 3, and this same pressure was coupled with the general pressure for regularization in class 4. Here only the second person retains the neutralization. Finally, the alternation in the first person singular appears to have spread by analogy to class 6, which otherwise has been completely regularized.

I regard this number neutralization as an archaism in Kenya Luo. Such an analysis makes this an example of the familiar "colonial lag" in a language that has become geographically detached from the main body of West Nilotic languages, according to oral tradition, through migration of the Luo people from an area to the north. It is worth considering, however, whether this might be a Luo innovation. Several reasons suggest that it probably is not. In the first place, it is not at all usual to find innovations as striking as this would be unless either one sees in the main body of these languages some evidence of a start in this direction, or one sees a model for the change within the language itself or in a language with which it has come in contact. None of these conditions obtains. The other West Nilotic languages, including the closely related Lango-Acholi group, show no evidence of this pattern whatever. Nor is there any potential model in the neighboring languages, including the immediately adjacent Kisii or the all-pervasive Swahili. Nor, finally, is there any similar or related structure within Luo that could provide any impetus for such an innovation. Given these facts, all evidence points to the probability that number neutralization in the kinship terms is a slowly disappearing archaism that is still partly retained only in Kenya Luo.