Précis from the 15th Conference
on African Linguistics
UCLA, March 29-31, 1984

STUDIES
in
AFRICAN LINGUISTICS

STUDIES IN AFRICAN LINGUISTICS

Supplement 9

PRECIS FROM THE FIFTEENTH CONFERENCE
ON AFRICAN LINGUISTICS

UCLA, March 29-31, 1984

Edited by

Russell G. Schuh
UCLA

FOREWARD

The papers in this volume were presented at the Fifteenth Conference on
African Linguistics, held at UCLA from March 29-31, 1984. Though the papers
here are called "précis", they are really full papers. Authors were given a
2000 word limit, which allowed them to not only write a substantive text, but
also to include a generous number of examples, tables, etc.

Inasmuch as the volume does not include all the papers presented at the
conference, we have chosen not to call it a "proceedings". However, if the
purpose of a proceedings is to reflect the general range and quality of papers
presented at a conference, this volume achieves that goal. Of the 89 papers
presented at the conference, 65 are included here.

If the papers here are a representative of the current state of African
linguistics, it is indeed a dynamic field. Of the language families native to
the African continent, only Khoisan is not represented. In addition, there are
several papers on European-based creoles which African languages have influ-
enced. Besides papers covering all the major "traditional" fields of linguis-
tics, i.e. phonetics, phonology, morphology, syntax, semantics, and historical
language change, there are a number of papers from "hyphenated" fields, e.g.
socio-linguistics and psycho-linguistics. Orientation ranges from the purely
descriptive to the highly theoretical. Even among the theoretical papers,
there is considerable diversity, e.g. in syntax there are papers representing
the government binding, relational, and generalized phrase structure approaches,
among others.

In short, we believe that for anyone who wants to learn who is doing what
in African linguistics today, this volume is a good place to start.

Russell G. Schuh
Los Angeles, December 15, 1985

STUDIES IN AFRICAN LINGUISTICS

Supplement 9
December 1985

TABLE OF CONTENTS

SOME THEORETICAL ISSUES IN BORROWING AND CODE-SWITCHING

F. Niyi Akinnaso
University of Ife, Nigeria

0. Introduction

Drawing upon Yoruba-English bilingual data, this paper provides explana-
tions for lack of rigorous distinction between borrowing and code-switching
(§1) and suggests four main ways of establishing the distinction between the
two (§2.) In conclusion, an argument is proposed for the relevance of studies
of borrowing and code-switching for linguistic theory (§3).

1. Borrowing and Code-Switching

Rather than provide a comprehensive review of previous studies of borrowing
and code-switching, emphasis is placed on major shortcomings of previous at-
tempts to distinguish between the two processes. The first shortcoming is that
of orientation: no one has explicitly made the distinction between borrowing
and code-switching the primary goal of analysis. Rather, only ad hoc distinc-
tions have been made within the context of a general discussion of either bor-
rowing or code-switching, thus making classification a secondary issue [Haugen
1950; Pfaff 1979; Goke-Pariola 1983].

The second shortcoming stems from failure to account for variation in in-
formants' level of bilingual competence. This is an important issue because
borrowing and code-switching imply vastly different claims about the competence
of the individual speaker: borrowing may occur in the speech of those with on-
ly monolingual competence, whereas code-switching implies some degree of compe-
tence in at least two languages. Such variation in levels of bilingual compe-
tence has serious implications for the rate and extent of morpho-phonological
adaptation of borrowed or switched items: morpho-phonological adaptation is
obligatory for monolingual speakers, whereas bilingual speakers may or may not
adapt borrowed or switched items to the structure of the recipient or matrix
language. This calls into question the status of morpho-phonological adapta-
tion of borrowed items as a criterion for distinguishing between borrowing and
code-switching.

The third, and perhaps most crucial, shortcoming arises from over-concen-
tration on the surface features of linguistic structure. Many investigators
have based the distinction between borrowing and code-switching on the phonolo-
gy, morphology, and surface syntax of particular utterances considered in iso-
lation, neglecting macro-sociological and socio-pragmatic issues underlying
surface linguistic behavior. In this approach, borrowing is viewed essential-
ly as a lexical operation, whereas code-switching is regarded as a syntactic
phenomenon [Reys 1974]. There are several loopholes in this approach. First,
the association of switching but not borrowing with internal syntactic struc-
ture ignores the generally recognized possibility of borrowing not only idio-
matic phrases but also full scale morphological and syntactic features from
another language [Gumperz and Wilson 1971; Pfaff 1979]. Second, there is no
agreement as to the classificatory status of foreign items in speech as they
occur in both borrowing and code-switching (see Pfaff [1979] for a review),
thus making it difficult to distinguish between the two (see, especially, Goke-

Pariola [1983]).

Some further comments should be made about the relationship between borrowing or code-switching and morpho-phonological adaptation. First, morpho-phonological adaptation is mediated by numerous factors, including speaker's level of bilingual competence, interlocutor, topic, and context of speech. For example, the pronunciation of the Yoruba word buredi 'bread' varies from the fully adapted form, [búrέdì] , to the unadapted English original, [brεd] . The former is found in the speech of nonliterate, monolingual Yoruba speakers, whereas the latter is found in the speech of literate, bilingual Yoruba speakers of English. However, this is not an absolute distinction since literate bilinguals sometimes use the fully adapted form when speaking to non-literate monolinguals, especially in situations where it may be offensive to sound literate.

Second, the degree and perceptibility of morpho-phonological adaptation vary according to the genetic and typological distance between the languages in contact. For example, Hausa loan words require less adaptation than English loan words in Yoruba.

A third comment concerns the extent of morpho-phonological marking required in "language [incorporated] borrowing" as opposed to "speech [spontaneous] borrowing" [Grosjean 1982:308]. It is difficult to predict the degree of morpho-phonological adaptation of loan words largely because the process that leads to language borrowing and the adaptation of borrowed items to the structure of the recipient language is very complex. Thus, although full integration of borrowed items is often accompanied by morpho-phonological adaptation, spontaneous borrowings, too, may be adapted, even on first usage. Besides, there are integrated borrowings that are unadapted [Saville-Troike 1982:67], whereas spontaneous code-switching may be accompanied by phonological and lexico-grammatical adaptation as in Yoruba-English code-switching [Goke-Pariola 1983]. Furthermore, the relationship between morphological adaptation and lexical incorporation is gradient, and depends on the functional load of morphological marking for different syntactic categories. For example, it has been found that there is a higher degree of morphological adaptation for verbs than for other syntactic categories because of the "functional load" and "centrality" of the verb in the sentence [Pfaff 1979:298].

2. <u>Distinguishing Borrowing from Code-Switching</u>

From the foregoing, it seems that the indeterminacy of the distinction between borrowing and code-switching rests on the fact that macro-sociological and socio-pragmatic issues (which often go beyond the particular utterance) are involved. Because of the relevance of degree of bilingual competence to these issues, a necessary preliminary step toward distinguishing between borrowing and code-switching is to define bilingualism. For present purposes, a bilingual speaker might be described as a person who can express himself in spontaneous, intelligible sentences in at least one language in addition to his first language.

The first criterion for distinguishing between borrowing and code-switching rests on the distinction between mono- and bilingualism, and the theoretical question to ask is, "What is the level of bilingual competence required of a speaker before he can use a borrowed item or code-switch?" As indicated above, individual bilingual competence is not required for borrowing to take place,

whereas it is obligatory for code-switching, as in the case of monolingual Yoruba speakers who make use of borrowed items in their speech, whereas only literate, bilingual Yoruba speakers can code-switch, in addition to making use of loan words.

While the above classificatory criterion is targeted at the competence of the individual speaker, the second criterion has to do with the number of grammars involved. The main argument is that borrowing prototypically involves only one grammar (except where the borrowed items are fixed phrases or idiomatic expressions), whereas code-switching involves at least two grammars. A caveat must, however, be added because the distinctiveness of the two grammars is often mediated by several factors, including genetic and typological relationship and the degree of lexico-grammatical adaptation involved in code-switching. Where lexico-grammatical adaptation is minimal as in Spanish-English code-switching [Pfaff 1979], the two grammars are often very distinct, whereas the distinction between the two grammars is often very blurry where there is a great deal of lexico-grammatical adaptation as in Yoruba-English code-switching [Goke-Pariola 1983]. In the latter case, the tendency is to conclude that only one grammar—that of the matrix clause—is involved. However, such a conclusion would be neglecting cases in which code-switching involves juxtaposition of syntactic constructions (complex noun or verb phrases, whole clauses, etc.) whose analysis would require a recourse to two separate grammars. This is not to say that mono-grammar explanations of code-switching are not plausible, but to point out that such explanations ofen rely on data in which switched items operate largely at a lexical rather than syntactic level. Since dual-grammar explanations of code-switching automatically subsume lexical switching, they seem to account for all the facts without leftovers.

The third classificatory criterion is degree of substitution: given L_1 as the indigenous language of a speech community and L_2 as the language in contact, it is often possible to render code-switched passages in either of the two languages, whereas equivalent terms are often not available in L_1 for items borrowed from L_2. Hence, it is often difficult to find lexical substitutions for loan words in the borrowing language, and where substitutions exist, they often post-date the borrowed items in the lexical history of the borrowing language. For example, there are no equivalent terms for the following loan words in Yoruba: búrédì 'bread', góólù 'gold', síkáfù 'scarf', wíígì 'wig', and tábìlì 'table', whereas the code-switched passage, Gìrl yẹn ò make ẹ̀ at all , can be rendered in either English or Yoruba:

English: *That girl does not make it at all.*

Yoruba: Ọmọbìnrin yẹn ò ṣe dáadáa rárá.

The English and Yoruba sentences are, of cours, inherently polysemous, specific meanings being essentially context-dependent. This underlines the fact that the main objective of code-switching is to give socio-pragmatic rather than referential information. This leads us to the fourth criterion.

The final criterion to be discussed here is that of functional classification. The theoretical question to ask is, "What is the primary function of particular L_2 items in an otherwise L_1 utterance?" The distinction to look for is that between referential and socio-pragmatic meaning. It is suggested that while borrowing serves primarily referential functions, providing labels for concepts, objects, and ideas that have no antecedents in the borrowing language/

culture, code-switching serves primarily socio-pragmatic functions. Thus in
the Yoruba sentence, mo fée je búrédì   'I want to eat bread', the borrowed
item, búrédì , refers uniquely to the object 'bread', whereas in the sentence
girl yen ò make è at all , the switched L_2 items (girl , make , and at all)
may have been introduced for a variety of socio-pragmatic reasons: to show
off, to cut off a monolingual participant in the conversation, to specify a
particular addressee, to reiterate a message, to deliver an ambiguous message,
etc. Viewed in this sense, borrowing is a word or clause level phenomenon,
whereas code-switching is ultimately a matter of conversational interpretation,
so that the relevant inferential processes are strongly affected by contextual
and socio-cultural presuppositions. Furthermore, in code-switching, "it is the
juxtaposition of two alternative linguistic realizations of the same message
that signals information, not the propositional content of any one conversation-
al passage" [Gumperz 1982:84].

3. Theoretical Implications

    The theoretical implications of the preceding observations about the rela-
tionship between borrowing and code-switching are twofold. First, the distinc-
tion between borrowing and code-switching sensitizes us to variations in degree
of communicative competence and, especially, the distinction between mono- and
bilingualism. Borrowing and code-switching imply vastly different claims about
the competence of the individual speaker. A synthesis of research on the rela-
tionship between borrowing and code-switching should, therefore, give us fur-
ther insight into the nature of, and variation in, communicative competence.

    Second, syntactic analyses of switched passages often involve at least two
grammars, thus extending the possibilities of syntactic knowledge beyond the
provisions of the conventional mono-grammar analysis. Two main views have
emerged regarding the nature of code-switching grammar (see Akinnaso [1981] for
more detailed review).

    In one view, represented by Samkoff and Poplack [1980], a code-switching
grammar must exist which makes it possible for code-switching to take place as
quickly and fluently as it does in spontaneous conversations. It is argued
that the constituents juxtaposed in intrasentential switching are too intimate-
ly related to be generated separately by the rules from two distinct grammars.
This view must, however, be distinguished from the tone that identifies the
code-switching grammar with that of the matrix sentence [Goke-Pariola 1983].

    In another view, represented by Woolford [1981], it is not necessary to
postulate a grammar specific to code-switching. Rather, the two monolingual
grammars co-exist, allowing the bilingual speaker to switch back and forth be-
tween grammars and to draw phrase structure rules freely from either language.
The lexicons and word formation components of the two grammars remain entirely
separate from each other. When phrase structure rules are the same in both
languages, the nodes may be filled freely from either lexicon; however, when
the nodes are created by a rule that exists in only one of the languages, they
must be filled from the lexicon of that language.

    Borrowing and code-switching are among the major legacies of those who live
with two languages. At the bilingual community level, borrowing and code-
switching constitute an integral part of the language varieties and communica-
tive norms developed by the speech community. Since bilingualism and language

contact are the rule rather than the exception today, more attention should be paid to the theoretical and practical implications of the major sociolinguistic consequences of language contact, viz., borrowing and code-switching.

REFERENCES

Akinnaso, F. Niyi. 1981. "One tongue or many tongues: theoretical and pragmatic issues in multilingual code-switching." Paper presented at the 24th Annual Meeting of the African Studies Association held at Indiana University at Bloomington, October 24-27, 1981.

Goke-Pariola, A. 1983. "Code-mixing among Yoruba-English bilinguals." *Anthropological Linguistics* 25:39-46.

Grosjean, F. 1982. *Life with Two Languages: An Introduction to Bilingualism.* Cambridge, Mass.: Harvard University Press.

Gumperz, J. J. 1982. *Discourse Strategies.* Cambridge: Cambridge University Press.

Gumperz, J. J. and R. Wilson. 1971. "Convergence and creolization." In D. Hymes (ed.), *Pidginization and Creolization of Languages*, pp. 151-167. Cambridge: Cambridge University Press.

Haugen, E. 1950. "The analysis of linguistic borrowing." *Language* 26:210-231.

Pfaff, Carol W. 1979. "Constraints on language mixing: intrasentential code-switching and borrowing in Spanich/English." *Language* 55:291-318.

Reys, R. 1974. "Studies in Chicano-Spanish." Ph.D. dissertation, Harvard University Press.

Sankoff, D. and S. Poplack. 1980. "A formal grammar for code-switching." *Centro de Estudios Puertorriquenos Working Papers* 8:1-55.

Saville-Troike, M. 1982. *The Ethnography of Communication: An Introduction.* Oxford: Basil Blackwell.

Woolford, E. 1981. "A formal model of bilingual code-switching." Ms., Linguistics Dept., M.I.T.

THE PLACE OF JIIDDU IN PROTO-SOOMAALI

Mohamed Nuuh Ali
UCLA and Somali National University

Linda Arvanites
UCLA

1. The Problem

    At the Second International Congress of Somali Studies, C. Ehret and M.
Nuuh Ali presented evidence that there is more linguistic differentiation in
the Soomaali-speaking area than previously described [Ehret and Nuuh Ali 1983].
They proposed a reorganization of the family tree of Omo-Tana. With the excep-
tion of H. Fleming's initial consideration of Bayso [1964], preceding work had
accorded that language a unique relationship with the rest of Omo-Tana: it had
come to be considered the sole constituent of a Northern branch of Omo-Tana
[Heine 1978:8]. By plucking Jiiddu out of obscurity among what have been con-
sidered "southern Somali dialects" [Sasse 1979:15,19,34], and putting it with
Bayso as one primary branch, as against a second primary branch composed of the
remainder of the Soomaali languages, Ehret and Nuuh Ali cut a swathe through
the confusion which has reigned with regard to "the full array of Soomaali dia-
lects and languages and...delimiting their territorial extent" [Ehret and Nuuh
Ali 1983: Addendum, p.5].

    Their grouping of Bayso and Jiiddu has been criticised by M. Lamberti in a
paper at that same conference which emphasized the ties of Jiiddu with a south-
ern Somali dialect cluster he labels "Digil" [Lamberti 1983: sections 2, 3.5
and Appendix]. In this response to Lamberti's arguments against the validity
of a Bayso-Jiiddu relationship, we examine Lamberti's counter-evidence anew.
We find untenable Lamberti's contention that Jiiddu is properly a "Somali" dia-
lect by virtue of its observance of the "older" laws of spirantization and pala-
talization, both because of inconsistent argument by Lamberti and because there
is another older law, *a-raising, which Bayso and Jiiddu share and which feeds
the palatalization conditions of Jiiddu. We discuss inconsistent argument in
sections 2ff., and *a-raising in section 4.3.

2. Data and Method

    In this examination of sound correspondances between Jiiddu and its neigh-
bors (Garree, Tunni) and geographically distant kin (southwestern Ethiopian
Bayso, Kenyan Rendille), we ask, "Which is the correct position for Jiiddu:
independent language status or southern Soomaali dialect (Lamberti's 'Digil')?"
It is important to stress the languages chosen for comparison. Lamberti [1983:
section 3.5] has argued for a "Digil" unity, classing Jiiddu with Garree and
Tunni. But, in refuting Ehret and Nuuh Ali [1983] he has made reference, not
to these two languages, but to Northern Soomaali. This is inconsistent argu-
mentation; two different sets of correspondences are used, the one to explain a
"Digil" cluster, the other to refute a Jiiddu-Bayso connection. Lamberti's
postulation of a "Digil" cluster points to closer relations between Jiiddu and
Garree and Tunni than between Jiiddu and Northern Soomaali. His own criteria
seem to demand argument from the standpoint of "Digil" to disprove Ehret and

Nuuh Ali's stand, yet he has not used such data.

We do not, as has Lamberti, use Northern Soomaali evidence to prove the nature of the Jiiddu-Bayso relationship; we prefer to emphasize the nature of the Soomaali I - Soomaali III differences through concentration on three of Lamberti's "Digil" dialects.

3. Sources and Terms

The first description of Jiiddu was accomplished by Moreno [1951]. Bayso has been described by Fleming [1964] and by Hayward [1978-79], which latter is our main source of Bayso data. Rendille data are from Oomen [1981] and Heine [1978]. Our data for Garree and Tunni as well as Jiiddu is from C. Ehret's field notes. We have relied on one of the two Jiiddu dialect forms collected by Prof. Ehret, which appears to differ in some respects not only from Moreno's but also from Lamberti's.

The term *Somali* refers to the nation and people (unless citing others' use, in which case quotation marks identify the form), while *Soomaali* refers to the historical mother language and to its branches and sub-branches. Thus *Soomaali I* is the branch of Omo-Tana containing Bayso and Jiiddu as one sub-branch and what Heine calls Sam as the second sub-branch; *Soomaali II* is Heine's Sam, composed of Rendille as one sub-branch and *Soomaali III* as the second sub-branch. *Soomaali III* contains the remainder of the Soomaali languages and dialects, such as Garree, Tunni, Maay, and the Northern dialects. It is Bayso, Jiiddu, Rendille, Garree, and Tunni which are compared here with a view toward ascertaining the validity of moving Jiiddu out of southern "Somali" dialect status.

4. Subgrouping Evidence

Lamberti ascribed to Jiiddu the status of one of the southern "Somali" "Digil" dialects, because it obeys what he calls "older" sound laws [Lamberti 1983: Appendix A]. These are (i) spirantization of $^*k$ to h as in "Somali" and (ii) palatalization of velars before front vowels as in "Somali". We proceed, then, to consider these changes.

4.1. Spirantization.

As mentioned earlier, if one describes Jiiddu as a southern "Somali" dialect, then one is constrained to compare it with speech groups from the southern Somali area. Accordingly, we use Garree and Tunni to appraise Lamberti's contentions about the age and scope of spirantization of $^*k$. If there is such a thing as a "Digil" dialect cluster, then it should be marked by sharing this "older" law. Earlier $^*k$ has spirantized in Jiiddu, except in the environment of another consonant. In the tables to follow, NC means no cognate, dashes indicate no form was collected, and parentheses indicate that seeming cognates are actually loans.

'Sheep's dewlap' hulkul in Jiiddu is a neat illustration of what happens to $^*k$: initially, this reduplicated syllable shows spirantization, while the second $^*k$, which is post consonantal, remains a stop. Those k 's found in Jiiddu which are not the result of post-consonantal preservation are loans, e.g. kullin 'all', or are reflexes of devoicing of $^*g$, e.g. 'enek 'breast', ɗik 'blood' [Ehret and Nuuh Ali 1983: Addendum]. Neither Garree nor Tunni share the change of $^*k$ to h . This difference does not support Lamberti, either with respect to a "Digil" cluster or with respect to the "age" of spirantization. If the "Digil" cluster were a unity at the time of the

Table 1. Spirantization of *k in Jiiddu

	Bayso	Jiiddu	Rendille	Garree	Tunni
a) initially					
'body'	NC	hor	NC	koor	kor
b) medially					
'brain/crown of head'	--	masihaa/ maska'	NC	maskah	masqa
c) finally					
'foot'	lukka	loh	luħ	NC	luk
d) no change/___ C					
'tooth'	ilkoo	'elka	ilko	ilig	ilka

Jiiddu spirantization, then in Table 1 Jiiddu should not be the sole partici-
pant of this change. It appears that spirantization was a matter of indepen-
dent development, then, in Jiiddu and Northern Soomaali: the very limited de-
velopment of spirantization in Northern Soomaali (in Lamberti's [1983:31] words,
"after *e , *a and *o ") cannot be compared to the Jiiddu change, which is
not vowel-triggered. Indeed, Banti's caution in characterizing the outcomes of
*k in Soomaali is another form of disagreement with Lamberti's formulation.
Banti notes that one type of *k change takes place "under conditions that
seem to be determined by lexical diffusion rather than by phonological differ-
ences", and that *k "may become a pharyngeal fricative, i.e. ħ ...This is
clear in Somali ráħ and Rendille raħ 'frog' vs. Somali rák-e , Oromo
raac-a ..." [Banti 1983:15-16]. (NB: ráħ is a Northern Soomaali form, rák-e
a Tunni or Maay form.)

4.2. Palatalization of velars. Examination of this set reveals that Garree
and Tunni do, indeed, share in palatalization with Jiiddu. But before the pres-
ence of palatalization in these three languages is construed as support for a
"Digil" cluster, note that Rendille also participates in the palatalization of
velars before front vowels.

Table 2. Palatalization of velars

	Bayso	Jiiddu	Rendille	Garree	Tunni
*k 'bird'	kimbir	ʃabbɛrɛ	cimbir	ʃimmir	ʃimbir
*g 'knee'	gilib	jeleb	jilib	ɟilib	jilib

    Lamberti has correctly pointed out that Bayso does not participate in this
"older" sound change. But the Rendille example shows that this change was not
limited to Lamberti's "Somali". Moreover, there are cases where Jiiddu lacks
palatalization yet the other languages have it. Compare Jiiddu with Rendille
in the case of 'water':

*k 'water'   bekee *behe   bice   biyyẹ   (behe)

(That the modern Jiiddu form wara was preceded by earlier Jiiddu behe is
surmised from the loanword for that meaning in Tunni, which takes the expected
Jiiddu form.) Palatalization neither helps to group Jiiddu with Bayso (which
lacks it) nor with Lamberti's "Digil", since the change is not exclusive to
"Digil". As Heine [1978:13-14] has shown, palatalization of velars before
high front vowels is a Sam (a Soomaali II) level change in Omo-Tana. While
Table 2 shows Jiiddu also has palatalization, it is important to recognize
that this palatalization, as 'water' reveals, is not identical to the Soomaali
II palatalization, since there are cases in Soomaali II where the affrication
of velar stops has applied, which have not been so changed in Jiiddu.

    Other sound change evidence further weakening Lamberti's arguments for a
"Digil" unity and simultaneously supporting a Jiiddu-Bayso relationship is
found in *a-raising.

4.3. Raising of *a . In his discussion of pharyngeals, Sasse [1979:36] also
described an Omo-Tana level change for Bayso and Western Omo-Tana of *a-rais-
ing to either e or i in the environment of a pharyngeal. The following
shows that this also takes place in Jiiddu. Bayso and Jiiddu have front vowels
from this *a-raising, where Rendille, Garre, and Tunni retain older *a .
This shared innovation not only points toward the closer relationship of Jiiddu
and Bayso, it further detracts from the claim for palatalization as an "older"
law, as we shall see.

Table 3. Raising of *a

	Bayso	Jiiddu	Rendille	Garree	Tunni
'head'	mete	midi'	mataḥ	madah	mada

The age of this raising rule explains why the following words are palatalized
in Jiiddu, but not in the rest of the languages where palatalization occurred:
the original *a had been raised in Jiiddu, but not in the rest.

Table 4. New Jiiddu environments for palatalization

	Bayso	Jiiddu	Rendille	Garree	Tunni
'name'	mege	miji'	magaḥ	ma'ag	maga
'hand/arm'	gene	jini'	--	ka'an	gana'

5. Conclusion

    We have shown that there is a rule older than palatalization in Jiiddu:
*a-raising. If this latter were not older than palatalization, the Jiiddu col-
umn in Table 4 would have had velars followed by front vowels (from *a-rais-
ing), unpalatalized velars in the environment which created palatals! This
shared *a-raising in Jiiddu and Bayso counters the case for a "Digil" cluster
by demonstrating that both palatalization and spirantization were changes which
proceeded in Jiiddu separately from the partially parallel changes in the Soo-
maali II, or Sam, branch, although areal influence may have helped to motivate
in one case or the other.

    The Jiiddu palatalization in its particulars (the non-occurrence in 'water'

and the unique occurrences in Table 4) reveal that there is little ground, us-
ing this velar palatalization, for Lamberti's placement of Jiiddu in "Digil",
since (i) this change is not unique to "Digil", and (ii), given that Jiiddu
palatalization was preceded by *a-raising, which fed it, while the Soomaali II
palatalization was not so affected, the changes are not identical. In other
words, palatalization in Jiiddu had to have occurred after the separation of
Jiiddu from the rest of Soomaali.

[Without the generosity of Professor Christopher Ehret, who provided his time
as well as his personal field notes, this paper would not have been possible.
We thank Prof. Ehret while we hasten to add that any errors to be found herein
are wholly our own device.]

REFERENCES

Banti, Giorgio. 1983. "Possessive affixes in the Somali area." In Thomas
    Labahn and Hussein M. Adam (eds.), *Proceedings of the Second Internation-
    al Congress of Somali Studies, Hamburg, April 1983*, to appear. Hamburg:
    Helmut Buske Verlag.

Ehret, Christopher and Mohamed Nuuh Ali. 1983. "Soomaali classification." In
    Thomas Labahn and Hussein M. Adam (eds.), *Proceedings of the Second Inter-
    national Congress of Somali Studies, Hamburg, April 1983*, to appear.
    Hamburg: Helmut Buske Verlag.

Fleming, Harold C. 1964. "Bayso and Rendille: Somali outliers." *Rassegna di
    Studi Etiopici* 20:35-96.

Hayward, R. I. 1978-1979. "Bayso revisited: some preliminary linguistic ob-
    servations." *Bulletin of the School of Oriental and African Studies* 41:
    539-570, 42:101-132.

Heine, Bernd. 1978. "The Sam languages: a history of Rendille, Boni and Soma-
    li." *Afroasiatic Linguistics* 6(2):1-93.

Lamberti, Marcello. 1983. "The linguistic situation in Somalia." In Thomas
    Labahn and Hussein M. Adam (eds.), *Proceedings of the Second International
    Congress of Somali Studies, Hamburg, April 1983*, to appear. Hamburg: Hel-
    mut Buske Verlag.

Moreno, Mario Martino. 1951. "Brevi notazione di Ǧiddu." *Rassegna di Studie
    Etiopici* 10:99-107.

Oomen, Antoinette. 1981. "Gender and plurality in Rendille." *Afroasiatic
    Linguistics* 8(1):35-75.

Sasse, Hans-Jürgen. 1979. "The consonant phonemes of Proto-East-Cushitic (PEC):
    A First approximation." *Afroasiatic Linguistics* 7(1):1-67.

Yaasiin, Keenadiid. 1976. *Qaamuuska Af-Soomaaliga*. Moqdishu: Ministry of
    Higher Education and Culture.

ON THE REALITY OF VOWEL COALESCENCE IN YORUBA

Oladele Awobuluyi
University of Ilọrin

All the cases of vowel coalescence reported in the literature so far follow the same pattern when considered from the standpoint of the outputs of the process: such outputs are always vowels in both the front and back series. Thus, in Swahili the vowels /a/ and /i/ coalesce to produce /e/ , a front vowel, while /a/ and /u/ coalesce to produce /o/ , a back vowel. Similar occurrences have been reported for Kasem (Chomsky and Halle [1968:358-364], following Callow [1965]), Ọwọn Afa [Awobuluyi 1972], and Xhosa [Aoki 1974].

It would appear, however, that that is not the only possibility in language. There is evidence to suggest that Standard Yoruba not only displays vowel coalescence, as recent literature on the phonology of the language fails to indicate, but also features output vowels belonging to the back series only. The relevant data are exemplified below:

(1) i. o   ni   ìkéde   → olùkéde
         agent   possess   announcement   'announcer'

    ii. o   ni   ìyà   → olùyà
         agent   possess   suffering   'ill-starred person'

   iii. ìsọ   kí   ìsọ   → ìsọkúsọ
         saying   any   saying   'foolish/loose talk'

    iv. ìwà   kí   ìwà   → ìwàkúwà/ìwàkíwà
         habit   any   habit   'bad habits, any habit'

     v. ibi   ìjokòó   → ibùjokòó
         place   sitting   'seat'

    vi. ibi   ìgbé   → ibùgbé
         place   habitation   'abode, residence'

   vii. a   rí   ogbó   → arúgbó
         agent   see   old-age   'elderly person'

  viii. òjì   lé   igba   → òjìlúgba
         forty   be-in-   two hundred   'two hundred and forty'
                   excess

    ix. ò   ṣe   ìwọn   → òṣùwọn
         agent   be   measurement   'unit of measurement'

     x. jẹ́   ìbà   → júbà
         pay   homage   'pay homage'

    xi. gbọ́   ìròó   → gbúròó
         hear   sound   'hear from someone'

   xii. pa   iró   → purọ́/parọ́
         tell   falsehood   'tell lies'

  xiii. sá   iré   → súré/sáré
         run   race   'run a race'

xiv.	dá	ìbùú		→	dúbùú/dábùú
	traverse	breadth			'lie across, traverse'
xv.	ò	ṣa	ògbó	→	òṣùgbó
	agent	pick-up	staff		'member of the òṣùgbó cult'
xvi.	dá	opẹ́		→	dúpẹ́
	give	thanks			'give thanks'
xvii.	orí	ekún		→	orókún
	top	knee			'knee, knee cap'
xviii.	ogún	èjì		→	ogójì
	twenty	two			'forty'
xix.	ogún	èje		→	ogóje
	twenty	seven			'one hundred and forty'
xx.	sun	ẹkún		→	sọkún/sunkún
	shed	tears			'cry, shed tears'
xxi.	ogún	èta		→	ogóta
	twenty	three			'sixty'
xxii.	ogún	àrùnún		→	ogórùnún
	twenty	five			'one hundred'
xxiii.	da	èbá	ilè	→	dòbálè
	become	vicinity	ground		'prostrate oneself'

The phonetic mergers encountered in the above data can be summarized as follows:

(2)	i.	i + i	→	u	(in (1), i-vi)
	ii.	i + o	→	u	(in (1), vii)
	iii.	e + i	→	u	(in (1), viii-ix)
	iv.	ẹ + i	→	u	(in (1), x)
	v.	ọ + i	→	u	(in (1), xi)
	vi.	a + i	→	u	(in (1), xii-xiv)
	vii.	a + o	→	u	(in (1), xv)
	viii.	a + ọ	→	u	(in (1), xvi)
	ix.	i + e	→	o	(in (1), xvii)
	x.	un + e	→	o	(in (1), xviii-xix)
	xi.	un + ẹ	→	ọ	(in (1), xx-xxi)
	xii.	un + a	→	ọ	(in (1), xxii)
	xiii.	a + ẹ	→	ọ	(in (1), xxiii)

The phonological process illustrated in (1-2) regularly occurs in every Standard Yoruba utterance meeting the structural descriptions of (a) the agentive construction illustrated in (1,i-ii) and (b) the disapprobative construction in (1,iii-iv). Its next highest degree of occurrence (probably ten to fifteen cases) is in the genitival construction in (1,v-vi). Elsewhere, it occurs

sporadically, but such that the total number of utterances involved may well
be over two hundred.

Considerations of the overall size of the relevant data apart, the clear
pattern formed by the output vowels seen in (2) suggests that some generaliza-
tion lies hidden in (1). That generalization would definitely be missed
should the utterances exemplified in (1) be regarded as exceptions to be hand-
led with a hodgepodge of ad-hoc devices.

To capture the generalization in question, this paper proposes that Stan-
dard Yoruba displays vowel coalescence. The process appears to be governed by
the following five related, partly language-specific and partly cross-linguis-
tic, principles:

(3) i.   the output vowel must be rounded;

     ii. the output vowel must be phonetically distinct from the input vowels;

     iii. the output vowel copies the functional tongue height of the second
          input vowel;

     iv. in the event that (3ii) and (3iii) clash, the output vowel assumes
          the highest tongue height;

     v.   the two input vowels must not both be rounded.

There is no viable alternative to vowel coalescence as a means of account-
ing for the data in (1). Thus, the data cannot be accounted for with vowel de-
letion, because most of the underlying forms that deletion would require would
be either ill-formed, non-existent or semantically distinct from their corres-
ponding surface versions.

Vowel harmony supplemented by total assimilation and vowel deletion cannot
be used either. For one thing, that method would require the employment of a
rule of total assimilation across a stop which does not otherwise exist. For
another, even with that kind of unattested rule plus deletion, the method would
only be able to handle four of the twenty-three examples in (1), namely,
(1 xviii-xix, xxi-xxii).

Partial assimilation-cum-deletion, the method advocated by Aoki [1974], is
of no avail either. In the first place, there is no rule of partial vowel as-
similation in Standard Yoruba. Secondly, such a rule would in any case be of
no effect whatsoever for eight of the thirteen formulas in (2) above. Thus,
there is no way that e and i could partially assimilate to eventually yield
u , as in (2 iii).

Stahlke [1976] rejects Aoki's approach to vowel coalescence and endorses in-
stead the Chomsky-Halle [1968:358-364] proposal that vowel coalescence be han-
dled by means of transformational rules. The fact, however, is that such rules
can only effect coalescence, miraculously as it were, and without being able to
explain precisely how the changes concerned are accomplished. It must be admit-
ted, therefore, that they are unsatisfactory.

Stahlke [1976] makes the interesting observation that the output of coales-
cence is always a compromise between the two original input segments. If the
technical problems involved in formalizing this observation could somehow be ov-
ercome, it might provide a viable alternative to conventional transformational

rules as a means of handling coalescence in an explanatory fashion. It turns out, however, that many of the outputs of vowel coalescence in Standard Yoruba can in no way be construed as compromise forms. Thus, it is not clear how u can be called a compromise between ə and i in (2) vi. a + i → u . Hence, even if Stahlke's observation could somehow be formalized, it would be unable to handle most of the Standard Yoruba data above.

    In these circumstances, it is clear that the Standard Yoruba case reported here shows that (vowel) coalescence poses a far greater challenge to phonological theory than was previously thought to be the case. The challenge has to do specifically with (a) explaining in rational and non-metaphysical terms the precise way or ways in which the phonetic changes it involves are accomplished and (b) evolving a rule schema which fully incorporates such an explanation. Standard Yoruba offers no clues whatsoever in this regard, neither do the other languages examined so far, going by the indications in Stahlke [1976]. Perhaps still other languages will, when relevant information becomes available on them.

REFERENCES

Aoki, P. K. 1974. "An observation of vowel contraction in Xhosa." *Studies in African Linguistics* 5:223-241.

Awobuluyi, O. 1972. "The morphophonemics of Ọ̀wọn Afa." *Research Notes* 5:25-44.

Callow, J. C. 1965. "Kasem nominals—a study in analyses." *Journal of West African Languages* 2:29-36.

Chomsky, N. and M. Halle. 1968. *The Sound Pattern of English*. New York: Harper and Row, Publishers.

Stahlke, H. F. W. 1976. "Segment sequences and segmental fusion." *Studies in African Linguistics* 7:41-63.

THE EXPRESSION OF NEGATION IN EGYPTIAN COLLOQUIAL ARABIC (ECA)

Hany Amin Azer
Cairo

In English the semantic load of negation affects either the whole sentence or part thereof. In the case of Egyptian Colloquial Arabic (ECA) the negative particle (the most common of which are miʃ and ma-..-ʃ) is realized surface structurally on the modal (when there is one and the tense is present) or on the tense carrier (the auxiliary kaan when the tense is past). However, it could also be attached to the lexical verb (a syntactic option which is ungrammatical in English). In presence of a modal, if the negativizer appears on the MV that follows, the resulting string is not the negative counterpart of the positive (modal) sentence. Rather, the positiveness of the modal is retained and the structure would then come to indicate that the subject can, would, might...etc. (when he likes) not + MV. In other words, the negative load is both syntactically and semantically externalized. In this case the discontinuous negativizer ma-..-ʃ could be employed. When the negative appears on the modal itself some will accept the single word negativizer miʃ and others the discontinuous ma-..-ʃ .

The single word negativizer miʃ appears before (i) adjectives, (ii) nouns, (iii) lexical verbs (with or without the future prefix ḥa- attached), and (iv) certain particles notably, maʕa , ʕand , li , and wayya . The discontinuous negativizer, on the other hand, appears on the pronouns. This is only a syntactic option used for the expression of certain attitudes shown later. The more frequent Pron. + (miʃ + MV).. string signifies no overtones.

The examples given below together with their paraphrase gloss establish the fact that the two negative particles are not in free variation. Selectional restriction rules will both delimit and govern their use. In other words, structural variations which appear to be stylistic options to the uninitiated speaker perform different functions, i.e. convey different messages. Any change in the message affects the code (ambiguous sentences excepted) though not vice versa.

Examples of negative structures with miʃ :

(1) miʃ mumkin   agiilak bukra   pre-modal position
    not possible I come to you tomorrow

    'I cannot come to you tomorrow'

(2) miʃ ʔabliin baʕd xaaliṣ   pre-lexical verb position
    not they accept each other completely

    'they totally resent each other'

(3) ʔanna miʃ ʃayyaal ʕandak   post-pronominal position
    I   not I work at you

    'I don't work for you'

(4) miʃ ḥasmaʕak   pre-verbal position
    not I listen to you   verb prefixed by ḥa

    'I won't listen to you'

(5) ʔilʕarabiyya di   miʃ sariiʕa ʔawi   pre-adjectival position
     the car   this not fast   very

     'this car isn't very fast'

     Examples of negative structures with ma-..-ʃ :

(6) mafiiʃ luzuum tiigi badri
     there isn't need you come early

     'there's no need for you to come early'

(7) maniiʃ gayy   bukra
     I'm not I come tomorrow

     'I'm not coming tomorrow', i.e. I insist on not...

(8) magatluuʃ ʕalaawa min sanateen
     not come to him increase from two years

     'he hasn't had an increase in salary for two years'

   Since the grammar of ECA is greatly synthetic, i.e. depending largely on
enclitics to map up word relations, word order is relatively loose. The dis-
continuous negativizer together with appropriate enclitics can generate single
word negative sentences like the following:

(9) mafhimtiʃ   'I/you didn't understand'
     mabiyeʕrafʃ   'he doesn't know'
     mazarunaaʃ   'they didn't visit us'
     maraḥluhumʃ   'he didn't go to them'

   Although the single word negativizer is fast becoming standard with inde-
pendent pronouns, we still hear ma-..ʃ with these but with special overtones
and speaker attitudes towards the communicative value of his utterance. That
is, negative pronouns when used in statements indicate something like insis-
tence, warning (or even threat), (self)assertion of authority, whereas in ques-
tions (or tags), they indicate something like surprise, resentment, or disa-
greement. Notice the difference between the following pair:

(10) a. mantiiʃ gayya maʕaana   ↑   'aren't you coming with us?'
         you(fem.)are not you coming with us i.e. I'm surprised if you aren't

     b. mantiiʃ gayya maʕaana   ↓   'you're not coming with us' i.e.
                                            I insist that you don't come
                                            with us

   The following are the negative pronouns of ECA:

SINGULAR   PLURAL

maniiʃ   1st person (masc. & fem.)   mahnaaʃ   1st person
mantaaʃ   2nd person (masc.)   mantuuʃ   2nd person
mantiiʃ   2nd person (fem.)
mahuwwaaʃ   3rd person (masc.)   mahummaaʃ 3rd person
mahiyyaaʃ   3rd person (fem.)

(N.B. Gender distinction is not shown on negative plural pronouns.)

Use of the discontinuous negativizer ma-..ʃ may result in certain phono-
logical changes exemplified by the following:

(i) In the first person singular /-ii-/ is used, i.e. maliiʃ , maʕayiiʃ ,
(cf. maniiʃ above).

(ii) The vowel of the particle is elided in the following: mal(i)haaʃ ,
mal(i)kiiʃ , mal(u)humʃ , mal(u)kumʃ , mam(a)ʕayiiʃ , mam(a)ʕakʃ , etc.

(iii) The final /-h/ of the prepositional fiih disappears from the corres-
ponding negative form (unless required by agreement with a preceding noun).
Thus,

(11) mafiiʃ   ṭalaba   filfaṣl   'there aren't any students in the
      there aren't students in the class   classroom'

(12) ʔilfaṣl   mafihʃ   ṭalaba 'there aren't any students in the
      the classroom there isn't in it students classroom'

(iv) In a line with a trend that applies to other suffixes, the use of /-ʃ/
implies the following:

    (a) occurrence of the extra vowel to avoid a sequence of three conson-
       ants, e.g.

(13) lissa   maruhtiʃ   'I haven't gone yet'
      not yet I have gone-not

    (b) lengthening of a preceding vowel, e.g. makatabuuʃ 'they didn't
       write/he didn't write it', maguuʃ 'they didn't come' (3rd person
       plural, no gender distinction shown), magaaʃ 'he didn't come'
       (3rd person singular masc.).

In negative imperatives the second person imperfect forms are used:

(14) a. matidxulʃ   'don't go in!'
     b. matzʕaʔʃi kidda   'don't shout so!'
     c. matxallihumʃ yintizru 'don't let them wait!'
     d. matitʔaxrʃ bukra   'don't be late tomorrow!'

other negative structures in the dialect include the following:

(15) laada walaada laakin dukha   'neither this nor this but that'
      not this not this but that

(16) latxiin wala-rfayyaʕ laakin mutawassiṭ 'neither fat nor thin but average'
      not fat and not thin but   medium

(17) lazaakir wala ḥayzaakir   'he has neither studied nor is he
      he not studied and he will not study   going to'

(18) ʔirraagil da labyesmaʕ wala byetkallim 'this man neither hears nor talks'
      the man this not hears and not talks i.e. he's both deaf and dumb

Examples (15-18) establish laa .. wala as corresponding to the English
'neither .. nor'. The actual negative particle in the construction is la-
(lengthening of the vowel in example (15) above is due to contraction). wa is

prefixed to every la after the first. Theoretically there is no limit to the
number of words which may be preceded by the particle.

Imperfect prefixes, like the future marker ḥa- , are often omitted with
verbs other than the first as in

(19)   laḥyiigi wala yetkallim   'he will neither come nor give us a
       he will not come and not he talks   ring'

Compare (19) with (17) above.

It is possible for /ʃ/ to be suffixed to a verbal form after the first,
e.g.

(20)   la saʔal ʕannak wala xaragʃ   'he has neither asked about you nor
       not he asks about you and not   has he left'
          he not leave

It is also quite as frequent to have the first negative of the discontinu-
ous type ma-..ʃ . For example,

(21)   maxaragʃi yetmaʃʃa wala zakirʃ druusu 'he neither went out for a walk nor
       he didn't go out to stroll and not he   did he study his lessons'
          didn't study his lessons

Emphatic negatives are those which have ma- without its final -ʃ . This
type of negative occurs frequently with a few words commonly associated with
negation, e.g. ʕumr and ḥadd , and with oaths. The first of these words ʕumr
(lit. life) usually shows as its final sound a pronominal suffix. It comes to
mean 'never' when ma- appears on the ensuing verb. Even on the occasion when
one hears -ʃ it must be shown on ʕumr after the pronominal suffix has been
added. Compare the following:

(22) a. ʕumri maʃuft waaḥid zayyu   'I have never seen anyone like him'
         in my life I didn't see   someone
             like him

     b. maʕumriiʃ ʃuft waaḥid zayyu   'never in my life have I seen anyone
                                             like him'

Note: the occurrence in (22b) of -ii- before the final ʃ .

The second type of emphatic negative is oaths. The common oaths in ECA are
wallaahi (lit. and my God), wirabbina (lit. and our Lord) and winnabi (lit.
and the prophet), to which may be added ʔin alla (God willing) and in which
case a following perfect seems to be a must. Thus:

(23)   laa wallaahi maʔdar   'no, by heaven I cannot'
       no by God   I cannot

(24)   ʔinʃalla maḥaddi xarag   'may nobody ever go out, then!'
       even though nobody leaves

GUMUZ, KOMAN, MAO, AND OMOTIC

M. Lionel Bender
Southern Illinois University-Carbondale

1. Introduction

Several languages of the Ethio-Sudan border area have long defied classification. Among these are Gumuz (a single language with many local varieties of which I will deal with Kokit, Sai, Sese, Disoha, and "Hamej" of Ethiopia) and "Mao" (several languages, of which I will deal with Hozo-Sezo, Bambeshi-Diddesa, and Ganza). The major difficulty lies in deciding whether these languages belong to Koman (of the Nilo-Saharan Phylum) or Omotic (of the Afroasiatic Phylum). Partial reconstruction of lexica of these two families now makes it possible to arrive at an unequivocal answer [Bender 1984, forthcoming].

2. Gumuz is Koman

Out of the first 100 basic items on my Koman lists, about 46 can be reconstructed quite firmly to Proto-Koman. The structure of Koman is as follows: I. Komo-Twampa (Uduk), 77% shared basic lexicon; II. Opo (Ansita) vs. I, 62% average shared basic lexicon; III. Kwama vs. II, 42%; IV. Anej (Gule) vs. III, 28%. Note that Anej-Kwama is 18% only, Anej vs. others averages 31%.

Only the least problematical items found in both Anej and the rest of Koman (or strongly in Koman if not found in Anej) will be considered here. A number of other cases of likely comparisons with part of Koman or Anej alone will not be listed here.

	Item	Common Gumuz	Proto-Koman[1]
6.	bird	mEta	*mbit
9.	blood	məxa	*baš ∿ s'amb[2]
11.	breast	kuwA	*koi
14.	cloud	k'uda	*Vku(d)
19.	dog	k'owa	*k'au
22.	ear	(t)s'ea	*s'e
23.	eat	sa	*ǧa
31.	foot	cogwa	*ǧog
32.	give	kYE, tYE	*kE(l)
43.	kill	šok'ʷ	*k'oš[2]
49.	louse	sukuna	*šuk'en
56.	neck	-ɓiya	*ɓia
73.	sleep	ǯiʔi	*ʔiš
75.	smoke	ɗukwa	*kur ∿ kudʳ[2]
82.	tail	tsia	*sin
87.	tongue	kwotɛta	*let'
89.	tree	gYa	*c(ʷ)a ∿ sa
92.	water	a(ʔ)ya	*yiʔi
95.	what?	ɪnts'e	*dVn[2]

[1]From Bender [1984] with slight modifications. Capital letters represent not-fully-determined phonemes.

[2]Consider reverse order ("metatheses").

The only convincing agreement with Proto-Omotic is 16, 'come': Gumez
we , Omotic *wA .

3. "Mao" Languages are Omotic

The structure of Omotic is something like: I. North Ometo-South Ometo,
average shared basic lexicon 63%; II. Chara vs. I, 44%; III. Gimira vs. II,
42%; IV. Kefoid (Gonga) vs. III, 38%; V. Janjero (29%) and Dizoid or Majoid
(28%) vs. IV; VI. Aroid (South Omotic) vs. V (North Omotic), 19%. Note that
Dizoid-Janjero is 18%.

"Mao" languages agree with about half of approximately 58 tentative Proto-
Omotic items. The best cases (some having only one of "Mao"-Hozo-Sezo-Ganza
represented) are given below.

	Item	"Mao"	Hozo-Sezo	Ganza	Proto-Omotic[1]	
6.	bird	kEfE	----	----	*(k)aB	
7.	burn	taas-[2]	(š)aaTs	----	*šaT	
13.	claw	----	s'uk'um	----	*suKuN	
16.	come	iŋKʸa	kwa	----	*y; *wA	
19.	dog	kana	----	kana	*kʸan	
20.	drink	iš	iš	----	*(w)oc	(often uš)
22.	ear	waale	we(y)	waya	*ay	(often way)
23.	eat	mi	ma , me	----	*(u)mu	
25.	eye	aaɸɛ	abi , awi	ap	*a(y)B	
26.	fat	----	k'o(t)s	----	*ko	
28.	fire	kaamɛ	taamɛ	----	*tama	
31.	foot	togɛ	tuugi	tuku	*toK	widespread
35.	grass	maara	mis(')	mati	*mAt'	widespread
37.	hand	kusɛ	ku(t)si	konso	*kuc	
38.	head	tookɛ	toki , towi	kwothi[2]	*tV(C)	
42.	I	tiya	----	----	*inta , tana	
44.	knee	tu-kume	k'uumi	----	*k'um , *gum	
51.	meat	ɔškə	o(t)si	wasi	*ac , aš	
52.	moon	aansɛ	ɛɛmsi	anzi	*ats	
54.	mouth	----	----	nana	*noono	
59.	nose	šiinte	šin(t')i	sindi	*sint'	
62.	person	ɛɛsɛ	----	ciya	*AT	(often ats)
75.	smoke	ts'uɛ	s'ubi , s'uwi	----	*c'uuB	
76.	snake	šoošA	š∞šE	----	*šoš	
80.	sun	awa	aBi	aba	*awa	
88.	tooth	aats'E	(h)aats'E	----	*as' , ac'	
89.	tree	inzE	iin(t)s	insa	*(m)inc'	(often inc')
92.	water	haats'E	haan(ts')	ha?a	*(K)a(i)(s')	
98.	woman	muns'E	----	----	*ma(yn)Z	

[1]From work now in process.

[2]Possible reversal.

4. Loans Which Deceive

The following are fairly clearcut cases of loans whose status as such becomes clear when tentative proto-languages are taken into account:

```
 6.  bird    Kwama   haaŋa ,   "Mao"  haaŋa .
17.  cut     Kwama   k'ɔfɔ ,   "Mao"  k'ofi .
19.  dog     Kwama   kana (< Omotic); Hozo-Sezo  wɨšĭ  (< Amharic).
28.  fire    Gumuz   manja (prob. Nilotic).
29.  fish    Hozo-Sezo  wats'ĭ ,   Koman  wats' .
40.  heart   "Mao"  εŋε ,   Kwama  EŋgE .
45.  know    Hozo-Sezo-"Mao"  al- ,   Kwama  ala ,   Twampa  ari .
64.  red     Hozo-Sezo  tant ,   Kwama  tantaa .
69.  see     Kwama  šĭ ,   Hozo-Sezo  šĭ .
70.  seed    Hozo-Sezo and Omotic  zara (< Amharic);  "Mao"  šok' ,
             Kwama  šɔɔgɔ .
72.  skin    Kwama  sɔɔŋk'o ,   Hozo-Sezo and Omotic  go(ŋ)K .
79.  stone   "Mao"  šooe ,   Opo  šawa or  jao ,   other Koman
             reversed as  (w)oš .
82.  tail    "Mao"  yoŋka ,   Janjero  ɔŋu ,   Kefa  uŋk ,
             Kwama  ooŋgo(?) .
```

REFERENCES

Bender, M. Lionel. 1984. "Proto-Koman Phonology and Lexicon." *Afrika und Übersee* 66:259-297.

Bender, M. Lionel. forthcoming. *Proto-Omotic*.

NOTE

[A full version of this paper entitled "The Limits of Omotic" will appear in R. Hayward, Forth.: *Omotic Language Studies*.]

QUANTITATIVE ANALYSIS OF SWAHILI VOCABULARY

Elena Bertoncini
Istituto Universitario Orientale, Napoli

It is a well-known fact that an important portion of the Swahili vocabulary consists of Arabic and other borrowings. I tried to figure out the ratios of the Oriental and European loanwords to Swahili words in the Swahili language in my *Tentative Frequency List of Swahili Words* [1973], distinguishing between single words and occurrences.

In the present analysis I have posed the following questions: in which spheres of the Swahili vocabulary are loanwords most numerous and in which spheres are Bantu words most numerous? The material I used was 40,000 word occurrences taken from 100 sources which were divided into four groups: ancient texts, modern literary texts, journalistic texts, and miscellaneous contemporary texts. In order to embrace the largest strata of the written language, samples of most varied kinds were chosen so that they might represent the greatest possible number of Swahili styles, from classical poetry, chronicles, and fairy tales to modern poetry and short stories, from textbooks and political pamphlets to newspaper articles including political news, reports, crime page, economy, culture, sports, and so on. The complete list of the sources is to be found in Bertoncini [1973]. It must be borne in mind that the material for this analysis was collected in the 2nd half of the Sixties, when the only modern prose writers available to me were Shaaban Robert and the authors of the short stories and essays published in the journal *Swahili*.

The analysis is based on Hallig & Wartburg's [1952] division of the vocabulary, partly modified according to the needs of Swahili. The whole Swahili vocabulary is divided into 7 sections and several sub-sections (cf. Table I.)

The 1st section, *Nature*, includes the sky and the air, the earth, plants, and animals. Besides the nouns, there are verbs such as -pambazuka 'become clear', -vuma 'blow', -iva 'become ripe', etc.

The 2nd section, *Man as a physical being*, contains the following sub-sections: the human body, its organs and their functions (there are such verbs as -konda 'grow thin', -kua 'grow up', -lamba 'lick', etc.); the senses and their activity; sleeping and waking; health and illness, including medical service; movements and positions (besides many nouns and verbs, there are some adverbs such as upesi 'quickly'; further eating, clothing, and housing.

In the 3rd section, *Man as a spiritual being*, there are the concepts connected with thinking, feeling, willing, and doing (in a general sense, not the actual work of jobs which are in the 5th section; I include here, for instance, -acha 'leave', -gumu 'difficult', tatizo 'problem', mpango 'project', huenda 'maybe', -faa 'be useful', lengo 'aim'); there are also the subsections ethics, language, the mass media, the arts and social sciences, and religion.

In the 4th section, *Man as a social being*, we find existence in general, where I put e.g. kuwa 'to be, ulimwengu 'the world', -enyewe 'self', kiumbe 'creature', and kitu 'thing'; there are further the subsections human

life from birth to death; the family and marriage; social relations, pastimes and festivities, and sports.

The 5th section, *Social organization and politics*, is quite extensive. It concerns communities and countries; state, government and politics; justice and police; defense, war and the army; education; agriculture, hunting and fishing; work and employment with the relative tools and materials; technique, industry, the economy, and the natural sciences; commerce, finance, and property (here we find any concept related with possession, such as -pa 'give', -potea 'get lost', uko-sefu 'lack', mwombaji 'beggar'); the last sub-section is transport, post and telecommunications.

The 6th section, *Natural laws*, includes properties (with brightness and darkness, sounds, and most adjectives except the evaluating ones like -ema 'good', -baya 'bad', which are put into ethics). The sub-section forms, values, methods, and relations contains such heterogeneous items as mfano 'example', hivi 'like this', kuliko 'more than', mbalimbali 'different', mviringo 'anything round', -ingine 'another', -panga 'put in order', etc. The remaining sub-sections are quantity, order, weights and measures; space; time; causes and conditions (with some adverbs and conjunctions like kwa sababu 'because'); changes and evolution, e.g. -sitawi 'flourish'.

In order to embrace the whole of Swahili vocabulary, I added the 7th section, *Pronouns and particles* (that is, exclamation, some conjunctions and prepositions).

Often the same item could belong to more than one section or sub-section, e.g. kufa 'die' could be in *human life* or *existence*. In this case I have chosen one section in which the word is counted.

I stick to the meaning actually found in the texts, even if it may be different from that given by the dictionaries. In some cases the meaning of a word changes in different groups of texts. For instance, mkutano 'meeting' is put into social relations in Group II (modern literary texts) and into politics in Group III (journalistic texts); upinduzi means "upsetting" (feeling) in Group I (ancient texts), and "revolution" in Group IV (miscellaneous contemporary texts).

I compiled a separate word list and the relative word counting for each of the four groups of texts and then did the same within these groups for each language cluster, i.e. for words of Bantu, Oriental, or European origin. Although each group is based on 10,000 word occurrences, it must be borne in mind that the number of different words is much smaller. (See Table II.)

In all types of texts the words of Bantu origin represent little more than 50%, but there are among them the words with the highest frequency, hence in the count of occurrences the ratio of the words of Bantu origin is much higher, about 70%. (Words from other African languages, e.g. Cushitic, are also included here.)

The ratio of the Oriental loanwords oscillates between 45% in the ancient texts and 30% in the newspapers. The European borrowings, on the contrary, are most frequent in the newspapers (20%) and practically non-existent in the ancient texts.

Another observation we can make from the above table is that the ancient

texts have the richest vocabulary, that is, the highest number of different
words, and the newspapers have the poorest vocabulary.

As regards semantic division of the vocabulary into sections, in all groups
the less numerous section is the last one, *Pronouns and particles*, but it con-
tains some Bantu and Oriental items with a very high frequency. On the other
hand, the first section, *Nature*, not only contains few items, but their fre-
quency is also low. Only in the ancient texts, Bantu words in this section are
slightly more numerous.

The richest section on the whole is C. *Man as a spiritual being*, except in
the newspapers and in the European cluster, where E. *Social organization* leads.
An important section for the Bantu cluster of the ancient texts is B. *Man as a
physical being*, whereas F. *Natural laws* is well represented in modern literary
texts and in the Oriental cluster as a whole. D. *Man as a social being* has
some importance only in the European cluster and in the newspapers but contains
two Bantu words from the top of the frequency list: kuwa 'to be' and mtu
'man'.

Observing Table I, you will see beside each section and sub-section in
brackets the total number of items and the percentage of items in the Bantu,
Oriental and European clusters respectively. These figures are the sums of the
results obtained in each group. If I had made a single list instead of four,
the resulting figures would be lower because many items recur in all groups.

Summarizing the results of the analysis, it can be affirmed that most words
of Bantu origin are connected with movements and positions. There are also
many Bantu words in the sphere of spiritual life (feelings, willing and doing,
ethics), but the majority of items in this sphere is provided by Oriental loan-
words. The same is true of terms dealing with time and quantity.

Bantu words predominate in zoological and botanical terminology and in the
sub-sections concerning the sky and the air, the earth, the human body, sensor-
ial activity, sleeping, food, clothes, and housing as well as in the sub-sec-
tions concerning agriculture, the family and marriage, human life, work, indus-
try, social organization, space, and properties. They have a slight majority
in the sub-sections on education, language, social relations and pastimes, the
mass media, the arts and the social sciences.

Oriental, mostly Arabic, loanwords provide the religious terminology and
other terms concerning spiritual activity. Many of them are connected with ex-
istence and with natural laws (time, quantity, forms and relations). Even many
particles (conjunctions and exclamations) are of Arabic origin. Most of these
borrowings entered Swahili long ago; however, Oriental loanwords also predomin-
ate in some spheres of modern life, such as commerce, justice, politics, and
transport, but in these last two sub-sections all three language clusters are
of almost equal importance. European, above all English, loanwords are found
especially in the newspapers and concern mostly modern life. They occur most
often in the spheres of politics, transport and sports, and also in those of
social relations and pastimes. Other terminological sub-sections relatively
well represented are commerce, justice, education, work and tools, the arts,
the mass media, medical service, food, and clothes. Finally, several European
borrowings concern time, weights, and measures.

Table I. Semantic Division of the Swahili Vocabulary

>   Figures in parentheses represent total number of items: Bantu %,
>   Oriental %, European %.

A. NATURE (429: 71, 26,3)

>   I.   The sky and the air. (48: 65, 27, 8)
>   II.   The earth. (138: 65, 31, 4)
>   III. Plants. (112: 70, 28, 2)
>   IV.   Animals. (131: 82, 18, 0)

B. MAN AS A PHYSICAL BEING (1,124: 73, 21, 6)

>   I a. The human body, its organs and their functions. (147: 89, 10, 1)
>   b. The senses and their activity. (42: 90, 10, 0)
>   c. Sleeping and waking. (20: 95, 5, 0)
>   d. Health and illness; medical service. (86: 51, 31, 18)
>   e. Movements and positions. (442: 81, 18, 1)
>
>   II a. Eating. (121: 63, 22, 15)
>   b. Clothing. (108: 54, 31, 15)
>   c. Housing. (158: 62, 30, 8)

C. MAN AS A SPIRITUAL BEING (2,182: 42, 53, 5)

>   I a. Thoughts, intellect, aptitudes and inner life. (284: 44, 54, 2)
>   b. Feelings. (478: 47, 51, 2)
>   c. The will; general activity, its possibilities and modalities.
>   (786: 40, 58, 2)
>   d. Ethics and character. (265: 45.5, 54, 0.5)
>
>   II a. Language. (256: 44.5, 42.5, 13)
>   b. The mass media. (65: 45, 29, 26)
>   c. Literature, music, fine arts, philosophy and social sciences.
>   (130: 45, 35, 20)
>   d. Religion. (202: 20, 77, 3)

D. MAN AS A SOCIAL BEING (688: 53, 33, 14)

>   I.   General existence. (127: 47, 52, 1)
>   II a. Human life from birth to death. (137: 63, 32, 5)
>   b. The family and marriage. (93: 76, 23, 1)
>   c. Social relations, pastimes and festivities. (221: 44, 42, 14)
>   d. Sports.

E. SOCIAL ORGANIZATION AND POLITICS (1,347: 47, 34, 19)

>   a. Social organization, communities and countries. (103: 68, 25, 7)
>   b. State, government and politics. (260: 32, 39, 29)
>   c. Justice and police. (109: 33, 46, 21)
>   d. Defense, war and the army. (143: 55, 33, 12)
>   e. Education. (70: 40, 27, 33)
>   f. Agriculture, hunting and fishing. (96: 88, 6, 6)
>   g. Work and employment; tools and materials. (127: 70, 13, 17)
>   h. Technique, industry, the economy and the natural sciences.
>   (20: 60, 5, 35)

  i. Commerce, finance and property. (255: 39, 50, 11)
  j. Transport, post and telecommunications. (164: 30, 36, 34)

F. NATURAL LAWS (1,228: 54, 41, 5)

  a. Properties. (207: 68, 30, 2)
  b. Forms, values, methods and relations. (213: 42, 55, 3)
  c. Quantity, order, weights and measures. (245: 45, 47, 8)
  d. Space. (247: 76, 22, 2)
  e. Time. (275: 43, 45, 12)
  f. Causes and conditions. (11: 10, 90, 0)
  g. Changes and evolution. (30: 40, 60, 0)

G. PRONOUNS AND PARTICLES (236: 67, 32, 1)

  a. Pronouns. (99:89, 9, 2)
  b. Conjunctions, exclamations and some prepositions. (137: 51, 49, 0)

Table II. Number of single words in the sources

		total:		percent of total:
I.	Ancient texts	Total items	1,969	
		Bantu	1,070	54.40
		Oriental	894	45.40
		European	5	0.20
II.	Modern literary texts	Total items	1,887	
		Bantu	1,040	55
		Oriental	771	41
		European	76	4
III.	Journalistic texts	Total items	1,587	
		Bantu	790	50
		Oriental	479	30
		European	318	20
IV.	Miscellaneous contemporary texts	Total items	1,791	
		Bantu	953	53
		Oriental	625	35
		European	213	12

REFERENCES

Bertoncini, E.B. 1973. "A tentative frequency list of Swahili words." *Annali dell'Istituto Orientale di Napoli* 33:297-363.

Hallig, R. and W. von Wartburg. 1952. *Begriffssystem als Grundlage für die Lexikographie.* Berlin: Abhandlg. der Dt. Akademie der Wissenschaften zu Berlin, Kl. für Sprachen, Literatur und Kunst.

NOMINATIVE/AGREEMENT COMPLEMENTARITY AND VSO ORDER IN STANDARD ARABIC

Hagit Borer
UC Irvine

Laurice Tuller
UCLA

1. Introduction

It has been noted that VSO languages are typically null subject lan-
guages. Another property which seems to be a correlate of these is that, in
VSO languages, there is a complementary distribution between the appearance
of full subject agreement on the verb and an overt subject. That is, if
there is full agreement, the subject must be empty, while if the subject is
overt, the agreement is empty or incomplete. Standard Arabic (SA) is an ex-
ample of this situation; basically, the same pattern holds for other VSO lan-
guages, such as Breton, Irish, Kwakwala, and Welsh [Borer and Tuller, in prep-
aration]. Consider the sentences in (1) from SA:

(1) a. katabuu   Ø t-taqriira   'they wrote the report'
        wrote-3pl   the-report

    b. *katabuu l-wuzaraa'u   t-taqriira   'the ministers wrote the report'
        wrote-3pl the-ministers the-report

    c. kataba   l-wuzaraa'u   t-taqriira   'the ministers wrote the report'
        wrote-3sg the-ministers the-report

In (1a) there is full third person plural agreement on the verb and hence only
a null subject is possible. Sentences like (1b), where third person plural
agreement occurs with an overt third person plural subject, are ungrammatical.
In such cases, the agreement must be incomplete, as in (1c), where the overt
plural subject occurs with singular agreement on the verb.

The idea that this nominative/agreement complementarity is related to the
VSO property receives further support from the fact that in modern Arabic dia-
lects, the complementarity no longer exists, and the word order has changed to
SVO as well.

It is well-known that VSO languages have properties which in other lan-
guages are attributed to hierarchical structure. That is, there is evidence
that the verb and its direct object have a status that the verb and its sub-
ject do not share. This is evidenced in SA by phenomena such as idioms, com-
positional thematic role assignment, anaphor binding, and Case assignment.
Various ways of accounting for the "VP property" of VSO languages have been
proposed (see Borer and Tuller [in preparation] for a full review). Here, we
will follow work initiated by Emonds [1980] and further pursued by Sproat
[1982] and Levin and Massam [1983] who propose that surface VSO order is de-
rived by fronting the verb.

We propose that the VSO word order and the complementarity between agree-
ment and nominative both follow from a single factor, viz. the categorial na-
ture of the AGR(eement) node. Concretely, we propose that AGR in VSO lan-
guages is [+N], while in "true" SVO languages, it is [-N]. We further assume

that the [+N] AGR has the properties and distribution of other [+N] elements.
We will show that the VSO order, the complementarity, and pro-drop all follow
from the interaction of the [+N] node with independently motivated principles
of grammar.

2. Nominative/Agreement Complementarity: The Paradigm Case

Following Stowell [1981], we assume that INFL is located in COMP (whether
it is base-generated or moved there is immaterial to our analysis).

(2)

```
                              S'
              COMP                    S
               |                    /   \
             INFL                 NP     VP
            /    \
          TNS     AGR
```
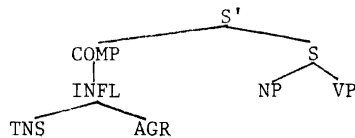
Nominative Case assignment to the subject NP is achieved by the features of
AGR and TNS percolating to the INFL node and then to the COMP node, from
which they are assigned to [NP,S].

Both "VSO" and "SVO" languages, then, have the underlying structure in
(2). The difference between the two is that while in "VSO" languages AGR is
[+N], in "true" SVO languages it is [-N]. [+N] AGR, like all other [+N] ele-
ments, may be generated with or without phonological realization. If it is
empty, it is subject to the Empty Category Principle, which sanctions the oc-
currence of empty elements by requiring that they be properly governed (see
Chomsky [1981] for definition and discussion). If, on the other hand, AGR is
phonologically realized, it, like nouns, is subject to the Case filter [Rou-
veret and Vergnaud 1980], which requires all N elements to be Case-marked.

The final component of our analysis is the general rule 'Move α', where
α may be any category, including V. This will be important since INFL, be-
ing affixal in nature, must end up adjacent to the verb. This can happen
either if V raises to INFL or if INFL lowers to V (see also Levin and Massam
[1983]).

Consider now how these various components of the analysis fit together to
produce the complementarity and VSO facts outlined above, looking first at
the case in which the [+N] AGR is generated without phonological content.
Since it is null, it must be properly governed. As INFL is not a proper gov-
ernor [Rizzi 1982], the verb must adjoin to COMP in order to properly govern
the empty [+N] AGR. An empty subject is impossible, since we assume that null
subjects must be identified by an overt AGR element (in the spirit of Tarald-
sen's generalization and subsequent work on the null-subject parameter).

The result is a VSO structure with a lexical subject, the (c) sentence of
(1):

(3)

```
                              S'
              COMP                      S
            /      \                   /  \
          V_i      COMP             NP     VP
                    |                     /   \
                  INFL                   V    (NP)
                    |                    |
                  AGR [+N]             [e]_i
```
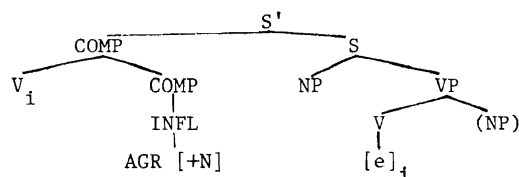
Consider now the situation where the [+N] AGR is generated with phonological features. Since AGR, in this case, is an overt [+N] element, it is subject to the Case filter, and hence must be assigned Case, in this instance, the nominative Case assigned by INFL. Since nominative Case is absorbed by AGR, the subject NP may not be assigned Case, and hence it may not be overt. The only possible result is therefore a structure with overt agreement and a null subject, the (a) sentence of (1):

(4)

```
                        S'
            ┌───────────┴───────┐
          COMP                   S
            │              ┌─────┴─────┐
        AGR [+N]          NP           VP
            │              │        ┌───┴───┐
         (overt)          Ø         V     (NP)
            │
         [+NOM]
```
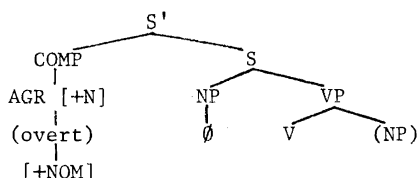
Notice that verb-fronting is not forced in these structures (AGR is not empty and hence the verb need not move up so as to properly govern it). In principle, then, we can assume that V-fronting is optional. Since the subject is empty, there is no evidence in SA as to whether the verb was fronted. If there is no V-fronting, INFL will lower and affix to the V, so as to satisfy the affixation requirement discussed above.

3. Dislocation and the Complementarity of Nominative Agreement

We would like to consider now some more complex cases, where the complementarity between nominative and agreement appears to break down. Typically, the complementary distribution between nominative Case and overt agreement does not hold in cases of dislocation and movement, as the following cases illustrate:

(5) Left Dislocation

    arrizaalu   habuu   'the men, they left'
    the-men-NOM left-3m-pl

(6) Question

    ayyu   rizaalin ahabuu?   'which men left?'
    which men-NOM left-3pl

Before considering why complementarity is not attested here, let us first distinguish betwen Left Dislocation constructions and constructions which involve extraction in SA. Based on Ayoub [1981], three pieces of evidence for this distinction can be given. While in Left Dislocation constructions the Case of the dislocated element is always nominative, regardless of the argument position to which it is related (7a), in constructions which involve actual extraction (topicalization, WH-movement) the dislocated element has the Case of its extraction site (7b).

(7) a. arrizaalu   raʕaynaa-hum   'the men, we saw them'
      the-men-NOM saw-we-them

    b. Zaydan   raʕaa ʕamrun   'Zaydun, Amrun saw'
      Zaydun-ACC saw   Amrun-NOM

Secondly, Left Dislocated elements must be specific (8a,b), whereas extracted topics may be non-specific (8c):

(8) a.   al-kittaabu qaraʕa-hu Zaydun   'the book, Zaydun read it'
         book-NOM   read-it Zaydun-NOM

    b.   *kittaabun qaraʕa(-hu) Zaydun   'a book, Zaydun read it'
         book-NOM   read-(it)   Zaydun-NOM

    c.   kittaaban qaraʕa Zaydun   'a book, Zaydun read'
         book-ACC read   Zaydun-NOM

Thirdly, while Left Dislocation need not obey subjacency (9a), extraction does (9b,c).

(9) a.   Zaydun zaa a r-razulu llatii raʕaa-hu   'Zaydun, the man who
         Zaydun came the-man who   saw-him   saw him came'

    b.   *al-xayla   ta rifu r-razula lla li yuhibbu 'the horses, you know
         the horses-ACC know-you the-man who   loves   the man who loves'

    c,   *man raʕayta l-fataata llatii qaabalat?   'who did you see the
         who saw-you the-girl who   met   girl who met?'

Before we proceed to consider the implications that the distinctions between Left Dislocation and extraction have for our analysis, it is worthwhile to note that SA has more than one TOPIC position, as is attested by (10), cited by Ayoub. We thus assume the structure of the TOPIC-COMP complex to be as in (11):

(1). Zaydun   abuu-hu   yahlumu   'Zaydun, his father dreams'
      Zaydun-NOM father-his-NOM dreams

(11).

```
                              TOPIC'
                         ┌──────┴──────┐
              TOPIC                      S'
                                         │
                                        COMP
                                    ┌─────┴────┐
                                          COMP
                                           │
                                          INFL
```
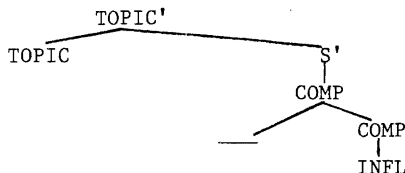
As will become clear, it is crucial for our discussion that the TOPIC node in (11) head a maximal projection. Concretely, government from the TOPIC posi-tion into any position inside S' is not possible.

   Returning to the Left Dislocation constructions and the extraction construc-tions discussed above, it is natural to conclude that while topicalization and questions are derived by actual movement, this is not the case for Left Dislo-cation constructions. In the latter, a dislocated element is base-generated in position, and a default nominative Case is assigned to it. Note that (5) meets the criteria for a Left Dislocation construction: the dislocated element is nominative, and it is specific. As (5) *is* a Left Dislocation construction, the absence of complementary distribution between nominative and Agreement is no longer a problem, since the nominative Case assigned to the dislocated element in (5) is not related to the agreement node and is rather a default disloca-tion Case. S-internally, the sentence in (5) acts precisely as expected: in

the absence of an overt subject in the clause, agreement is overt. The place-
ment of an overt subject in this clause alongside the overt agreement, e.g. a
subject pronoun, would, as expected, lead to ungrammaticality.

A more complex issue is presented by the breakdown of complementarity in
the cases of real extraction. Consider again the structure in (11). We as-
sumed that when AGR is [e] , V moves into the position immediately dominated
by the adjoined COMP, so as to properly govern the empty N node. The failure
of the V to move results in ungrammaticality. Now consider what happens if AGR
is empty and V moves into COMP. The extracted subject now must move into the
TOPIC node if extraction takes place, as in (12):

(12)

```
                          *TOPIC'
           TOPIC                          S'
             |
            NP_k          COMP                    S
                      V        COMP         NP          VP
                                INFL       [e]_k     V      (NP)
```
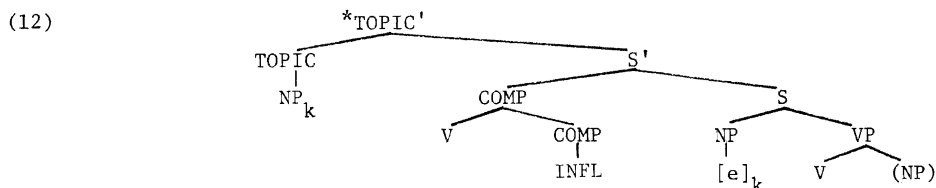
Since S' is taken to be a maximal projection, NP_k cannot properly govern its
trace in the [NP,S] position. Furthermore, as INFL is not a proper governor,
the empty category in the subject position is not properly governed, and thus
a violation of the ECP results.

What happens if the NP_k (instead) of V) moves into the adjoined COMP, where
it can properly govern its trace? In such a situation, [e] in INFL is not prop-
erly governed, resulting in ungrammaticality. (See Borer and Tuller [in prepa-
ration] for why NP_k cannot be a proper governor here.)

(13)

```
                            *S'
            COMP                         S
        NP_k       COMP           NP          VP
                    INFL         [e]_k     V      (NP)
                    [N e]
```
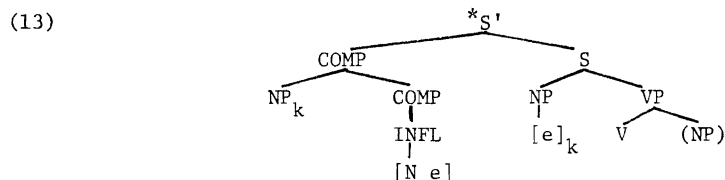
We thus expect any derivation which involves an empty INFL to result in ungram-
maticality. The only grammatical derivation of sentences such as (6), (8b)
and (9c) involves the following: agreement is generated as an overt element
and the extracted subject moves into the adjoined COMP position, from which it
may properly govern its trace. The derivation does not involve any V movement
(crucially, however, in the phonological component INFL will lower and attach
to the verb, in accordance with the analysis sketched in section 1 above). It
follows from our analysis that nominative Case may not be assigned in the
clause itself. We have, however, established the fact that nominative Case is
the default Case assigned in Arabic in dislocated positions. As no Case could
be assigned to the extracted subject in the location of its origin, a default
nominative Case will be assigned to it following the extraction.

We are now in a position to predict certain asymmetries between subject
and object extraction. Note that both V movement and extraction from the
[NP,S] position are not possible due to the fact that the subject trace must be

properly governed by its antecedent. Such is not the case for the trace of the
direct object. Thus, while V movement is still necessary in order to properly
govern the INFL node if the latter is [e], such movement will not block the
topicalization of the direct object:

(14)
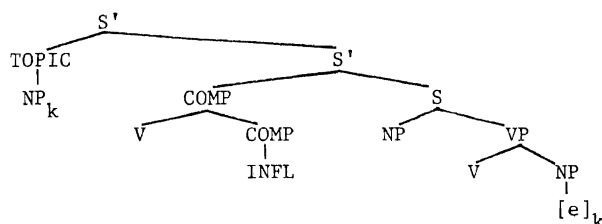
It thus appears that the structure motivated for the complementizer system in
SA by independent factors accounts naturally for the apparent breakdown of nom-
inative/agreement complementarity. Upon a closer scrutiny, it turns out that
in fact no such breakdown occurred and that the "redundant" nominative Case has
an independent source which is not related to the AGR node. Once this is estab-
lished, and the conditions under which such independent nominative Case is as-
signed are clarified, it is clear that S-internally, the complementary distri-
bution between agreement and nominative is preserved both in Left Dislocation
structures and under extraction.

REFERENCES

Ayoub, G. 1981. *Structure de la phrase verbale en arabe standard.* Thèse de
  3e cycle, Paris VII [published in *Etudes arabes: Théorie et analyses.*
  Département d'arabe, Paris VII.]

Borer, H. and L. Tuller. in preparation. "Nominative/Agreement complementari-
  ty and VSO languages." ms., UC Irvine and UCLA.

Chomsky, N. 1981. *Lectures on Government and Binding.* Dordrecht: Foris.

Emonds, J. 1980. "Word order in generative grammar." *Journal of Linguistic
  Research* 1:33-54.

Levin, J. and D. Massam. 1983. "Raising and binding in Niuean." ms., MIT.

Rizzi, L. 1982. *Issues in Italian Syntax.* Dordrecht: Foris.

Rouveret, A. and J.-R. Vergnaud. 1980. "Specifying reference to the subject:
  French causatives and conditions on representation." *Linguistic Inquiry*
  11:97-202.

Sproat, R. 1982. "VSO languages and Welsh configurationality." ms., MIT.

Stowell, T. 1981. "Origins of phrase structure." Ph.D. dissertation, MIT.

AFRICAN LANGUAGE USAGE IN THE CLASSROOM,
REPORTED AND OBSERVED

Dianne C. Bowcock
University of Wisconsin, Madison

1. Introduction

    The Gambia, located in the Sahel of West Africa, is representative of lan-
guage policy in many African nations in two fundamental ways: (1) it is lin-
guistically complex, and no linguistic group comprises a majority; and (2) it
continues to use the former colonial language as its recognized official lan-
guage. Although the current educational language policy specifies English as
the medium of instruction, this paper discusses that in practice the vernacular,
especially Mandinka, is used considerably.

    Gambian linguistic groups consist of Mandinka (42%), Pulaar (18%), and Wolof
(15%), in addition to a variety of others (Jola, Serahulie, Serrer, Aku, Manjago
to name a few). Language is in most cases a marker of ethnic identity. Vir-
tually no one speaks English as a first language. Language contact is high, and
multilingualism is the norm. Of the 231 primary school teachers surveyed,
teachers on the average spoke three languages including English, and three-
fourths spoke Mandinka. Excluding the capital city, Mandinka serves as a *linga
franca*. As the Gambia is 98% Muslim, Arabic used in a classical form functions
as a religious language.

    Approximately 60% of Gambian children enter primary school, and 40% complete
it. Around 15% finish secondary school. The current stated official medium of
instruction in schools is English, although the Department of Education has
plans to introduce Mandinka, Wolof, and Pulaar into schools. It is still uncer-
tain whether these will be introduced as subjects or used as media of instruc-
tion. Presently vernacular reading books are being developed. It is planned
that the local languages will be used in some form or other through the fourth
grade.

    Teacher questionaires were distributed and classroom observation undertaken
in eleven schools in Mandinka-speaking areas of the Gambia. Approximately 95%
of these children speak Mandinka, 70% speak it as their mother tongue.

2. Teacher Questionaires

    Teachers were asked to specify the language(s) they used in certain situa-
tions or domains. Table 1 indicates the language usage reported in various do-
mains. For example, when speaking with a spouse at home, 38% said they used Man-
dinka, 35% used Wolof, and 27% used other vernaculars like Pulaar or Serrer.
The non-school usage reveals the diglossic situation between the use of the of-
ficial language at the bank (English) and vernacular usage elsewhere in the less
formal domains of home or when shopping. Diglossia is also apparent in the
School Non-classroom domain in which teachers use almost 100% vernacular with
parents of children and use predominately English with headteachers or other
teachers. Parents in most cases do not speak English. All teachers (excluding
Koranic teachers) speak English. School classroom usage reveals that teachers

reported using either English or English plus the vernacular. When comparing
the three subjects math, science, and social studies, one notices that the use
of English is less in science and social studies, concomitant with an increase
in the vernacular in these subjects. For social studies approximately 10% of
the teachers answered they use Mandinka *only*. Note that in giving praise a
high percentage, around 80%, said they use English only, and the remainder re-
ported using English and the vernacular.

Teachers were asked to estimate the percent of the time they spend teaching
in English and the vernacular(s) in one entire teaching day. Presently in
classrooms the vernacular is used only orally and never in a written form.
Teachers had no inhibitions about reporting vernacular usage in spite of an
English-as-a-medium policy.

Table 2 reveals that vernacular estimates range from 43% in first grade and
gradually decrease to 13% in sixth grade. Of the vernaculars, the use of Man-
dinka is the most prevalent. When asked why they used the vernacular, teachers
most often selected two reasons: (1) the child understands the subject matter
better when taught in the vernacular, and (2) it makes learning English easier.

3. Observations

One week of observation at each school was completed in first and second
grades. Every 15 or 20 seconds during teaching time, the observer noted (a)
who was speaking, (b) the language code used, and (c) what was said. These em-
pirical data revealed that essentially four languages were used in classroom
lessons: 60% English, 28% Mandinka, 10% Arabic, and 2% Wolof. Gambian chil-
dren receive 2-3 hours per week of Koranic instruction, which essentially con-
sists of recitation of Koranic prayers or verses and passages from the Koran in
Arabic. A special Koranic teacher teaches these lessons, not the regular class-
room teacher. Table 3 excludes Arabic from the analysis and compares teachers'
estimates of usage with usage actually observed. Teachers were reasonable ac-
curate in their estimates of their code usage.

The weekly timetable allows for a variety of subjects in varying propor-
tions throughout the week. Table 4 indicates that language usage varies signif-
icantly with the subject of the lesson. Observed vernacular usage was near 15%
for Language, Reading, and Rhymes and increased to 60-75% for subjects such as
Social Studies, Story Telling, and Health. All of these subjects included the
use of the vernacular in varying proportions plus English. In contrast, the
Koranic lesson (which uses Arabic in a classical form) used Mandinka as its me-
dium of instruction. English was not used at all in Koranic lessons, as these
instructors were not usually exposed to Westernized education, nor were they
competent in English.

In these schools pedagogy takes the form of recitation where the teacher
says a word or phrase, and the child or entire class repeats it. This is due
to a combination of factors such as a dearth of teaching materials, the large
class size, and large numbers of teachers with little formal teacher training,
all of these compounded by a medium of instruction foreign to the students.
The recitation form of teaching is particularly noticeable in Language, Reading,
Rhymes, Math, and Science where English terms are presented, recited, and prac-
ticed orally as a group. Reading and Rhymes as subjects usually consist of re-
citing sentences, paragraphs, or English poems. Math and science at these

first and second grade levels also consist of essentially presenting vocabulary. Social Studies within the Gambian curriculum is culturally based and cannot rely entirely on English as a medium. Mandinka terms and concepts are prevalent in these lessons. For example, teachers may discuss the fole of the "Seyfo" (chief) or the "Alkalo" (religious leader) in the community.

Comparison of the types of speech, e.g. command, question, relative to the language used reveals which languages are used in what types of situation. Table 5 reveals that the use of Arabic is concentrated mainly in the recitation, reading aloud category. These usages require little understanding, but rely on rote memory. Arabic here is used in a classical sense and not as a form of interchange and communication. Although English is used in a broad spectrum of ways, it too included recitation, oral reading, and oral spelling. In contrast, Mandinka and Wolof are not used in these forms. One notices also that questions not related to the subject, commands, and personal comments occur slightly more in the vernacular than in English. Direct translation and series explanation occur most frequently in the vernacular, indicating that teachers often present material initially in English and then explain again in the vernacular. Praise seems to be given more often in English, reprimands in the vernacular. This dichotomy of praise and reprimand perhaps reflects and reinforces the status of English and serves as an inducement for the child to learn English.

4. Conclusion

A description of the language usage reported and observed in Gambian classrooms has been presented. In spite of an official stated policy of English in the classroom, the vernacular, Mandinka in particular, is used considerably in first and second grade, especially for culturally-based subjects (Story Telling, Social Studies, Health), and it is the only medium of instruction for Koranic lessons (Arabic). Vernacular usage is also reported up to sixth grade, one might presume with the same subject allocation as apparent here. English usage is high in subjects where English vocabulary presentation and practice are the focus of the lesson. Comparison of reported usage and actual observed usage indicate teachers are aware of the ways they allocate language, whether it be usage among codes, among subjects, or among domains.

As the language policy is changed to include accepted and expanded usage of the vernacular(s), the functions of the vernacular vis-á-vis English will expand. It is possible that this language change may bring with it changes in teaching methods less reliant on English vocabulary presentation, recitation, and rote memory, and more involved in interactive communication.

TABLE 1

LANGUAGE USAGE IN VARIOUS DOMAINS

REPORTED BY TEACHERS

M=Mandinka
W=Wolof
E=English
V=Vernacular (possibly including M & W)
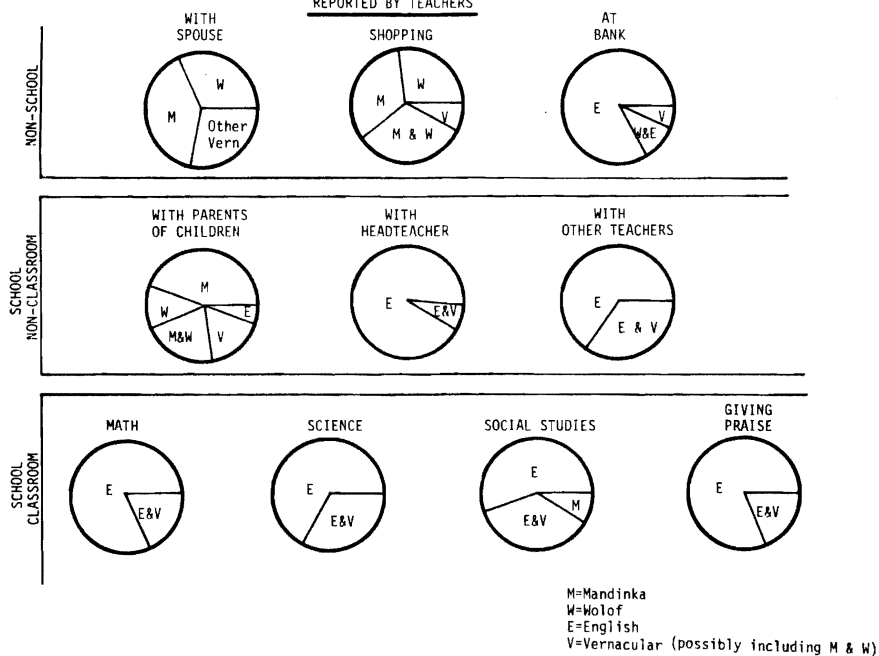
TABLE 2

TEACHER ESTIMATES OF VERNACULAR USAGE

BY LEVEL
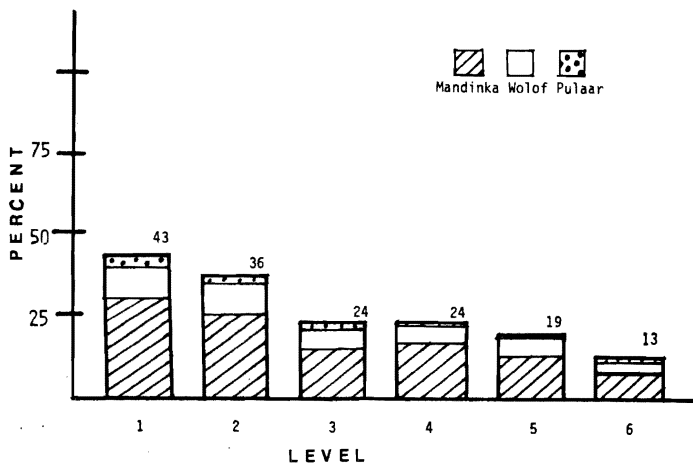
TABLE 3

VERNACULAR USAGE

REPORTED AND OBSERVED

(Level 1 & 2, all subjects combined*)

Reported Observed

PERCENT

ENGLISH   MANDINKA   WOLOF   PULAAR

English: Reported 60, Observed 70
Mandinka: Reported 27, Observed 27
Wolof: Reported 10, Observed 2
Pulaar: Reported 3, Observed 0

*Excludes Koranic lessons (consisting of both Arabic usage and
Mandinka usage). Koranic teachers did not complete questionaires.

TABLE 4

OBSERVED VERNACULAR USAGE BY SUBJECT

Mandinka Other

PERCENT

ENGLISH

ARABIC

SUBJECT	Hours per week
LANGUAGE	3-5
READING	.5
RHYMES	.5
HOME ECONOMICS	1
PHYSICAL EDUCATION	1
MATH	4
SCIENCE	1-2
SINGING	1
ARTS & CRAFTS	1
HAND-WRITING	.5
SOCIAL STUDIES	1
STORY TELLING	.5
HEALTH	1
KORAN	2-3
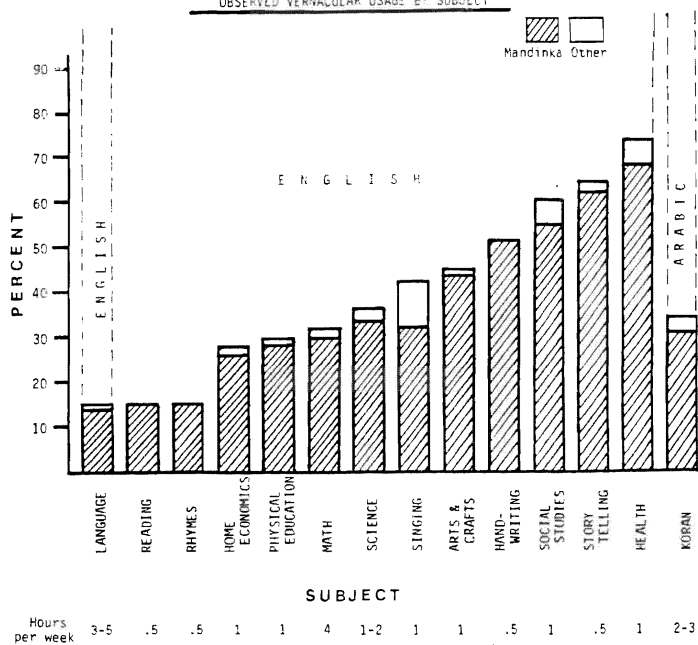
TABLE 5

OBSERVED CLASSROOM LANGUAGE USAGE

BY TYPES OF SPEECH*

| TYPE OF SPEECH | ENGLISH | CODE USED (Percent) | | |
		MANDINKA	WOLOF	ARABIC
1. Subject matter	34	35	35	3
2. Question re:subject	18	16	8	-
3. Command	16	21	18	2
4. Prayer, recitation	4	-	1	36
5. Reading aloud	12	-	-	48
6. Spelling/alphabet	2	-	-	-
7. Praise	1	-	-	-
8. Reprimand	-	2	2	-
9. Singing	4	3	20	10
10. Comment	2	4	3	-
11. Vernacular prompt	1	3	1	-
12. Direct translation	-	3	-	-
13. Telling story	-	2	-	-
14. Series explanation (teacher explains what was previously said)	-	6	5	-
Number of instances	7777	3574	281	1244

*based on 62 hours of actual speech

WH-MOVEMENT IN YORUBA

Vicki Carstens
UCLA

Yoruba has a focus construction which enables any sentence constituent to appear sentence-initially. Basic word order is SVO:

(1) Ajike ń ta   isu ninu oja   'Ajike is selling yams in the market'
          ASP sell yams in   market

The presence of the particle ni following a constituent in sentence-initial position indicates that it is focused:

(2) isu ni   Ajike ń   ta   'it's *yams* that Ajike is selling'
     yams FOCUS   ASP sell

Wh-questions are formed by obligatory usage of the focus format:

(3) ki ni   Ajike ń   ta   ninu oja 'what is Ajike selling in the market?'
     what FOCUS   ASP sell in   market

The structure of (3) will be considered to be as illustrated in (4) below (structure subsequently will be indicated by bracketing).

(4)
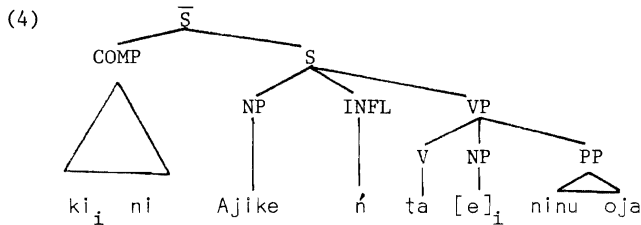
When a subject is focused or questioned, a third-person singular resumptive pronoun is obligatory:

(5) a. $_{\bar{S}}$[Ajike$_i$ ni $_S$[o ń ta   isu]]   '*Ajike* is selling yams'
                  FOCUS   3s ASP sell yams

    b. $_{\bar{S}}$[ta$_i$ ni $_S$[o$_i$ ń ta   isu]]   'who is selling yams?'
          who FOCUS   3s ASP sell yams

If the locative phrase ninu oja is focused, the particle ti must be introduced between the subject and the verb:

(6) $_{\bar{S}}$[ninu oja$_i$ ni $_S$[Ajike ti ń   ta   isu t$_i$]]
       in   market FOCUS   ? ASP sell yams

     'it's in the market that Ajike is selling yams'

ti is obligatory in 'where' questions:

(7) $_{\bar{S}}$[nibo$_i$ ni $_S$[Ajike ti ń ta   isu t$_i$]] 'where is Ajike selling yams?'
       where FOCUS   ? ASP sell yams

In these sentences ti is semantically empty, and although its presence is
clearly motivated by the presence of a locative in COMP, it does not occupy the
DS position of that phrase.

   ti also occurs as a "preverb" in the construction exemplified by (8):

(8) Tolu ń ti oko bọ   'Tolu is coming from the farm'
        ASP from farm come

Note the position of the homorganic nasal continuous aspect marker with respect
to ti here: their order is the reverse of that in (6). If the object oko
is extracted, the order found in (6) is again obligatory:

(9) oko ní   Tolu <u>ti</u> ḿ bo   'it's the *farm* that Tolu is coming from'
     farm FOCUS   ASP come

No Yoruba verbs or preverbs other than the three to be discussed in this paper
can precede the continuous aspect marker in this way. In cases such as (6),
(7), and (9), where the presence of ti is motivated by the presence of a loc-
ative phrase in COMP, and it does not inflect or occupy the position in which
verbs usually occur, I conclude that it is performing a distinct role and occu-
pying a distinct syntactic position. I will assume the structure of (7) to be
roughly the following:

(10)

ti is also found in 'how' questions:

(11) $_{\overline{S}}$[bawo$_i$ ni $_S$[Dupe <u>ti</u> kí   baba   rè   t$_i$]]
         how ^{i} FOCUS   greet father 3s poss.

     'how did Dupe greet her father?'

Alternatively še can appear on its own or immediately following ti , but one
of these options must be exercised or the result is ill-formed:

(12) $_{\overline{S}}$[bawo ni $_S$[ó $\left\{ \begin{array}{c} \text{ti} \\ \underline{\text{ti še}} \\ \underline{\text{še}} \end{array} \right\}$ pa   ekun   náà? t$_i$]]
        how FOCUS   3s   kill leopard this

     'how did s/he kill this leopard?

(13) *bawo ni o pa ekun naa?

As before, continuous aspect if it occurs is preceded by these elements. It is
worth noting that še also serves as a main verb, meaning 'do'.

   Embedded 'how' questions, manner relatives, and comparatives are all intro-
duced by the particle bi and must include either ti or še :

(14) mo fé   mo [bi$_i$ $_S$[o še pa   ekun   náà t$_i$]]
      1s want know how   2s   kill leopard this

      'I want to know how you killed this leopard'

(15) [bi$_i$ $_S$[Tolu ti ri   t$_i$]] ya   mi lénú
       how   look   open me mouth

      'the way Tolu looked surprised me'

(16) mo ga [bi$_i$ $_S$[Ajike ti ga   t$_i$]]
      1s tall how   tall

      'I am as tall as Ajike is'

Finally in 'why' questions and relative clauses headed by idi (rè) 'the rea-son', a particle fi occupies the same syntactic slot:

(17) $_{\bar{S}}$[nitoriki$_i$ ni $_S$[Tolu fi ń   lo sí ója   t$_i$]]
          why   FOC   ASP go to market

      'why is Tolu going to the market?'

(18) $_{NP}$[idi $_S$[ti$_i$ $_S$[ó fi ń   lo t$_i$]]] ni lati ra isu
          reason   REL   3s ASP go   be for buy yams

      'the reason he's going is to buy yams'

fi has many other uses, of which the most common is as a preverb having an in-strumental interpretation:

(19) o ń fi ibon pa   ekun   's/he is killing the leopard with a gun'
      3s ASP gun kill leopard

When its object is extracted, it usually inverts with the continuous aspect marker:

(20) ibon ni   ó fi ḿpa ekun   'it's a *gun* that she's killing the
      gun FOCUS   leopard with'

In a multi-clause question, the presence of the appropriate verb exclusively in an embedded clause indicates that clause (rather than a higher one) to be the location of the variable bound by the WH-phrase in COMP. In (21) below, nibo can only bind a variable in the embedded clause, i.e. (21) must have the S-Structure (22):

(21) nibo ni   Ajike so fun e   pe òun ti rí Tolu?
      where FOCUS   tell you that 3s   see

      'where did Ajike tell you that she saw Tolu?'

(22)

```
                        S̄₁
             ┌───────────┴──────────┐
           COMP                      S₁
            △              ┌─────────┴──────────┐
           ╱ ╲            NP                    VP
          ╱   ╲           │          ┌──────────┼──────────┐
         ╱     ╲          │          V         NP         S̄₂
        ╱       ╲         │          △         │     ┌─────┴─────┐
       ╱         ╲        │         ╱ ╲        │    COMP        S₂
      ╱           ╲       │        ╱   ╲       │     │     ┌─────┼─────┐
     ╱             ╲      │       ╱     ╲      │     │    NP  INFL   VP
    ╱               ╲     │      ╱       ╲     │     │     │    │  ┌──┼──┐
   ╱                 ╲    │     ╱         ╲    │     │     │    │  V NP PP
  niboᵢ            ni    Ajike  so fun      e   pe   oun   ti ri Tolu [e]ᵢ
```
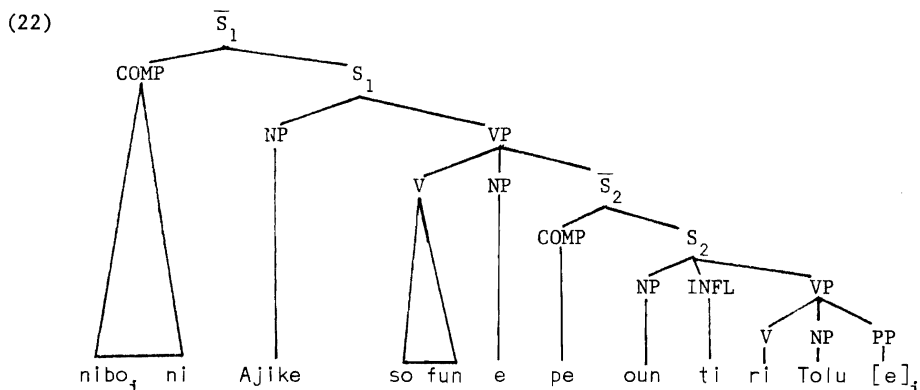
The presence of ti in S₂ results in there being just one available interpretation for (21), i.e.

(23) For which place x, Ajike told you [she saw Tolu at x]

But if ti occurs only in the matrix clause, the question is ambiguous. The question in (24) can have either of the interpretations (a) or (b):

(24) nibo ni   Ajike <u>ti</u> sọ fun e   pe   oun ri Tolu?
     where FOCUS   tell   you that 3s see

     where did Ajike tell you that she saw Tolu?

     a. for which place x, [Ajike told you at x] that she saw Tolu

     b. for which place x, Ajike told you [she saw Tolu at x]

This indicates that two S-structures may correspond to question (24): that in (22) above and the one below:

(25)

```
                     S̄₁
          ┌───────────┴──────────┐
        COMP                      S₁
         △          ┌─────────┬────┴──────────┐
        ╱ ╲        NP       INFL             VP
       ╱   ╲        │         │      ┌───┬────┼─────┐
      ╱     ╲       │         │      V  NP   PP    S̄₂
     ╱       ╲      │         │      △   │    │  ┌──┴──┐
    ╱         ╲     │         │     ╱ ╲  │    │ COMP  S₂
   ╱           ╲    │         │    ╱   ╲ │    │  │  ┌──┴──┐
  ╱             ╲   │         │   ╱     ╲│    │  │ NP    VP
 ╱               ╲  │         │  ╱       ╲    │  │  │  ┌──┴──┐
niboᵢ          ni  Ajike     ti  sọ fun  e [e]ᵢ pe oun  ri  V  NP
                                                              ri Tolu
```
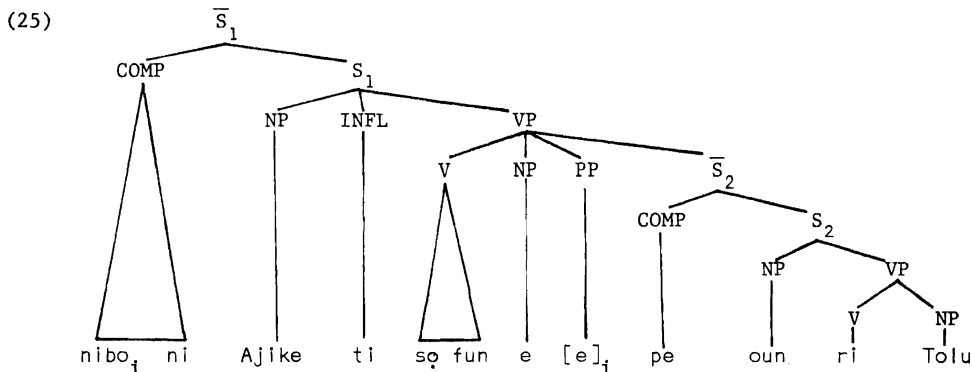
A further complication exists. In addition to the two positions of ti in (21) and (24), it is also possible for ti to appear in each clause. The question in (26) below can have either of the two interpretations available for (24) and additionally for some speakers can be a question involving two places,

for which a third structure must be entailed, in which nibo is indexed to two gaps:

(26) nibo ni Ajike <u>ti</u> so fun e   pe oun <u>ti</u> ri Tolu
    where   tell   you   3s   see

    a. for which place x, [Ajike told you at x] that she saw Tolu

    b. for which place x, Ajike told you [she saw Tolu at x]

    c. for which places x and y, [Ajike told you at x] that [she saw Tolu
        at y]

(A fourth interpretation seems to exist as well, wherein *for which x* has matrix and *for which y* embedded scope, but judgements so far have not been entirely clear). The (a) interpretation is unexpected, as it indicates that a *ti* may occur vacuously beyond the logical source of *nibo* .

    Although two-story 'where' questions have been used in these examples for ease of exposition, the same facts hold of 'why' and 'how' questions and of three and four clause structures.

    These structures were found to obey Subjacency, so I assume a *wh*-movement derivation for all of them. It is therefore tempting to relate the presence of ti , fi , and se to the ECP. Under standard assumptions, movement would proceed successive-cyclically from COMP to COMP leaving traces, which ti , fi , and se could be thought to sanction in compliance with the Empty Category Principle given in (27a), where proper government is as stated in (27b) (cf. Chomsky [1981], Aoun & Sportiche [1981]):

(27) a. ECP: $_{NP}$[e] must be properly governed

    b. A *properly governs* B if A governs B and

        (i)   A is a lexical category X^0 (lexical government), or

        (ii) A is coindexed with B (antecedent government)

Minor alteration of the structure I proposed in (10) would allow ti to lexically govern a trace dominated by VP. Thus in a single clause sentence such as (7), ti could be assumed to properly govern Wh-trace at the source. Likewise in a multi-clause question such as (21), where ti is contained in an embedded clause as illustrated below, ti could be argued to properly govern $_{NP}$[e] at the site of extraction:

(28) $\overline{S}_1$[nibo$_i$ $_{S_1}$[$_{\overline{S}_2}$[$_{\overline{S}_2}$[<u>ti</u> t$_i$]]]]

Consider however the configuration below, representing the structure of (24), reading (b):

(29) $\overline{S}_1$[nibo$_i$ $_{S_1}$[<u>ti</u> $_{\overline{S}_2}$[$_{S_2}$[t$_i$]]]]

Here ti is too remote to lexically govern the extraction site. It might be thought to properly govern the trace in the intervening COMP of $\overline{S}_2$, which would then antecedent-govern the source, but since nibo cannot antecedent-govern the source in a single clause question such as (7), it would be surprising if an intermediate trace could do so. We can see from (24b)/(29) that ti is not needed to lexically govern the source, and from (21)/(28) that it is not

required to licence intermediate traces. In short although tì is obligatory, owing to the unpredictability of the clause in which it will appear, either of the two functions which this approach can ascribe to it are demonstrated to be optional, so our understanding of its role is not furthered.

An alternative possibility exists. At the beginning of this paper, I noted that a subject cannot be focused or questioned unless a resumptive pronoun occupies subject position. This suggests that Wh-trace cannot be properly governed from COMP at all in Yoruba. We have seen that a verb's object can be extracted freely, which indicates that verbs can be proper governors. Let us assume that proper government has to be lexical in Yoruba and briefly examine [-N] lexical governors.

All objects in Yoruba must be adjacent to a verb, preposition or preverb. The sentence in (30) illustrates the use of the semantically empty preposition ní to govern and case-mark the NP onje 'food':

(30) Bola fun mi ní onje   'Bola gave me food'
          give me PREP food

     (*Bola fun mi onje)

Prepositions cannot be stranded, so are not proper governors in Yoruba. They are further limited in that they cannot take pronominal objects. If an object not governed by a verb is pronominalized, the preverb fi must be introduced for it to cliticize to (note that here continuous aspect would precede fi , as in (19)):

(31) o fi i fun mi   'she gave it to me'
        3s   3s give 1s

This use of fi suggests a similar treatment of tì , fi , and se . If we assume that only verbs and preverbs are proper governors in Yoruba, we can explain the introduction of tì , fi , and se in a way that parallels the insertion of fi above, as a means of overcoming a syntactic restriction, here on *wh*-movement. Both prepositional phrases and adjuncts lack lexical governors. If antecedent government is not possible in Yoruba, as the evidence from subject focusing suggests, then perhaps before an adjunct or PP can move to matrix COMP it must find a lexical proper governor for its trace. If we assume that movement proceeds through INFL, then perhaps the presence of a trace there triggers insertion of the appropriate verb, in the same way that pronominalization of onje causes fi to be inserted in (31).

The (c) reading of (26) can be derived as mentioned above from a structure including two nibo's, one in each clause, such that at S-structure nibo is indexed to two gaps. Perhaps in cases such as (26b), where tì is included in every clause, the moved phrase has passed through the INFL of each S̄ on each successive-cyclic move. The (a) reading of (26) still fails to be captured, however, and as yet remains a mystery.

REFERENCES

Aoun, J., and D. Sportiche. 1981. "Some aspects of wide scope quantification." *Journal of Linguistic Research* 1:69-95.

Chomsky, N. 1981. *Lectures on Government and Binding*. Dordrecht: Foris Publications.

THREE CASES OF DOWNSTEP IN VENDA

Farida Cassimjee and Charles W. Kisseberth
University of Illinois

According to Westphal [1962], Venda, a Bantu language spoken in the Zout-pansberg district of the northern Transvaal in South Africa, displays the phe-nomenon of *downdrift*. Each occurrence of a sequence of low-toned vowels be-tween two sequences of high-toned vowels causes the second sequence of high-toned vowels to be realized at a somewhat lower pitch level than the first se-quence (where "vowel" = any tone bearing unit, including syllabic nasal, and "sequence" = one or more such units). In addition to downdrift, Venda also dis-plays *downstep*; that is, there are instances where what is demonstrably a se-quence of high-toned vowels is immediately preceded by another sequence of high-toned vowels, yet the second sequence is pronounced at a somewhat lower pitch level than the first. In this paper we examine three instances of downstep in Venda and argue that all of them can plausibly be regarded simply as instances of downdrift but where the low tone that induces the downdrift is a tone that is present in the (autosegmental) tonal tier but unassociated with any vowel.

Before we examine these three cases of downstep, it is necessary to review very briefly the analysis of Venda tonology developed in Cassimjee [1983] where the following tone rules are postulated:

LOW-DELETION: A Low tone at the beginning of a word is deleted when the preceding word ends in a High tone.

MEEUSSEN'S RULE: A High tone is changed to a Low tone when immediately preceded by another High.

HIGH TONE SPREAD: Add an association line between a High and an immediate-ly following vowel (provided that to do so does not result in the crossing of association lines). This rule is applied iteratively from left-to-right.

CONTOUR SIMPLIFICATION: (a) If a HL sequence is associated with the same pre-penult vowel, disassociate the Low; (b) if a HL sequence is associated with the same ultimate vowel, disassociate the High.

All of these rules are phrase-level rules and they apply in the order listed.

Cassimjee assumes that there are just two underlying tones in Venda, High and Low, and that (in the level of representation that is input to the above rules) each vowel is associated with at most a single tone, i.e. it is not nec-essary to assume there are lexical contour tones. Furthermore, she assumes that within a morpheme, successive high-toned vowels are all linked to a single High on the tonal tier whereas successive low-toned vowels are linked to sepa-rate Lows on the tonal tier. Given these assumptions and the rules mentioned, an extremely complex pattern of alternation in Venda nominals can be accounted for in an elegant fashion.

The first case of downstep: Downstep arises as a consequence of the appli-cation of the rule of Contour Simplification (which disassociates the Low in a HL sequence associated with a pre-penult vowel). Consider, for example, the al-ternation between mu-lambóni 'at the river' (isolation form) and mú-lambíóni

(form used after a word that ends in a High). The symbol "!" marks the fact
that downstep occurs between the two sequences of high-toned vowels separated
by "!". The post-High form is produced by the following derivation:

(1)   H ## L L H L
          | | | |
          mu-lamboni   (input)

      H ##   L H L   Low-Deletion
        inapplicable   Meeussen's Rule

      H ##   L H L
                           High Tone Spread
        mu-lamboni

      H ##   L H L
                | |
        mu-lamboni   Contour Simplification
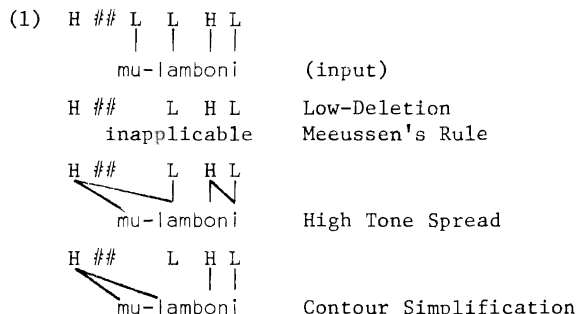
Notice that when Contour Simplification disassociates the L from the pre-penult
vowel, there is a "floating" Low between the high-toned pre-penult vowels and
the high-toned penult vowel. And there is also a downstep at this point. We
attribute this downstep to the floating Low. In other words, a floating Low
will trigger downdrift just as an associated Low would. All that is required
is that this floating Low actually be in the tonal tier at the point where the
rule of Downdrift applies.

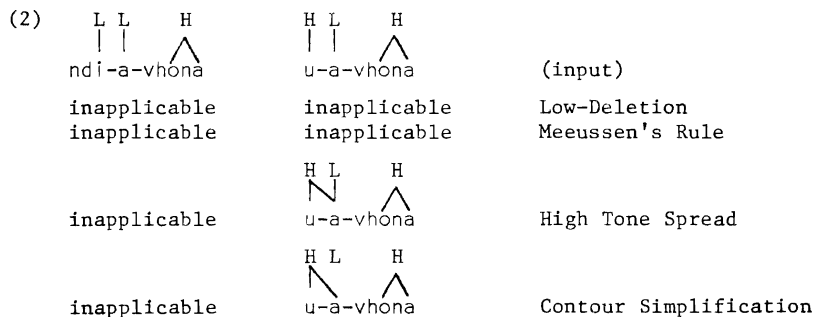The preceding example involved a case where Contour Simplification affects
a contour tone created by the phrasal application of High Tone Spread. There
are also cases where Contour Simplification affects a contour tone resulting
from the word-internal application of High Tone Spreading. For example, if we
compare the first and third person present tense verbal forms ndi-a-vhón-á
'I see' and ú-á-vh!ón-á 'he sees', an analysis immediately suggests itself
where ndi- and -a- are Low-toned elements, and ú- and -vhóná are High-
toned elements. We would then obtain the following derivations:

(2)   L L   H   H L   H
      | | /\ | | /\
    ndi-a-vhóna   u-a-vhona   (input)

    inapplicable   inapplicable   Low-Deletion
    inapplicable   inapplicable   Meeussen's Rule

                     H L   H
                           /\
    inapplicable   u-a-vhona   High Tone Spread

                     H L   H
                           /\
    inapplicable   u-a-vhona   Contour Simplification

In the derivation of ú-á-vh!óná we see that the application of Contour Simpli-
fication to the output of the word-internal application of High Tone Spread cre-
ates a floating Low tone and that there is, in fact, downstep at precisely the
point where this floating Low occurs.

The second case of downstep: Another source of downstep in Venda is a
floating Low tone that arises in the morphology (as opposed to the operation
of a phonological rule, as in the preceding case). The present tense forms cit-
ed above are valid only in cases where the verb word is final in the clause.
If another word follows, then the present tense forms lack the /a/ prefix.
The "short" forms for first and third person singular present tense are shown
in (3):

(3) ndi-vhóná...   ú-vh!oná...

The proper analysis of these short forms seems to involve saying that whereas
the long present tense form has an /a/ prefix and a Low tone that is associat-
ed with that prefix, the short form has no /a/ prefix but does have a Low
tone located at the point between the subject prefix (ndi- or ú- in the ex-
amples under discussion) and the verb stem. The suggested underlying forms,
then, for (3) are as in (4):

(4)   L L H   H L H
       │   ∧   │   ∧
     ndi-vhona...   u-vhona...

It is this floating Low tone in the short present form that causes the downstep
between a High-toned subject prefix like ú- and a High-toned verb stem like
-vhóná .

The third case of downstep: In addition to floating Low tones created by
Contour Simplification and in the morphology, we suggest that there are also
floating Low tones created by a rule of Tone Metathesis. Consider the follow-
ing present tense examples:

(5) ndi-a-lindela   'I am waiting'

     ú-á-líndêla   'he is waiting'

From the first person singular form it is clear that -lindela is a Low-toned
verb stem. The problematic form is the third person singular. Why is the High
tone on the subject prefix able to spread all the way to the second vowel of
the verb stem? Why is there no trace of the Low tone associated with the /a/
prefix? An answer to these questions emerges when one considers the pronuncia-
tion of the items in (5) when they *follow* a word that ends in a High.

(6) ndí-á-lindela

     !ú-á-líndêla

The data in (6) strongly suggest that there is a floating Low tone in front
of the third person form since (a) there is a downstep between the final High
of the preceding word and the High of the subject prefix on the verb, and (b)
the High of the preceding word has failed to trigger Meeussen's Rule (which or-
dinarily would change an initial High in a verb to Low after a word that ends
in a High).

If we assume that there is, then, a floating Low in front of the third per-
son form, where could it have come from? If we were to say that it originates,
via metathesis, from the Low tone associated with the /a/ prefix, then we

would explain both why there is a downstep in front of the verb word and also
why the High tone of the subject prefix is able to spread past the /a/ prefix
all the way into the verb stem.

    The Tone Metathesis rule can be formulated roughly as follows:

(7)   H L   [L
           Verb Stem   ==⟹ 2 1 ∅ 3
      1 2   3

Tone Metathesis is triggered only by Low verb stems, and it applies only when
there is a HL sequence in front of the stem. We illustrate the effects of this
rule below. (It will be noted that we have assumed the existence of a special
rule that deletes the initial Low of a verb stem after a High-toned prefix.
This rule has not been fully justified here, but it is important in determining
how far into the verb stem a High-toned prefix is able to spread.)

(8)   H ## H L L L L
             | | | | |
          u-a-lindela   (input)

          inapplicable   Low-Deletion

    H##L H   L L L
         | | | |
          u-a-lindela   Tone Metathesis

          inapplicable   Meeussen's Rule

    H##L H   L L   (initial-Low deletion from verb stem)

    H##L H   L L
                  J |
          u-a-lindela   High Tone Spread

          inapplicable   Contour Simplification

    We have now examined three cases of downstep in Venda and have shown that
they all can be accounted for in terms of the principle of downdrift operative
in the language as long as we assume the existence of floating Low tones in the
tonal tier at the point where Downdrift applies. Furthermore, we have shown
that these three cases of floating Low tones have separate origins. In one
case the floating Low originates from Contour Simplification, in another case
from the morphology, and in a third case from the application of a rule of Tone
Metathesis.

REFERENCES

Cassimjee, Farida. 1983. "An autosegmental analysis of Venda nominal tonol-
     ogy." *Studies in the Linguistic Sciences* 13(1):43-72.

Westphal, E. O. J. 1962. "Venda: tonal structure and intonation." *African
     Studies* 21(2):49-69; 21(3-4):125-173.

THE APPENDIX IN PARAMETRIC PHONOLOGY

Monik Charette
Projet sur les langues africaines (U.Q.A.M.)
and McGill University

1. Introduction

Vowel shortening processes sensitive to syllabic structure have been treat-
ed as specific rules for specific languages in a linear phonological framework.
The fact that in different languages the contexts of application of the rules
are identical suggests that vowel shortening has to be derived from a universal
principle and not by language specific rules which need to be learned indepen-
dently. Following this line, the difference in the context of application will
be explained from the differences in the syllabic structure of languages in
question. To account for vowel shortening processes sensitive to syllabic
structure, Lowenstamm & Kaye [1982] have proposed a universal principle, the
Prosodic Government Principle (henceforth PGP). The principle seeks to explain
why we cannot find long vowels in closed syllables in languages where vowel
shortening occurs.

In this paper I will discuss an apparent violation of the PGP in Wolof, a
West Atlantic language spoken in Senegal. I will show that the violation is
indeed apparent because of an independently motivated theory, that of the "ap-
pendix". The intersection of these two theories will give precisely the desir-
ed results.

2. Prosodic Government Principle

> "One could for instance speculate that the Nucleus is the 'head' of the
> rime constituent. We could then go on to say that this element must in
> some sense govern its sister constituents of the rime. This relationship
> would be defined, at least in part, configurationnally and could explain
> why long vowels and [heavy] diphthongs are not found in closed syllables
> in languages for which such a constraint holds." [Lowenstamm & Kaye 1982:
> 27]

PGP excludes configurations with a branching nucleus in a branching rime.

(1)

(long vowel)   (heavy diphthong)
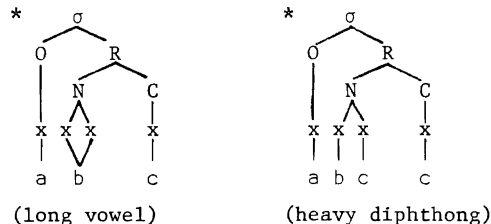
In such configurations the head of the rime (the leftmost point under the
nucleus) does not govern all its sister constituents in its prosodic domain,
the rime, since the first branching constituent dominating it is the nucleus

and not the rime.

3. Yawelmani

If we consider Yawelmani [Kurada 1967] we see that vowel shortening occurs in all closed syllables, which means that PGP is systematically respected.

(2) | stem | aorist | | passive aorist | | gloss |
|---|---|---|---|---|---|
| /'ilii/ | /'ilii+hin/ | ['ileehin] | /'ilii+t/ | ['ilet] | 'to fan' |
| /panaa/ | /panaa+hin/ | [panaahin] | /panaa+t/ | [panat] | 'to arrive' |
| /'aamil/ | /'aamil+hin/ | ['aamilhin] | / aamil+t/ | ['amlit] | 'to help' |

The PGP explains why we cannot find long vowels in closed syllables in a language like Yawelmani. By the PGP the branching nucleus of a syllable like -lii must loose a point of the skeleton when the coda of the rime is occupied: (-lii+t → -lit). If the nucleus does not loose a point of the skeleton, the head of the rime (the leftmost point under the nucleus) will not govern all of its sister constituent in the rime.

(3) /'ilii+hin/ ['ileehin]
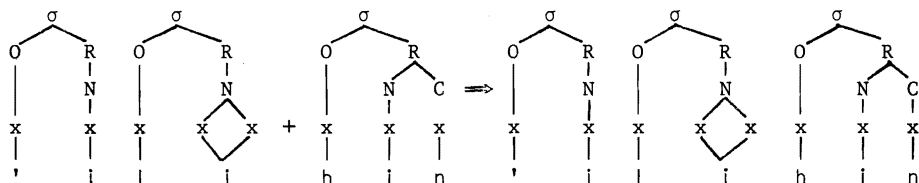
/'ilii+t/ ['ilet]
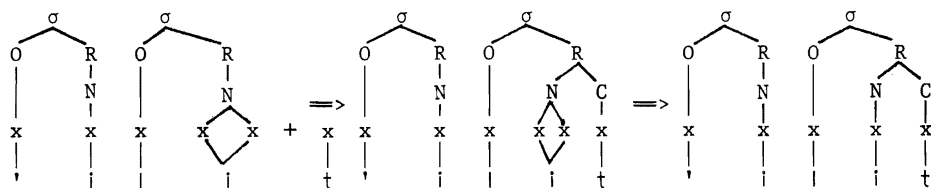
3. Wolof

If we now consider Wolof [Diagne 1971; Dialo 1983; Sauvageot 1965], a language in which a vowel shortening process sensitive to syllabic structure is also present, we must explain why PGP is always respected in non-final syllables while it is apparently systematically violated in word-final syllables. Such cases are given in (4) below.

(4) | imperfective | inversive | | gloss |
|---|---|---|---|
| [rOOf] | /rOOp+i/ | [rOppi] | 'to put in/to take out' |

[yEEw]   /iEEu+i/ [yEwwi]   'to tie/to untie'

[tEEr]   /tEEd+i/ [tEddi]   'to start/to stop a vehicle'

The inversive forms show us that word internally a long vowel shortens when the coda is filled.

(5) /rOOp+i/   [rOppi]
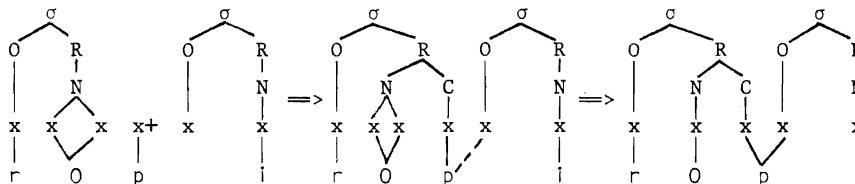
We see in (5) that when the inversive suffix is added to a stem ending in a consonant, this segment is syllabified under the rime which is creating a closed syllable. Since the rime is now branching, the nucleus must loose a skeletal point to prevent violation of the PGP. The skeletal point dominating the consonant could not be syllabified in the following onset since this constituent already dominates a skeletal point. The only possible syllabification is then for the point to occupy the coda position which is not filled. The gemination of the consonant is explained by the fact that the onset of the inversive syllable dominates a skeletal point which has to be associated to a segment.

To explain the fact that in Wolof the PGP is systematically violated in word final syllables, I would like to claim that a word-final syllable containing a long vowel followed by a single consonant is not a closed syllable as seems to be the case, but is rather open. Following this I will suggest that Wolof has an appendix position (a non-rimal constituent) which is, like an extrametrical position, possible at the end of a word or a cycle. This suggests that the syllabic structure of a word like [rOOf] is a syllable composed of a non-branching rime followed by an appendix constituent to which the last consonant is associated. Since the rime is non-branching, there is no reason for the long vowel to be shortened by the PGP.

(6) [rOOf]

Having shown that a word-final syllable containing a long vowel followed by a single consonant is to be analyzed as having a branching nucleus and an appendix, the question is now whether the appendix position is justified elsewhere in the language. The answer is provided by words ending in more than one consonant. We find in Wolof words ending in geminate consonants which are never pre-

ceded by a long vowel. The analysis for such words is one with a branching
rime followed by an appendix. Since the coda never branches (because we never
find a cluster of more than two consonants word internally and because when a
suffix beginning with a consonant is added to a stem ending by a geminate, an
epenthetic vowel appears) the appendix position is justified, the two skeletal
points dominating the geminate needed to be associated to a syllabic constitu-
ent.

(7)   bOpp   'head'

```
                        σ
                    ┌───┼───┐
                O   R       App
                    ┌─┴─┐
                    N   C
                    │   │
            x   x   x   x
            │   │    \ /
            b   O     p
```
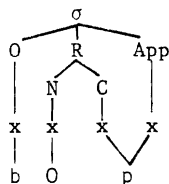
It is clear that a final consonant following a long vowel must be analyzed
as being in the appendix (because of the PGP) and that the same is true for a
word ending in a geminate. But this leaves open the question of the analysis
of a final consonant preceded by a *short* vowel. Is the consonant in the coda
or in the appendix? That is, is the appropriate structure (8a) or (8b)?

(8)   nak   'cow'   a.   b.

```
                    σ                              σ
                ┌───┴─┐                        ┌───┼───┐
            O       R                      O   R       App
                  ┌─┴─┐                        │
                  N   C                        N
                  │   │                        │
        x     x     x                  x   x   x
        │     │     │                  │   │   │
        n     a     g                  n   a   g
```
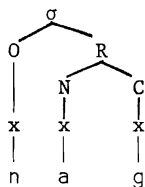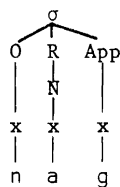
The following factors suggest that the syllabic representation of a word
containing a short vowel followed by a single consonant has a non-branching
rime followed by an appendix dominating the last consonantal segment:

  (a) An open syllable is less marked than a closed one.

  (b) When a syllable contains a long vowel followed by a single consonant,
       this consonant is syllabified under the appendix and the syllable is
       open.

  (c) No words end in more than one consonant except those ending in gemin-
       ates which have the syllabic representation of a single segment asso-
       ciated to two skeletal points, one under the coda and one under the
       appendix. (The consonant cluster nasal-obstruent is analyzed as the
       nasal associated to the nucleus and the obstruent under the appendix.
       No long vowels precede such clusters.)

I consider that this analysis provides a plausible account of the acquisi-
tion of syllabic structure. Word-internally and word-final the coda is filled
only by a segment associated to another constituent, i.e. only geminates occupy
a coda position. There is no evidence that the last consonant of a word such

as nak is under the coda since in no other case would a consonant be unique-
ly associated to the coda position. Analysing the consonant under the coda
would lead us to say that only in word-final position is a single segment syl-
labified under the coda.

To sum up, my claim is that in Wolof all syllables are open except when
closed by the initial element of a geminate.

REFERENCES

Diagne, P. 1971. *Grammaire de wolof moderne*. Paris: Présence Africaine.

Dialo, A. 1983. *Eléments systématiques du wolof contemporain*. Dakar: Centre
    de linguistique appliquée de Dakar.

Kaye, J. D. & J. Lowenstamm. 1982. "Compensatory Lengthening in Tiberian
    Hebrew." In Wetzels & Sezer (eds.), *Studies in Compensatory Lengthening*.
    Dordrecht: Foris, to appear.

Kuroda, S. Y. 1967. *Yawelmani Phonology*, MIT Press, Cambridge.

Sauvageot, S. 1965. *Description synchronique d'un dialecte wolof: le parler
    du Dyolof*. Dakar: IFAN.

SEMISEGMENTAL PHONOLOGY

Donald G. Churma
Ohio State University

In the full version of this paper, I argue for a restrictive theory of tone in what I will refer to as "true tone languages" (TTLs) as contrasted with, say, pitch accent languages. Assuming in broad outlines the theory of autosegmental phonology, I provide evidence that this theory should be restricted, when applied to tone in TTLs, in these ways:

(1) Tonal autosegments are at some point in the derivation mapped onto their anchors, after which they behave like any other non-autosegmental feature.

(2) Tonal autosegments may be associated with no more than one anchor.

Evidence for (1) is of three types. First, rules that are crucially autosegmental in nature, e.g. deletion of a vowel without concomitant deletion of the tone it bears, universally precede rules that are not, e.g. spreading, in the sense of Hyman and Schuh (cf. Leben [1973], Odden [1980], and Creider [1983]). Secondly, diachronic changes appear never to affect tones in a crucially autosegmental way, as I have argued in Churma [1983, to appear]. This follows from (1) together with the hypothesis that rules are added only at the end of the grammar. Third, no crucially autosegmental rule may be optional, since only possible sound changes may be optional synchronic rules [Churma 1983, to appear].

There are a number of different kinds of evidence which support (2). First, note that it is not necessary to allow violations of (2) in order to allow for rules that affect (apparent) sequences of like tones as if they were a single multiply-associated autosegment, given the existence of the Q-subscript formalism, which is independently required for an account of Kikuyu, where rules affect sequences of like tones even across word boundaries [Clements and Ford 1979].

Furthermore, there are a number of examples for which the unmarked autosegmental case, i.e. multiple association of tones, either requires unwieldy rules or simply gives incorrect results, including the following. First of all, despite the fact that only "stranded" tones would be expected to reassociate with the trigger of the rule that results in the loss of their segmental support [Clements and Ford 1979], in fact *any* tone whose support is lost reassociates to the trigger [Leben 1978]. Thus, in the often cited case of Lomongo, /bàlóngó bǎkáé 'his book' → bàlóngǎkáé , despite the fact that the high tone on the second o in the input would not be stranded after vowel deletion if it was also associated (in unmarked fashion) with the first o .

Secondly, in some languages, rules that appear to be clearly autosegmental in nature (in the sense that they would be most simply expressed by a crucially autosegmental rule) make it impossible, when treated as such, to state subsequent rules. For example, in Churma [to appear, b] I argue that in Loko there is a rule which converts all tones of the second element of a compound to low (presumably stated most simply as $T_o \rightarrow L$, with association of all vowels to the

L). However, a later rule must be able to convert the first two Ls (either as simple Ls on vowels of the second element or as part of a word-final falling tone on the first element) to H when they follow a word-final H. The Ls in this case behave as if they were singly associated; however, only the tone of the first syllable is affected if the first element has final falling tone, and only the first two are affected if it has a final H. If multiple association of tones is prohibited, as in (2), this would *require* that the former rule be revised so that all (singly-associated) tones in second elements are replaced by L, and the latter would be able to apply appropriately.

A third argument in favor of (2) comes from Odden's [1980] analysis of certain forms in Shona, which behave as if they have multiply-associated tones with respect to an early rule (in that indefinitely long sequences of Hs are lowered) but behave otherwise with respect to a later rule, where only a single H of a sequence is lowered. If (2) is adopted, then this difference would be attributed to the presence of a Q-subscript in the case of the former, but not the latter. (These facts could also be taken as support for (1), as in fact Odden argues, with the difference in behavior accounted for in terms of the different behavior of pre- vs. post-mapping rules; however, the putatively post-mapping rule does not appear to have the other kinds of characteristics exhibited by such rules.)

Finally, in Venda, according to Cassimjee [1983], all Hs are multiply associated, but all Ls are singly associated, as indicated by the fact that indefinitely long sequences of Hs are affected by a rule, whereas only the first of a sequence of Ls is affected by another rule. If we assume that there are just 100 lexical items for which the putative difference between singly- and multiply associated tones could be detected from the way in which they are affected by the relevant rules, then the probability of the above distribution occurring by chance is $(1/2)^{100}$, or one in over 1,200,000,000,000,000,000,000,000,000,000. An alternative account in which the difference in behavior derives, not from a wildly improbable chance distribution with respect to lexical representations, but from a simple difference in the form of the rules involved (Q-subscript vs. lack thereof) seems clearly preferable.

The converse of (2) is clearly not true, given the existence of contour tones. The different autosegmental tiers behave differently in other respects, as well. For example, while elimination of one of two tones associated with a single vowel is commonplace ("contour-tone simplification"), no language requires that one of two vowels (putatively) associated with a single tone be deleted. Thus, tone in TTLs is more nearly suprasegmental than autosegmental in character—indeed close to being strictly segmental when compared to other prosodic characteristics (as Bell and Hooper [1978] almost suggest).

There are a number of fairly obvious apparent problems for a theory that incorporates principles (1) and (2). Some of these are addressed in my 1983 paper, and I feel that the others will also turn out to be only apparently problematic (some are treated in work in preparation). In any event, the (apparent?) problems facing a theory that does *not* incorporate the equivalent of these principles are sufficiently severe that the potential explanatory role played by these principles deserves careful attention.

REFERENCES

Bell, Alan and Joan B. Hooper. 1978. "Introduction." In A. Bell and J. B. Hooper (eds.), *Syllables and Segments*. Amsterdam: North Holland.

Cassimjee, Farida. 1983. "An autosegmental analysis of Venda nominal tonology." *Studies in the Linguistic Sciences* 13(1):43-72.

Churma, Donald. 1983. "Diachronic and synchronic tone rules in the Etsako verbal system: some theoretical implications." *Ohio State University Working Papers in Linguistics* 27:16-49.

Churma, Donald. to appear a. "The nature of tonological representation: evidence from Loko." In G. Dimmendaal (ed.), *Current Approaches to African Linguistics*, Vol. III. Dordrecht: Foris.

Churma, Donald. to appear b. "Necessarily simultaneous rule application in Igbo tonology." *CLS* 20.

Clements, George N. and Kevin C. Ford. 1979. "Kikuyu tone shift and its synchronic consequences." *Linguistic Inquiry* 10:179-210.

Creider, Chet. 1983. "Constraining autosegmental phonology: evidence from Nandi tone." Paper presented at Fourteenth Conference on African Linguistics, University of Wisconsin, Madison.

King, Robert. 1973. "Rule insertion." *Language* 49:551-578.

Leben, William R. 1973. "Suprasegmental phonology." Unpublished PhD dissertation, MIT.

Leben, William R. 1978. "The representation of tone." In V. Fromkin (ed.), *Tone: a Linguistic Survey*, pp. 177-219. New York: Academic Press.

Odden, David. 1980. "Associative tone in Shona." *Journal of Linguistic Research* 1(2):37-51.

THE DESTRUCTION OF TONAL STRUCTURE IN MENDE

Elizabeth Cowper and Keren Rice
University of Toronto

In Mende, a Mandan language of Sierra Leone, there are several word forma-
tion processes which involve moving or copying tones and introducing low tones
that are assigned to all non-initial syllables of the second morpheme of the
word. We will claim that in order to account for these processes in the lexi-
cal phonology framework proposed by Kiparsky [1982], the rules copying and mov-
ing tones and assigning the low tones must destroy previously assigned autoseg-
mental structure.

1. Data

1.1. Reduplication. In Mende, reduplication involves the copying of an en-
tire verb or adjective stem to the right of the base. A final high tone of the
base is moved onto the reduplicated element and the remaining syllables of the
reduplicated element receive low tone. This is shown in (1).

(1) a. mbélá 'tear, split, break' mbélámbélà 'tear to pieces'

  b. hùmù 'murmur in dissatis- hùmùhùmù 'murmur in dissatisfaction'
                faction'

  c. nyàndé 'pretty' nyàndènyándè 'very pretty'

  d. fèmbé 'shake' fèmbèfémbè 'shake repeatedly'

From the form in (1a), it might seem that the high tone is spreading rather
than moving onto the first syllable of the reduplicated element. However, the
forms in (1c) and (1d) show that in fact the final high is moved. In these
forms, the base still carries a low tone which spreads right to associate with
the remaining syllables of the base. The inserted low tone then associates
with the remaining syllables to the right. In (1a), since rightward movement
of the high tone leaves the base with no tone, the high tone spreads back.

1.2. Noun-noun compounding. Noun-noun compounding involves the copying of a
final high tone from the first noun onto the first syllable of the second noun.
The remaining syllables of the second noun receive low tone. This is illustrat-
ed in (2).

(2) a. ngúlú + mítà ngúlúmítà 'wooden spoon'
       tree   spoon

  b. mèndé + hálé mèndéhálè 'Mende medicine'
       Mende   medicine

  c. pùù + hálé pùùhàlè 'European medicine'
       Europe   medicine

  d. mèndé + bèlè mèndébélè 'Mende trousers'
       Mende   trousers

The word formation processes of reduplication and compounding thus both in-
volve the assignment of low tone to the second member of the word. They differ
only in that reduplication involves moving final high tones while compounding
involves copying final high tones. In the rest of the paper, our major con-
cern will be how the second element receives its tones.

2. Lexical Phonology and Mende

Within the lexical phonology framework, the organization of the grammar of
Mende is as follows.

(3)

lexical phonology		
morphology		phonology

compounding

intransitive formation   ←

                                →

mutation

insert L/]__ in X⁰

copy final H in][in X⁰

move final H in]] in X⁰

syntax

reduplication   ←

phrasal compounding   →

inflection

postlexical phonology
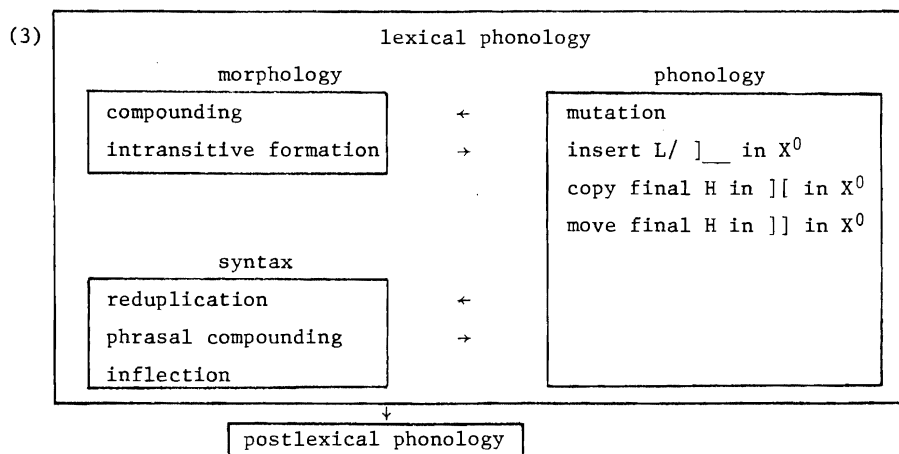
While the placement of syntax within the lexicon is controversial, we argue for
it in detail in Cowper and Rice [1984]. For the present paper, we simply as-
sume the model in (3). The rules we are concerned with here are the tone rules
in the lexical phonology and their interaction with morphological processes
within the lexicon. Before proceeding with our analysis, we will outline some
basic principles of lexical phonology relevant to our analysis.

In the lexical phonology model, there is a cycle back and forth between the
phonology and morphology sides of the grammar. While most languages that have
been treated in a lexical phonology framework have more than one level, it ap-
pears that there is just one level in the grammar of Mende.

The rules in the lexical phonology are sensitive to the internal structure
of words; the postlexical rules apply across the board, paying no attention to
internal structure. In order to capture this distinction between rule types,
the Bracket Erasure Convention is used. This convention erases word internal
brackets at the end of each level of the lexicon. Thus, within the Mende lexi-
con, the internal structure of words is transparent, but postlexically no refer-
ence can be made to this structure. The rules of the lexicon are subject to
the Strict Cycle Condition; they can only apply in derived environments. In re-
cent work, Kiparsky [1983] proposes that only structure changing rules are re-
stricted by the Strict Cycle Condition to derived environments; structure build-
ing rules such as stress assignment and tone association are not so restricted

and can apply to basic lexical entries.

With this overview of lexical phonology, we will now go on to look at the rule of tone association in Mende.

3. The Place of Tone Association in the Grammar

In arguing for the placement of tone association, we will assume with Leben [1978] that Mende is a language with autosegmental tone and tone spreading. We will show here that (1) tone association occurs in the lexical rather than in the postlexical phonology and (2) it precedes all rules of word formation in the lexical phonology.

We will present two types of evidence that tone association is lexical rather than postlexical. In both cases, if tone association applied postlexically, incorrect forms would be generated. First, consider a case where a polysyllabic stem has a single tone associated with it, as in (4).

(4) a. bulu   'horn'   b. bulu + nga   'horns'
           | | |
           H   H   L

If tone association is postlexical, brackets will have been erased, obliterating word internal structure and predicting the tone association in (5).

(5) bulunga
    | ⋁
    H   L

The correct tone association is not (5), however, but (6):

(6) bulunga
    ⋁ |
    H   L

This pattern follows only if tone association is sensitive to word internal structure.

A second piece of evidence for tone association being lexical comes from the existence of word internal contour tones. An example is shown in (7).

(7) a. mba   'rice'   b. mbanga   'rices'
        ⋀   ⋀ |
        L H   L H L

Again, postlexical tone assignment predicts the incorrect form in (8) rather than the correct (7b) since access to word internal structure is not allowed.

(8) mbanga → *mbanga
                | ⋀
    L H L   L H L

Once tone association is placed in the lexical component of the grammar, the theory of lexical phonology predicts that it will apply immediately to the basic lexical entries. As discussed in Kiparsky [1983], structure building rules can apply to basic lexical entries and are not restricted by the Strict Cycle Condition to derived environments. Tone association is a structure building rather than a structure changing rule and therefore applies as the first rule of the lexical phonology before any phonological or morphological processes have a chance to apply.

4. The Destruction of Assigned Tones

Since tone association can be shown to apply before any other processes, it follows that when word formation processes apply, the component parts of the word already have their tones associated. Thus if any word formation process introduces a new tone pattern, the original associated tones must be deleted. Thus, in a reduplicated form like (9), the tones on the second element must be erased in order to give the correct phonetic form.

(9) mbela   mbela

       H   H

     phonology   mbela   tone association
                        V
                        H

     morphology   [[mbela] mbela]   reduplication
                        V   V
                        H   H

     phonology   [[mbela] mbela]   (tone erasure)
                        V
                        H

                      [[mbela] mbela]   insert L
                        V   V
                        H   L

                      [[mbela] mbela]   move final H
                                V
                              H L

                      [[mbela] mbela]   tone spread
                        ＼＼＼＼＼N
                              H L

                      [[mbela] mbela
                        ＼＼＼＼＼ | postlexical rules
                        H   L
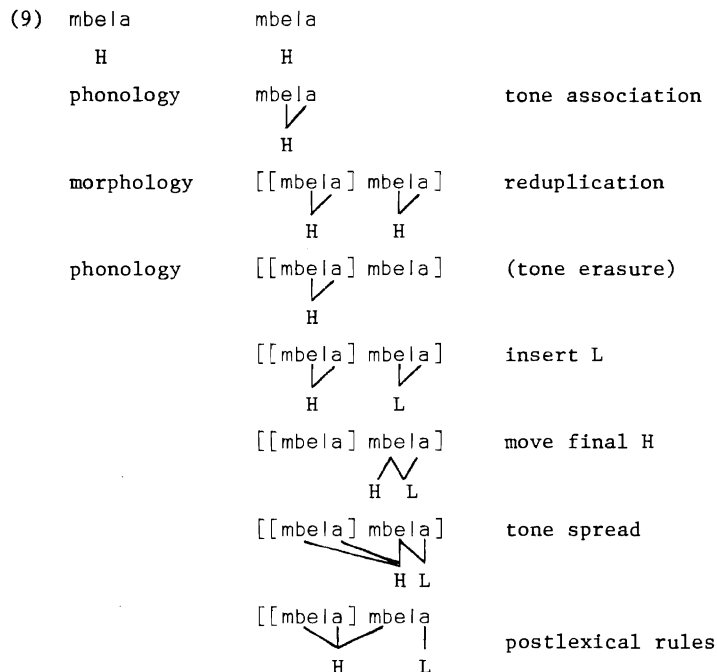
The surface tones in reduplicated forms might be accounted for by claiming that reduplication involves copying merely the segmental tier, leaving the second element toneless. The tone erasure step would then be unnecessary and the derivation would go directly to mbela mbela and then continue as illustrated.
                                    V
                                    H

While such an approach involving copying only the segmental tier will handle
the reduplication data, it is unavailable for any word formation process in-
volving elements with lexically assigned tone. An example is noun-noun com-
pounding, as shown in (10).

(10)   mɛnde   hale

                           L H   H

phonology   mɛnde   hale   tone association
                 | | \ /
                 L H   H

morphology   [[mɛnde][hale]]   compounding
                   | | \ /
                   L H   H

phonology   [[mɛnde][hale]]   (tone erasure)
                   | |
                   L H

                 [[mɛnde][hale]]   insert L
                   | | \ /
                   L H   L

                 [[mɛnde][hale]]   copy final H
                   | | \|
                   L H   H L

                 [[mɛnde][hale]]   postlexical rules
                   | | | |
                   L H   H L
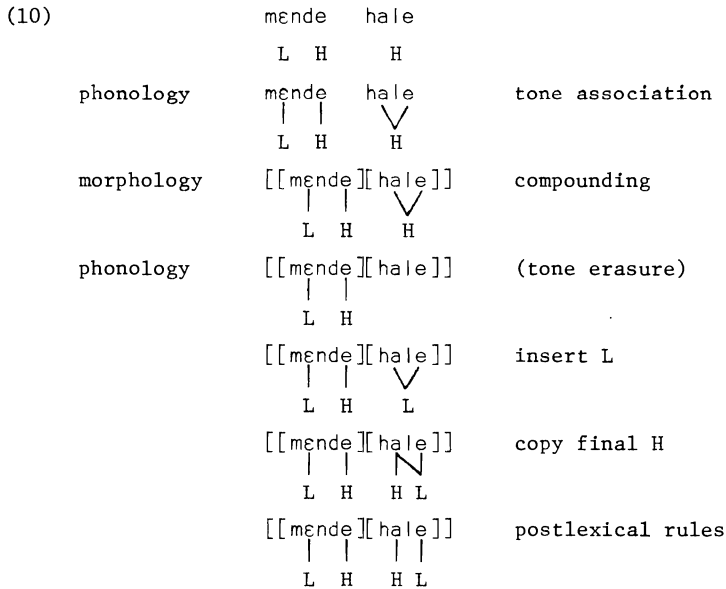
Since hale with associated H is a basic lexical entry on its own, it will be
assigned tones by tone assignment on entering the phonological component of the
grammar. Since this item is assigned tones before compounding occurs, the tone
erasure step is necessary to eliminate these assigned tones. We thus see that
there is no way to avoid erasing autosegmental structure.

To sum up, we have shown that tone association in Mende precedes all rules
of word formation. We have also shown that word formation rules involve whole-
sale changes in tone melody and thus must detach and erase previously assigned
structure. What remains to be shown is that the erasure of tones need not be
stipulated in the grammar of Mende, but follows automatically from the theory
given the existence of the tone insertion, copy, and movement rules. In the
derivations shown in (9) and (10), the tone erasure step (in parentheses) need
not be stated but follows given the other rules.

As Kiparsky [1983] discusses for English stress rules, structure building
rules override existing metrical structure when they apply in derived environ-
ments but not when they apply in non-derived environments. This overriding of
existing metrical structure is not blocked by the Elsewhere Condition since the
string affected by the stress rules is not a substring of any lexical entry.
Since the structural description for the stress rule is met and nothing blocks
it from applying, the rule must destroy any previously existing structure to be

interpretable: a stress rule cannot apply to stress an already stressed form.

   The destruction of autosegmental tone can be viewed similarly: it follows automatically from the theory given the existence of the derived environment low tone insertion rule. This rule is not interpretable unless it automatically erases structure previously assigned since tones cannot be assigned to already toned structure. Since tone melodies in Mende are associated with morphemes rather than syllables, it follows that when tone erasure occurs the tone melody of an entire morpheme disappears.

[The authors' names are given in alphabetical order. No priority of authorship is intended. Thanks to Patrick Conteh for help with the data.]

REFERENCES

Cowper, E. A. and K. Rice. 1984. "Word formation outside the lexicon."
     Paper presented at the Canadian Linguistic Association.

Kiparsky, P. 1982. "From cyclic phonology to lexical phonology." In H. van
     der Hulst and N. Smith (eds.), *The Structure of Phonological Representa-
     tions* (Part 1), pp. 131-176.   Dordrecht: Foris.

Kiparsky, P. 1983. "Some consequences of lexical phonology." Ms., MIT.

Leben, W. 1978. "The representation of tone." In V. Fromkin (ed.), *Tone:
     A Linguistic Survey*, pp. 177-219. New York: Academic Press.

ONE FATHER OR TWO? POLYSEMY IN KINSHIP TERMS

Chet A. Creider
University of Western Ontario

1. Introduction

In this paper I propose the use of empirical procedures developed in the study of semantics in linguistics for the resolution of aspects of a long-standing debate in anthropology. All kinship terminologies use a small number of terms. For example, in a Hawaiian-type system, there may be only a handful of terms. The Mbuti pygmies use just five terms [Turnbull 1965:110]: tata 'individual of one generation greater than my parents', epe 'male of my parents' generation', ema .'female of my parents' generation', moko 'individual of my generation', and mIki 'individual of a generation below my own'. Kinship terms which denote a large number of kin types are termed *classificatory* after Morgan [1871]. Terms which denote a small number of types are called *descriptive*. These two labels are frequently also used to describe entire terminological systems, although this usage is of course very imprecise.

In the semantic analysis of kinship systems, two general approaches have been taken in the literature. In the first, which I will call the social category approach, it is claimed that kinship terms do not inherently have anything to do with kinship (as biologically defined). So-called kinship terms are in essence terms which express relationships of social category. Relationships which are felt to be ones of kinship in, e.g. English, are "covered" by, i.e. have as functional analogues, terms which are non-biological in basic meaning.

The second general direction for analysis is taken by the "extensionist" hypothesis. Under this hypothesis, kinship terms have core meanings which are biologically defined. These meanings are then "extended" to cover wider ranges of kin types. Thus epa in Mbuti usage would have as its "core" meaning 'father of ego'.

A classical statement of the social category approach was provided by Leach in 1958 in a paper entitled, "Concerning Trobriand clans and the kinship category *tabu*". A highly polemical reanalysis of the Trobriand data in terms of the extensionist hypothesis was given by Lounsbury [1965], "Another view of Trobriand kinship categories". Since then the debate has raged without, to the best of my knowledge as an impartial outsider, resolution. It has in fact become customary for anthropologists simply to cite their affiliation to one or the other "side" in the debate as though this were now simply a matter of which team one belonged to and had more to do with matters of ascriptive identification than with decidable issues [Kiernan 1977]. In part this is due to the fact that virtually all of the analyses which have been utilized in the discussion have been based on data collected by others. Both Leach and Lounsbury based their analyses on Malinowski's Trobriand data, supplemented by data provided by a missionary. Scheffler and Lounsbury [1971] used data collected by Allan Holmberg, etc. We will see below why this is a self-defeating procedure.

2. A Sketch of the Nandi Kinship Terminological System

Before proceeding further let me outline the principal relevant features
of the kinship terminological system of Nandi, a Southern Nilotic language spo-
ken by some million or so individuals in Western Kenya (including closely re-
lated dialects). The terminology is a variant of the bifurcate-merging or Iro-
quois type known as Omaha. The term kwaanta is used in referring to ego's
father, his father's brothers and all individuals whom ego's father calls
brother. This includes of course all of ego's father's father's brothers'
sons since ego's father refers to *his* father's brothers as kwaanta . In addi-
tion one's father's mother's sisters' sons are called 'father' because ego's
fathers call the children of their mothers 'brothers and sisters'.

The term eeyoo is the basic word for mother. It is used to refer to
one's own mother, to one's father's other wives and to all women whom one's
mother calls 'sister'. It also is used to refer to the wives of everyone one
refers to with kwaanta .

It should be emphasized that the language does not provide terms to distin-
guish among these different kinds of 'mother' and 'father'. It is of course
possible to use relative clause constructions to identify uniquely the particu-
lar individual one is referring to, but in such a case there is no tendency to
prefer a kin-based identificational procedure over any other means of uniquely
identifying some referent. It is as natural for a Nandi to refer to his FaBr
as 'father' as it is for an English speaker to call the same individual 'uncle'.
Countless details of usage reinforce the system. To cite just one, the Nandi
practice teknonymy, and refer to an individual by the name of his or her (usu-
ally first) child. A man without children of his own, but with, for example,
an older brother who has had a son named Kibet, will be called 'father of Kib-
et'.

The term seenke is used to refer to anyone whom ego's father calls 'sis-
ter'. These individuals are father's sisters, father's father's brother's sis-
ters and father's mother's sister's daughters.

The term maama denotes anyone that one's mother calls 'brother', i.e.
mother's brothers, mother's father's brother's sons and one's mother's mother's
sister's sons. This term can also be applied to generations below ego, i.e. to
one's MoBrSo and MoBrSoSo. Finally it is a reciprocal term, so it also means
'sister's son', i.e. 'son of anyone ego calls sister'.

This basic system is paralleled on one's own generation by the use of terms
for 'sibling', 'brother', and 'sister' for anyone who is the child of someone
one calls eeyoo or apa (the address term corresponding to kwaanta 'fa-
ther'). Similarly, the children of one's sibling are called 'sons and daugh-
ters'.

3. The Analysis of Polysemy in Linguistics

George Lakoff [1970], in a well-known *Linguistic Inquiry* squib, distinguish-
ed between ambiguity and vagueness and provided a number of tests which allow
linguists to distinguish between the two. The article by Arnold Zwicky and Jer-
rold Sadock [1975], "Ambiguity tests and how to fail them", provided a conveni-
ent summary of the literature together with an evaluation. The basic test I

will use in the next section "passes" according to Zwicky and Sadock and is un-
controversial today.

Our goal will be to determine if the meaning of a Nandi kinship term which
is classificatory is polysemous. If it is, then an ambiguity test will allow
us to distinguish the different senses which the term has. Let me illustrate
with a couple of English examples. First, suppose we wish to determine whether
the English term 'father' is ambiguous, i.e. has two senses, as between 'bio-
logical father' and 'priest'. Imagine a situation in which there are two indi-
viduals, Bill and John, both of whom regularly attend mass and frequently turn
to their respective priests for counselling. In addition both have living fa-
thers. In other words, each of Bill and John has two 'fathers' as shown below.

(1)   1   2   3   4

    biological father   priest   biological father   priest
                      ____/   ____/
                       John   Bill
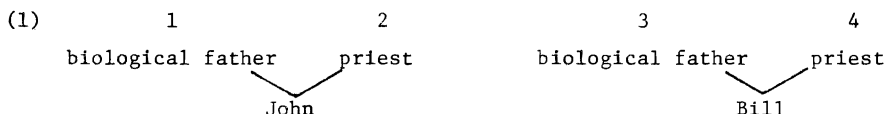
Now consider the sentence, 'John called his father, and Bill called his also'.
The possible pairings of individuals who are in the 'father of' relationship to
John and Bill are 1+3, 2+4, 1+4 and 2+3. It is clear that only the first two
are possible readings for the sentence. That is, the construction requires
identity of sense and hence distinguishes between two different senses of the
same word.

Now consider again the same two individuals. Each of these has two
'uncles' as shown below.

(2)   1   2   3   4

    MoBr   FaBr   MoBr   FaBr
        ____/   ____/
         John   Bill

If we look at the sentence, 'John called his uncle, and Bill called his
too', it is clear that any of the logically possible pairings of 1+3, 1+4, 2+3
and 2+4 are plausible readings of the sentence. We may conclude that the term
uncle, with respect to the distinction between MoBr and FaBr, does not distin-
guish between MoBr and FaBr, i.e. that there is a single sense to the term (no
polysemy).

4. The Application to Nandi

Suppose these kinship relations: Arap Suswa is the biological father of
Tapsubei and Arap Barno, now deceased, was one of his brothers. The following
sentence is perfectly appropriate in Nandi:

(3) kwaant-aap Taapsubei Araap Suuswa, ak kii Araap Barno kora[1]
     father-of Tapsubei Arap Suswa and Past Arap Barno also

     'Arap Suswa is the father of Tapsubei, and Arap Barno was too'

_____

[1]Nandi is a verb-initial language; Arap Suswa and Arap Barno are in the

In this sentence, where Tapsubei has a father (in the English sense) and a pa-
ternal uncle (also termed 'father' in Nandi), the two individuals are both giv-
en the attribution 'father'. It may be useful to compare an English example.
Suppose John is Bill's biological father and Andrew is his priestly father.
The sentence, 'John is Bill's father and Andrew is, too', is not possible as a
description of this state of affairs. Although syntactically well-formed, it
is semantically ill-formed (unless uttered for the sake of a laugh).

    As another example, suppose that out of a group of men standing some dis-
tance away from the speaker, two men detach themselves and come towards the
speaker. If one of the two men is the father of Kiprono, and the other is a
paternal uncle of Kiprono, it would be entirely appropriate for the speaker to
say,

(4)   kwaanwaakik aap Kiproono chaa   pwaaney
      fathers   of Kiprono those+who come (pl.)

      'the ones who are coming are fathers of Kiprono'

Compare a situation in English where a pair of eyeglasses and a drinking glass
are located some distance from a speaker. It would not be appropriate to say,
"The glasses are over there." A somewhat more subtle English example may be
constructed. Suppose a similar situation to the Nandi one, but suppose that of
the two men who come toward the speaker, one is the brother of the father of
John and the other is the brother of the father of John's wife. It would not
then be appropriate to utter, "The ones who are coming are John's uncles."

    As a final example, suppose we have two friends, Kibet and Kiprono, and (5)
is uttered with respect to them.

(5)   kii-kuur kwaanta-nyii Kipeet, ak kokuur nenyii Kiproono
      Past-call father-his   Kibet   and call   his   Kiprono

      'Kibet called his father, and Kiprono called his'

    In this sentence, in a situation where Kibet and Kiprono each have a father
(in the English sense) and one or more paternal uncles, i.e. individuals also
termed 'father' in Nandi, any of the logically possible combinations of fathers
and paternal uncles may be intended.

    Analogous sentences with the term eeyoo 'mother, mother's sisters' may be
constructed, and the "additional" (from an English-speaker's point of view)
sense of 'another of Fa's wives' may also participate fully in the core exten-
sion of the term.

    What can we conclude from this exercise? At the very least we can claim
that from the standpoint of cognitive reality, that is the semantic system oper-
ated by an adult speaker of Nandi, there is no polysemy here. The extensionist
hypothesis, however attractive it may appear from a formal point of view, sim-

---

nominative case and function as subjects of their respective clauses. Non-past
sentences have zero copula.

ply fails to produce an analysis which is cognitively real.

However, as is often the case with the real world, all is not that simple. When we turn to the more extended senses of the Nandi terms, the very same tests clearly distinguish between the above core extensions of the terms and the extended senses of, for example, FaFaBrSo for kwaanta . Interestingly, the cross-generational neutralization of the term for MoBr, maama , does not survive the test with a unitary sense. The use of the term for MoBr for MoBrSo and MoBrSoSo is criterial for a kinship terminology to be an Omaha type. So this usage is less well-integrated cognitively than the basic Iroquois features.

I mentioned previously that it was unfortunate that the principal articles in the extensionist debate were based on secondary analyses of data collected by others. It is in fact surprisingly easy to simply ask speakers whether there is or is not a unitary sense to a given kinship term. As an English speaker, it is clear to me that 'father-as-priest' and 'father-as-biological father' are different senses of the term 'father', but that the term 'uncle' applies equally well to MoBr and FaBr, i.e. that both are included in the basic extension of the term. In the more subtle case of the use of the term uncle for MoSiHu or FaSiHu, my intuitions are less clear, but I am satisfied with the results of the test given in the discussion of the English analogue to (5). Nandi operate a culture with far fewer straggly pieces and loose ends than ours, and their judgements are much sharper. Their intuitions coincide with the results of the test.

5. Discussion

Despite the fact that at the locus of what might be called primary extensions, the extensionist analysis is not supported in Nandi, it appears to me that it has a very strong basis in the ontogenetic development of the child. A Nandi child first learns to refer to his biological mother and father as eeyoo and kwaanta . He is then taught to apply these already learned terms to FaBrs and MoSis. My guess is that as a child he operates a system which is best described in the extensionist framework. As an adolescent the child comes into extensive contact with his close relatives, and I suspect that by the time of his initiation in early adolescence, the child has internalized the cognitive system which matches the social reality which is the Nandi social system— one based on the fundamental principle of the equivalence of siblings. The Nandi were traditionally a highly independent, acephalous ethnic group with a high level of military activity. In a society characterized by a high mortality rate for males, the Nandi kinship system, together with associated institutions of teknonymy, the levirate, etc., ensured that children always grew up with someone to inherit from, someone to call father who would arrange their initiations, marriages, provide them with cattle, etc. There were no single parent households in Nandi despite the fact that large numbers of males were lost in military action.

In conclusion, I have suggested new procedures for the semantic analysis of kinship terminological systems. These procedures should be readily adaptable for use in other cultures and languages, and I hope that work of this type will aid in deciding which of several competing analyses has the strongest claim to cognitive validity. This in turn may lead to renewed progress in the area of kinship studies.

[I would like to thank J. T. Creider for discussion of the Nandi examples used in this paper and of the ideas proposed here.]

REFERENCES

Kiernan, K. T. 1977. Review of *A Study in Structural Semantics: The Siriono Kinship System* by H. W. Scheffler and F. G. Lounsbury. *American Anthropologist* 79:141-143.

Lakoff, G. P. 1970. "A note on vagueness and ambiguity." *Linguistic Inquiry* 1:357-359.

Leach, E. 1958. "Concerning Trobriand clans and the kinship category *tabu*." In J. Goody (ed.), *The Developmental Cycle of Domestic Groups*, pp. 120-145. Cambridge: The University Press.

Lounsbury, F. G. 1965. "Another view of Trobriand kinship categories." In E. A. Hammel (ed.), *Formal Semantic Analysis*, pp. 142-185. *American Anthropologist* 67.5 (pt.2).

Morgan, L. H. 1871. "Systems of consanguinity and affinity." *Smithsonian Contributions to Knowledge* 17:291-382.

Scheffler, H. W. and F. G. Lounsbury. 1971. *A Study in Structural Semantics: The Siriono Kinship System*. Englewood Cliffs, New Jersey: Prentice-Hall.

Turnbull, C. 1965. *Wayward Servants: The Two Worlds of the African Pygmies*. Garden City, N.Y.: The Natural History Press.

Zwicky, A. and J. M. Sadock. 1975. "Ambiguity tests and how to fail them." In J. Kimball (ed.), *Syntax and Semantics* 4, pp. 1-36. New York: Academic Press.

MICROCOMPUTERS AND AFRICAN RESEARCH

Gerard M. Dalgish
Baruch College, CUNY

This paper examines some applications of microcomputers in conducting research and analysis in the field of African languages. It describes the minimum capabilities necessary to conduct computerized research and analysis, explores some examples of syntactic, morphophonemic, and historical computerized data-keeping and analysis for Khoisan, Nilotic, Cushitic, and Bantu languages. It concludes with some general comments on the usefulness as well as the limitations of such research and mentions additional applications of interest to Africanists as well as African linguists.

Syntactic computerized analysis is often more complex than the other areas. I worked on a project at the University of Illinois in which sentences from five East African languages—Sandawe, Maasai, Iraqw, Acholi, and Chagga—were entered on the PLATO facility. In the presentation there was a reproduction of a printout of a search for all examples containing WH-Question. One "field" —computer jargon for data that the computer will treat as one group—consisted of the sentences morphosyntactically split; for example, ho-a dlomo ?leng tanga . The second field listed the glosses of each morpheme: WH-ELEMENT+ AGENT,BUY,PROG(ressive),MELON. The third field glossed the sentence, in this case, "Who is buying the melon?", and other fields contained "anything of interest" for the particular language, in this case such remarks as "affirmative", "question", etc.

Once the data were entered—a not insubstantial undertaking—one could begin to search for any morpheme, marker, syntactic category, gloss, or combination of any of these. For languages with complicated syntactic word order, such as Sandawe with a practically free word order system, keeping track of the possible permutations is something the computer can do with ease. In fact, one could construct a short computer program to generate possible word order combinations and test such items against the speaker's intuitions for grammaticality, or for semantic/pragmatic focus, etc.

For languages with interesting deictic pronominal processes, such as Maasai, the computer can "find" quickly what might otherwise be disparate data, linking points that might otherwise be missed. The presentation demonstrated a search for the morpheme aa in Maasai; it is used for 1st singular objects and 1st singular subjects under certain circumstances. It is important to note that it is up to the linguist to make sense out of what the computer shows him/her; the computer does not yet do the analysis. But with the computer we have a quick way of bringing all the relevant data together to help us make the judgement.

These initial examples were with PLATO, but many of us do not have access to that facility, and in fact, sometimes mainframes are more trouble than they are worth in terms of convenience and access. But with relatively simple database systems that run on microcomputers, we can begin to conduct research just as easily as with mainframes. I use a very simple database called Incredible Jack which is not without its problems, and in the presentation I provided a

sample template form for syntactic data, and then sentences entered as "rec-
ords" on that template. It is possible even with this limited system to up-
date, i.e. retype or correct, anything you entered, make searches of varying
degrees of complexity, and print out what you need when you need it. A cru-
cial example can be searched for in your file and for some systems, can be
merged into your text without even retyping.

Morphophonemic analysis and historical investigation can also be aided by
the computer. Words or morphemes can be entered along with—as in the case
for Bantu as an example—such relevant information as class membership, any
and all alternations observed, etc., in short, any information that might nor-
mally go on one's index cards, looseleaf binders and file folders. In the
presentation, a sample template for Luyia was given, where the fields include
such information as underlying form, part of speech, gloss, class #, singular,
plural, etc. Once one enters the data, one can examine here paradigms along
any parameter one chooses, e.g. grammatical/semantic paradigms (as infinitive,
imperative, passive, first-person singular, applied, stative, etc. forms); one
can then transfer, say, all the verbs into another file and then enter present
tense forms. One could save a lot of work by being able to look at morphemes
by root-initial or root-final segments, by nasal interactions, vocalic inter-
actions, tonal phenomena, etc., all without laboriously recopying and realpha-
betizing. Relevant alternations need be entered only once, after which para-
digms can be called up by searches of particular fields. For complicated al-
ternations like those observed in certain past tenses of Bantu languages, we
can easily compare paradigms within a morpheme or across morpheme types for a
particular category.

As for historical work, once a list of Guthrie, Meinhof, Bourquin, or any
proposed proto-system of Bantu is entered, one can again compare one's own da-
ta with the proposed proto-forms and match correspondences. One could even
imagine a software package "Guthrie for the Apple Computer" which would ask
for selected items in the Bantu language of your choice, match them semantical-
ly to Guthrie's starred forms, and give you the correspondences (or let you fi-
gure them out.) In the presentation there was a printout of a few morphemes I
entered with their corresponding proto forms, showing where most vowel-initial
and y-initial roots came from. But the bigger one's database becomes, the
more the correspondences could fall out.

Another project that can actually be fun is to program the computer to sim-
ulate the derivations of certain forms. I presented a program written in BAS-
IC that can accept as input two morphemes of a word (verbs mostly) and produce
the correct surface form. This could easily be applied to CAI (computer-as-
sisted instruction) in African languages, where the student can be called upon
to test his knowledge of how to put strings together. It would also be inter-
esting to know what sorts or classes of rules will allow themselves to be ren-
dered in BASIC and which can not. Since the structure of BASIC is well known
to mathematicians, we might find out the structure of certain rules that cannot
be captured in BASIC and test to see how widespread such rules are, or even
whether we should rethink our whole paradigm of rule-writing, rule-ordering,
and the like. At the present, artificial intelligence (AI) research is foc-
ussed primarily on English and a handful of Indo-European languages; African-
ists have long been aware of the dangers of such limitations. As we begin to
attempt to parse our "exotic" languages both morphemically and syntactically,

we may encounter problems that will lead to a rethinking of some AI research.

I conclude with some remarks about some of the advantages and disadvantages of computers in African linguistic research and present some caveats and pitfalls to avoid. Some drawbacks include limitations in memory storage which can slow your work down, especially as you increase the size of your database. This point should not be underestimated. Nor should the value of having good merge capabilities be forgotten—you should be able to switch your data around, both in existing files and in new files, in and out of the databases to a word-processing program.

A much more important potential drawback is the fact that the linguist must have some preliminary analysis in mind prior to deciding on which fields to set up. In some sense, you have to know what's going to be interesting before you go about setting up your schema to enter the data. Obviously, a thorough grounding in the structure of the language family is helpful before one investigates a language within that family. And this problem can also be minimized if one can easily redesign one's file structure, which is possible in most software. Networking with computer-interested Africanists who are attempting this sort of research is also very helpful.

One of the advantages is the sheer speed of finding relevant forms, as well as the possibility of uncovering a correlation that had gone unsuspected. It will also be simpler to comply with requests from colleagues for data; no laborious writing out or spending days at the xerox machine will be necessary. And for monolingual and bilingual dictionaries, word-processing and database systems are perfect for gathering, alphabetizing, searching and replacing, etc. Instant dictionaries could be produced, alphabetized by English or by African language, without retyping.

In short, microcomputers can provide the African linguist with important analytical tools to aid research in and compilation of African language data. Syntax, phonology, historical work, lexicography, CAI, and even AI are all areas that will benefit from the contributions of Africanists with computers.

SYNTACTIC BINDING AND RELATIVE ASPECT MARKERS IN HAUSA

Anthony R. Davis
Stanford University

This paper discusses some features of the verbal aspect system of Hausa and relates them to a class of phenomena known as constituent control, unbounded dependencies, or syntactic binding. Specifically, I will try to develop a unified account of the distribution of Hausa relative aspect markers, within the framework of lexical-functional grammar (LFG). An introduction to LFG is Kaplan and Bresnan [1982] and this paper also incorporates ideas in Zaenen [1983].

The aspect of a Hausa verb is indicated by an aspect marker preceding it, which also indicates the person, number, and gender of the verb's subject, as shown in (1) and (2):

(1) a. Hàlīmà tā   zō   'Halima came'
      H.   3sgf,cmpl come

   b. kin   zō   'you came'
      2sgf,cmpl come

(2) a. Hàlīmà tanà   zuwà   'Halima is coming/comes
      H.   3sgf,cont come   (regularly)'

   b. kinà   zuwà   'you are coming/come
      2sgf,cont come   (regularly)'

There is another form of the completive and continuative aspect markers, known as the relative form, which must be used in the contexts exemplified in (3)-(6):

(3) <u>relative clauses</u>
   a. mutànen dà sukà   zō jiyà   'the people who came yesterday'
      people Comp 3pl,r.cmpl come yesterday
   b. *mutànen dà sun   zō jiyà
      people Comp 3pl,cmpl come yesterday

(4) <u>word questions</u>
   a. mè   ya   ganī?   'what did he see?'
      what 3sgm,r.cmpl see
   b. *mè yā   ganī?
      what 3sgm,cmpl see

(5) <u>cleft and fronting constructions</u>
   a. Kànde cè   ta   zō   'it's Kande who came'
      K.   copula 3sgf,r.cmpl come

b. *Kànde cḕ tā̄ zō̄
    K.   copula 3sgf,cmpl come

(6) a. cikin mō̄tā̀ (nē) mukà zō̄   'we came by *car*'
        in   car   copula 1pl,r.cmpl come

    b. *cikin mō̄tā̀ (nē) mun zō̄
        in   car   copula 1pl,cmpl come

The relative aspect markers also appear in narrative contexts, as when tell-
ing a story or fable. No attempt will be made here to deal with occurrences in
these contexts, and it is unclear at best whether they are syntactically deter-
mined or related in other ways to those in (3)-(6). This problem aside, the
list in (3)-(6) is insufficient in two respects. First, it doesn't provide a
unified description of the environments in which relative aspect markers occur.
A grammar of Hausa incorporating such a description would be preferable, all
other things being equal, to one that didn't. Secondly, this account isn't
strictly adequate with regard to verbal complements, as (7) and (8) show:

(7) a. mḕ su kḕ fā̄tan sun gamā̀? 'what do they hope they have
        what 3pl,r.cont hope 3pl,cmpl finish   finished?'

    b. *mḕ su kḕ fā̄tan sukà gamā̀?
        what 3pl,r.cont hope 3pl,r.cmpl finish

(8) a. yā̂ran dà su kḕ zā̄ton yā̄ tàfi K̞anṑ
        boys Comp 3pl,r.cont think 3sgm,cmpl go Kano

        'the boys who thought he went to Kano'

    b. *yā̂ran dà su kḕ zā̄ton ya tàfi K̞anṑ
        boys Comp 3pl,r.cont think 3sgm,r.cmpl go Kano

I will now present an outline of some parts of LFG relevant to what follows.
There are no movement or deletion rules in LFG; instead an empty category is
generated in the "gap" and it is anaphorically related to some other constitu-
ent. The empty category I will call the bindee, and the corresponding constit-
uent is its binder. Thus in

(9) Who did you see *e*?

Who is the binder of the empty category, and both are base-generated by phrase
structure rules. Phrase structure rules in LFG are constrained by functional
equations, which contain information about the grammatical relationships the
constituents bear to one another. As an example here are some of the PSR's
that could be used to generate (9):

(10) S ---> NP   Aux   NP   VP
              (↑ TOP)=↓ ↑=↓   (↑ SUBJ)=↓ ↑=↓
              ↓=↓↓

      VP ---> V   NP
               ↑=↓   (↑ OBJ)=↓

NP   --->   *e* $\Uparrow$
$$\uparrow = \Uparrow$$

The $\uparrow$ is a variable referring to the functional information at the mother node, while $\downarrow$ refers to the node itself. These equations are subject to certain general principles. The head of a category always bears the equation $\uparrow = \downarrow$; such an equation in effect passes all of the functional information at the current node to its mother node. A maximal category may bear an equation of the form ($\uparrow$ G)= $\downarrow$, where G is a grammatical function such as SUBJ, OBJ, or PRED. Minor categories may only bear the equation $\uparrow = \downarrow$.

In (9) the binding of *who* to the empty category is effected with the $\Uparrow$ and $\Downarrow$ metavariables. A $\Downarrow$ must be matched by a $\Uparrow$. The equation $\downarrow = \Downarrow$ is associated with the constituent which is the binder, while the equation $\uparrow = \Uparrow$ is associated with the empty node in the gap. Kaplan and Bresnan (1982) proposes conditions on the possible configurations in which $\Uparrow$ and $\Downarrow$ may appear. Some of these are shown in (11), which also introduces the notion of *binding domain*:

(11)
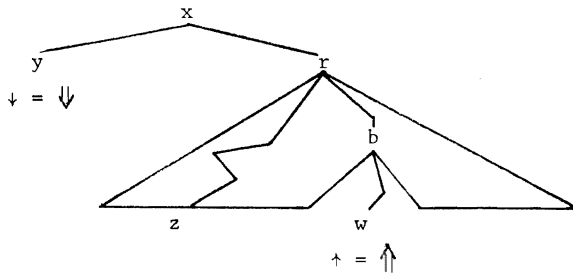
In (11), node y is the binder. Node r, which is required to be a daughter of y's mother, is the *root node* of the binding domain. The bindee must be dominated by the root node, as node z is in (11). A further stipulation is that the path from the root node to the bindee may not contain any *bounding nodes*. Thus if node b is a bounding node, no node that it dominates, such as w, is a possible bindee of y. The class of bounding nodes is specified for each language, and it has been argued that S is a bounding node in English. This is the basis of the LFG account of island constraints. For Hausa, I have not assumed that S is a bounding node, as extraction seems to be freer than in English.

We can now define a binding domain as all the constituents dominated by a root node but by no bounding nodes (except possibly the root node itself).

Returning to relative aspect markers, we note that, narrative contexts aside, they seem to occur only within binding domains. We now need some mechanism in LFG which will permit only the relative forms to appear there. Zaenen [1983] proposes a lexical feature BND, which may have the values + or -. For Hausa, its value will be + for relative aspect markers and - for neutral ones. In aspects that don't distinguish between relative and neutral forms, BND can be either + or -. Also, every phrase structure rule that introduces a root node will associate with it a *constraint equation* of the form:

(12)   S
    (↓ BND)=c +

Unlike the other equations, constraint equations don't contribute any functional information, but require that some other equation in the tree do so. Here, for example, the constraint equation (12) will be satisfied if some constituent of S bears the equation:

(13)   (↑ BND)= +

and if the value of BND can percolate up to S via a series of ↑ = ↓ equations.

Now only one more thing needs to be stipulated—the root node of any binding domain bears the constraint equation (12), while all other S nodes implicitly bear the equation:

(14)   (↓ BND) =c −

Now we can give an account of (6) and (7). The structure of (7a) is given in (15).

(15)

```
                          S
         (↓ TOP)=↓              ↑=↓
           ↑=↓                   S
           NP            (↓ BND)=c +
            |                    |
            |                   ↑=↓
           mè                   VP
                     ↑=↓   ↑=↓              (↑ XCOMP) =↓
                (↑ BND)= +  V                     S
                   Aux      |                     |
                    |       |                    ↑=↓
                    |       |                     VP
                  su kè   fātan      ↑=↓      ↑=↓         (↑ OBJ)=↓
                                     Aux       V           NP
                                      |        |            |
                                  (↑ BND)= +   |           ↑=⇑
                                    sukà      gamà          e
```
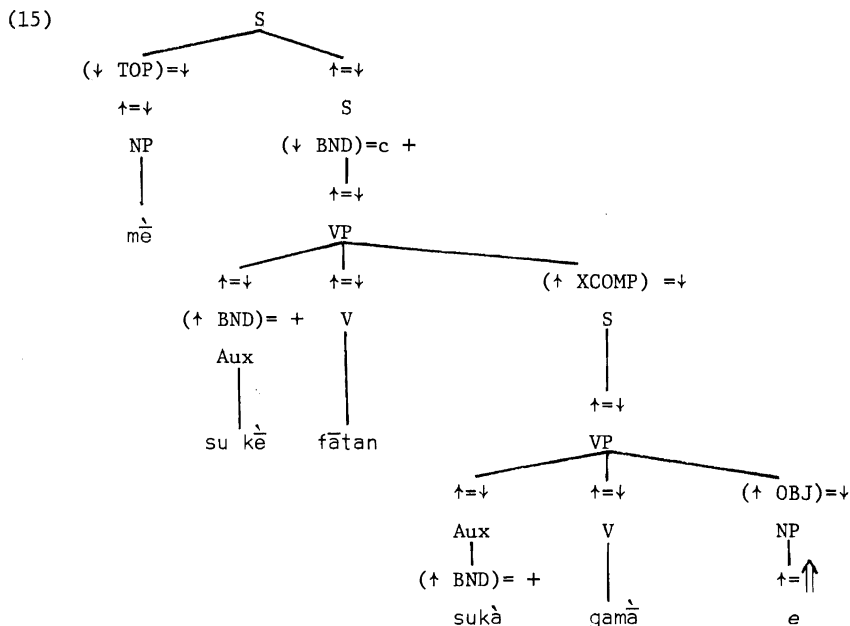
The root S node bears the constraint equation (12), as required, and so the verbal aspect marker in that clause must be in the relative form, in order to supply the + value of BND which will satisfy the constraint. But in the lowest clause the aspect marker can only be neutral, because the S node immediately dominating that clause is not a root node. Thus this S node implicitly bears

equation (14), and the presence of a relative aspect marker in this clause would
cause a clash in the value of BND in that clause, accounting for the ungrammati-
cality of (6)b.

There are two verbs in Hausa whose complements behave somewhat differently,
as (16) and (17) show:

(16) a. mutā̀nên dà   sukà   rigā   sukà   tàfi,
         people Comp 3pl,r.cmpl have already 3pl,r.cmpl go

         sū nè̀   sukà   sā̀ci sānìyā
         they copula 3pl,r.cmpl steal cow

         'the people who have already left, they stole the cow'

    b. *mutā̀nên dà   sukà   rigā   sun   tàfi
         people Comp 3pl,r.cmpl have already 3pl,cmpl go

(17) a. mutā̀nên dà   sukà   rìkidà   sukà   zamā   kūrā̀yē
         people Comp 3pl,r.cmpl metamorphose 3pl,r.cmpl become hyenas

         'the people who metamorphose and become hyenas'

    b. *mutā̀nên dà   sukà   rìkidà   sun   zamā   kūrā̀yē
         people Comp 3pl,r.cmpl metamorphose 3pl,cmpl become hyenas

(Example (17) comes from Eulenberg [1972].)

In (16) and (17) both the main verbs and their complements take relative as-
pect markers when within a binding domain. It is noteworthy that these two
verbs also require the subject of their complement to be coreferential to their
own. An account of this correlation would be desirable.

One way of doing this is to assume the structure for these sentences shown
in (18) on the next page. We have to make rigā or rìkidà a member of ↑ ADJ
(adjuncts) to avoid assigning two conflicting values to PRED. This means that
these two verbs are treated as a sort of adverbial, and what appears to be the
complement is treated as the main verb. Notice that all of the features of
both aspect markers will percolate up to the top VP; this means that if they
differ in any way there will be a clash in the values of person, number, gender,
aspect, or BND, and the structure will be ill-formed.

There is a hitch in this account which is illustrated by (19):

(19) a. mutā̀nên dà   bà sù   rìgāyà̀   sun   ga sinèmar ba
         people Comp Neg 3pl,cmpl have already 3pl,cmpl see movie   Neg

         'the people who haven't already seen the movie'

    b. *mutā̀nên dà   bà sù   rìgāyè̀   sukà   ga sinèmar ba
         people Comp Neg 3pl,cmpl have already 3pl,r.cmpl see movie   Neg

When rigā is negated, the aspect marker of the following verb is neutral
even in a binding domain, at least for some speakers. One treatment of this
problem is to complicate the constraint equations associated with root nodes,

(18)

```
                          NP
         ↑=↓                        (↑ ADJ)=↓
         ↓=⇓                         S'
         NP                        (↓ BND)=c  +
                          ↑=↓                     ↑=↓
                         ⇑=⇓                       S
                         Comp                  (↓ BND)=c  +
                                      (↑ SUBJ)=↓              ↑=↓
                                         NP                    VP
                                              ↑=↓    ↓ε(↑ ADJ)        ↑=↓
                                              Aux        V             VP
                                                                 ↑=↓        ↑=↓
                                                                 Aux         V
                                        ↑=⇑   (↑ BND)= +        (↑ BND)= +
   mutānên          dà        e      sukà       rigā       sukà        tàfi
```
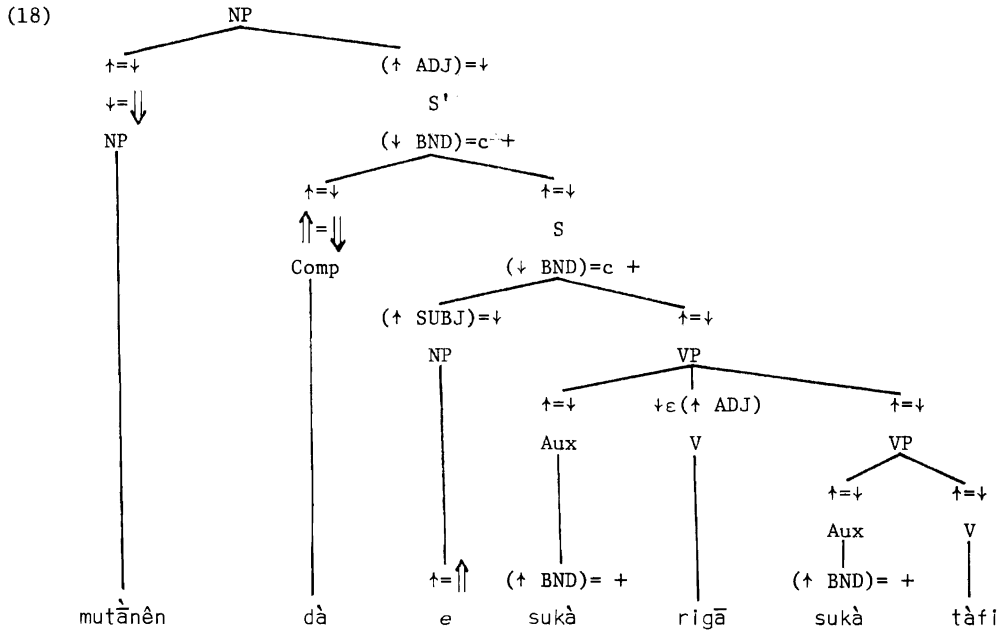
as in (19):

(19) (↓ BND) =c + or (↓ NEG) =c +

However, this is clearly ad hoc in the absence of independent motivation.

REFERENCES

Eulenberg, J. B. 1972. "Complementation phenomena in Hausa." U.C. San Diego doctoral dissertation, reprinted by Xerox University Microfilms.

Kaplan, R. and J. Bresnan. 1982. "Lexical-Functional grammar: a system for formal grammatical representation." In J. Bresnan (ed.), *The Mental Representation of Grammatical Relations*, pp. 173-281. Cambridge, MA: The MIT Press.

Zaenen, A. 1983. "On syntactic binding." *Linguistic Inquiry* 14:469-504.

NIGER-CONGO NOUN CLASS AND AGREEMENT SYSTEMS
IN HISTORICAL AND ACQUISITION PERSPECTIVE

Katherine Demuth, UC Berkeley
Nicholas Faraclas, UC Berkeley
Lynell Marchese, San Jose State University

0. Introduction

This paper investigates noun classes and concordial agreement systems in
Niger-Congo languages. It examines comparative language data from Cross River
and Kru languages, noting overall characteristic directions of noun class and
agreement system evolution in both families. It then focuses on problems which
first language learners might face in the learning of a full class/agreement sys-
tem, considering both spontaneous and experimental Bantu language acquisition da-
ta as well as evidence from Bantu languages in contact. Historical changes
which have resulted in the leveling of gender and agreement distinctions in Ni-
ger-Congo in many ways parallel the various stages of acquisition of the system
in languages which still maintain these distinctions. Findings from these com-
parative data sets provide important clues as to the nature of the linguistic
change at work in the cases considered, as well as providing evidence for and
against various theories of how those changes might have taken place.

1. Cross River Languages

The Cross River subbranch is divided into five groups: Bendi, Upper Cross,
Lower Cross, Ogoni, and Central Delta, each of which typifies a different stage
in the gradual disintegration of the prototypical Niger-Congo noun class and con-
cordial agreement systems. The most conservative groups (Upper Cross and Bendi)
preserve many of the original CV- prefixes as well as the gender and concordial
systems which most probably existed in Proto-Niger-Congo. The most innovative
groups (Lower Cross, and especially Ogoni) show limited concord and few if any
gender distinctions, with prefixes where they persist (many nouns in Ogoni are
prefixless) typically taking the form N- or V-. In some groups (Central Delta
and Bendi especially) old CV- prefixes are incorporated into noun stems.

In Upper Cross, Bendi, and Central Delta, many languages have complete con-
cordial systems including pronominal, subject-verb, adjectival, determiner-demon-
strative, and numeral concord. Numeral concord is, however, most often a relic.
In Lower Cross and Ogoni only a few relics of concord have survived, including a
few adjectival concords.

From the comparative synchronic data on Cross River languages we find a small
range of consistent patterns by which gender/concord loss appears to be taking
place. It is not just *any* gender which persists, but rather the human 1/2 and
the non-human 9/10 classes which are the last to be lost. CV- prefixes are not
simply omitted, but rather reduced to V- or N- or incorporated gradually into the
stem with new prefixes occasionally added. The number of plural classes tends to
collapse, becoming distinguished by one overgeneralized marker. Concord appears
to be lost first with numerals and adjectives, while it is maintained longest
with subject pronouns.

2. Kru Languages

Like Cross River languages, Kru languages represent a reduced version of a
more extensive proto-system. While Kru languages are almost exclusively suffix-
ing, noun class suffixes have all but disappeared through loss or coalescence
with the noun stem. Again, we find more and less conservative Kru languages,
Eastern Kru showing more preservation of the old system, and Western Kru showing
more loss. As the result of coalescence in Kru languages, noun systems are be-
coming more regularized, with singulars being perceived as unmarked and plurals
marked, a tendency observed both in Bantu [Stucky 1978] and in Lower Cross.

Despite this phonological coalescence and seeming "loss" of noun class suf-
fixes, concord is extensive in Kru. In Eastern Kru languages, concordial agree-
ment occurs on subject, object, possessive, interrogative, and relative pronouns,
as well as on adjectives, demonstratives and definite markers, as seen in the
Godié examples below:

(1) ɲʉkpɔ̱ kʌdɔ̱ nɔ̱   mlλ   ɲʉ́   wɔtɔ̱   'this big man drank cold water'
     man   big this drank water cold

(2) ɔ̱ mlλ ɔ̱   'he drank it'

The gender distinction in subject pronoun systems is maintained longer than any
of the other manifestations of concord in Kru. With one exception: all lan-
guages still maintain a singular human/non-human distinction throughout the pro-
noun set.

As class distinctions decrease, there appears to be a corresponding (though
not absolutely predictable) decrease in concordial agreement. Though most lan-
guages do not retain adjective gender agreement, singular/plural distinctions
are maintained on some adjectives. As in Cross River, numbers and definite mark-
ers seem to be lost first.

Kru languages thus represent a case where remnants of gender classes are pre-
served as coalesced nominal suffixes. While the productivity of nominal classi-
fication is minimal, the distinctions which are made correspond to the human
classes 1/2a and non-human classes 9/10, similar to the most dominant class re-
tentions in Cross River languages. Though the gender system is minimally func-
tional, the agreement system is still productive, indicating a primacy of con-
cord over nominal marking.

3. Bantu Language Acquisition Data[1]

The language acquisition data from Bantu languages stem from a longitudinal
study of spontaneous and natural speech from 4 Sesotho speaking children between
the ages of 2 and 4 1/2 years old [Demuth 1983], a spontaneous/naturalistic Sis-
wati study of 2 children between the ages of 18 months and 36 months, and an ex-
perimental study of 3 children 4 1/2 to 6 years of age [Kunene 1979].

From our current cross-linguistic knowledge of strategies that children em-

---

[1]Acknowledgement and appreciation go to Dan Slobin and students for their
contributions to this prediction process. I accept full responsibility, however,
for the particular interpretations presented here. (KD)

ploy when learning a language [Slobin 1984], we have made several predictions
about the kinds of phenomena we would expect to find in the acquisition of the
Sesotho noun class system: (1) The learning of noun class prefixes might prove
problematic as they are word initial, carry little semantic content, are usually
found in unlengthened (and unstressed) position, and usually bear low tone. (2)
children might try to collapse the number of singular/plural distinctions made,
possibly taking the singular form plus prefix as the root and using only one
plural marker, probably class 10. (3) class 9 nouns with ∅ prefix and monosyl-
labic nominal stems + prefix would be assigned a singular marker of some sort,
making them "fit the paradigm". (4) there would be a somewhat reduced number of
gender distinctions in the agreement system initially, perhaps surfacing produc-
tively as class 9/10.

Upon considering spontaneous Sesotho language acquisition data we discover
that only some of these predictions are upheld. Noun class markers were used
with ∅-, V-, or CV- markers at the same stage of development, as illustrated be-
low:

(3) (25.0 months):   -punkɔ   -phokɔ
                        à-pɔ́kɔ̀   à-pɔ́kɔ̀
                        e-pɔnk   ma-punkə

                        (lὲ-phɔ́qɔ̀)   (mà-phɔ́qɔ̀)
                        'green corn stalk'   'green corn stalks'

Thus, as with the various stages of loss or incorporation of nominal prefixes
found in Cross River languages, children also progress through a stage where a
single lexical item may be rendered with variable prefix shape, even in consecu-
tive utterances in the same contextual and grammatical environment. Exceptions
to this progression of appropriate nominal marking are found in the omission of
class 5, 7, 8, and 10 prefixes (Sesotho lε , sε , (N)lí and (N)lí , when an
adjunct (demonstrative, possessive, etc.) follows the noun, as seen below:

(4)   pɔ̀:kɔ̀   láŋ̀ε   'that green corn stalk'
        (lὲ-phɔ̀qɔ̀)   lá-nὲ)
        green corn stalk that

Omission of these particular prefixes when the noun is used with an adjunct is a
phenomenon also found in adult Sesotho speech and may represent an initial stage
of prefix loss in progress in Sesotho.

Contrary to our hypothesis, class 9 nouns, which take a ∅ prefix, are not ov-
ermarked with prefixes from other classes, and nouns from one class are rarely
assigned to other classes, i.e. there is no collapsing of plural distinctions in
singular/plural markings. This differs from the tendencies observed in Cross
River, Kru, and Bantu languages in contact, where plural distinctions are fre-
quently neutralized.

These findings contrast with experimental results from Siswati where children
of ages 4 1/2-6 did collapse plural markings when the children were given novel
word forms and Siswati nouns out of context and asked to provide the correspond-
ing singular or plural form of the noun. Overgeneralizations occurred (1) toward
the use of 9/10 class markings for classes 7/8 and 11/10 and (2) toward the over-

extention of class 2a, the human-relative (family relation) class marker, to classes 2, 4, and the liquid/mass class 14 and the infinitival class 15 (apparently analysed only as stems, as they have no singular/plural alternations). Thus older children tended to classify plural nouns into loose human/non-human classes. Independent evidence from Kituba [Mfwene 1972] and Spoken and Kinshasa Lingala [Bokamba 1983] document this same tendency for overgeneralization of the class 2a human-relation class marker for plural when the noun class system begins to lose gender distinctions. The most interesting result, however, is that these same children did *not* make these or any overgeneralizations in spontaneous speech, indicating a major difference in the nature of "natural" versus "less-natural" linguistic contexts.

The acquisition of concordial agreement is a gradual process which has already begun prior to 2 years of age, most notably with demonstratives and possessives. It continues till past the age of 3 when most subject concords and object clitics, demonstratives, possessives, relatives, adjectives, and some numerals are used with appropriate gender forms.

4. Conclusion

First language learners appear to focus not simply on nouns, but on entire nominal or verbal phrases where concord is of primary importance and nominal marking only secondary. This would account not only for the relative lack of marking errors for nouns in context on the part of Sesotho speaking children and for the primacy of concord not only in the order of acquisition, but also in its persistance in Kru and Cross River languages where productive gender marking has been lost. Noun and modifier may be conceived of as being a cognitive unit, with concord as the crucial unifying element. It is proposed that young language learners may adopt this unit as a basic learning construct, using concord productively while continuing to experiment with the correspondingly appropriate marking for nouns.

REFERENCES

Bokamba, E. G. 1983. "Code-mixing and grammatical changes in Bantu languages."
     Paper presented as part of Lecture Series, Dept. of Linguistics and Niger-
     ian Languages, Univ. of Ibadan, Nigeria, June 23, 1983.

Demuth, K. 1983. "Aspects of Sesotho language acquisition." Indiana Univer-
     sity Linguistics Club, Bloomington.

Faraclas, N. forthcoming. "Cross River languages." In J. Bendor-Samuel (ed.),
     Current Trends in Linguistics: Niger-Kordofanian Languages. The Hague:
     Mouton.

Greenberg, J. H. 1978. "How does a language acquire gender markers?" In J. H.
     Greenberg (ed.), *Universals of Human Language* pp. 47-81. Stanford: Stan-
     ford University Press.

Kunene, E. C. L. 1980. "The acquisition of Siswati as a first language: a
     morphological study with special reference to noun prefixes, noun classes
     and some agreement markers." Ph.D. dissertaion, UCLA.

Marchese, L. 1984. "Agreement systems in Kru: a historical perspective."
     Paper presented at Agreement Symposium, Stanford, October 1984.

Mfwene, S. S. 1979. "Some grammatical changes and variations in Kikongo-Kituba
     and their implications for language planning." Paper presented at the
     10th annual Conference on African Linguistics, Univ. of Illinois, Urbana.

Slobin, D. I. 1984. *The Crosslinguistic Study of Language Acquisition*. Hills-
     dale, N. J.: Lawrence Erlbaum Associates.

Stucky, S. U. 1978. "How a noun class system may be lost: evidence from Kitu-
     ba." *Studies in the Linguistic Sciences* 8(1):216-233.

THE INTONATION SYSTEM OF ISOKO

Shirley Donwa-Ifode
University of Port Harcourt

1. Introduction

Isoko is a Southwestern Edoid language spoken in the Isoko Local Government Area of the Bendel state of Nigeria.

It is a discrete level tone language with two level tones: high (H) and low (L) as stated by Mafeni [1969] and Elugbe [1977]. Both previous writers, without any discussion, mention the possible use of intonation in Isoko. Though Mafeni claims the existence of downstep and downdrift, Isoko has neither. Moreover, the phenomenon of final low tone raising discussed by Elugbe is a feature of the intonation system. In this paper we give a preliminary analysis of intonation in the language.

For an adequate understanding of the subject of this paper, it is necessary to make some basic observations about the tone system in general. In addition to the H and L tones, contour tones also exist at the phonetic level. They are derived from underlying sequences of level tones: a segmental and a floating. The floating tone that forms one end point of the contour may arise from segmental processes such as Elision, Glide Formation, etc. or they could be underlying floating tones which have purely intonational function. Amongst the justifications for the latter claim is the fact that contour tones are generally simplified, but where one end point of the contour is a feature of intonation, the simplification of that contour is blocked since it is likely to obscure the intonation signal. Consider for instance

(1) ɔ̀lɛ̂   'yam'

     ɔ̀lɛ̌   'yam?'

A simplification of the contour tone on this final ɛ̂ would yield a positive statement since, where it applies, all contours are simplified to (H).

The lexical function of tone is only prominent in the noun. The tone of the verb stem (Vs) is continually changing from one construction to another; our phonological analysis assigns no underlying tone to the Vs since there is evidence that it acquires its tone by polarisation.

We also postulate a process of tonal replacement. In its citation form the subject concord marker (a linker of the subject and verb phrase (VP)) bears a L tone. This L tone of the subject concord marker (Scm) does not undergo changes generally. However, in conditional and relative clauses at the beginning of a sentence, the L tone of the Scm is always replaced by a H. Compare examples (2a, b) with (2c).

(2) a. ɔ̀ ɔ̀ ɲa → ɔ̀ ɔ̀ ɲá   'he went'
        he Scm go

    b. ɔ̀ ɔ̀ tí ɲa → ɔ̀ ɔ̀ tí ɲà   'he will go'
              will

c. ɔ̀ ɔ̀ té ɲa → ɔ̀ ɔ́ té ɲà   'if he goes...'
       if

    The L tone of the Scm in the imperative is also replaced by a H, after which
the Vs is assigned a tone opposite to that of the Scm.

                       Repl.   Pol.
(3) ʋ̀ɛ̀ ʋ̀ɛ̀ dɛ   →   ʋ̀ɛ̀ ʋ́ɛ́ dɛ   →   ʋ̀ɛ̀ ʋ́ɛ́ dɛ̀   'buy!' (singular)
     you Scm buy
The process of tonal replacement is seen as a tonal manifestation of intonation
in Isoko.

    The relationship between intonation and other tonological processes is such
that the former is superimposed on the latter. Hence, contour tones that are
manifestations of intonation are not subject to simplification. The process of
replacing the basic tone of a syllable to give a particular intonation contour
usually takes precedence over other tonological processes. Consider, for in-
stance, the replacement of the L tone of the Scm by a H after which the Vs is as-
signed an opposite L-tone by the process of Polarisation, as in (3) above. If
the order is reversed, i.e. polarisation before replacement, the result will be
an unacceptable tonal sequence. Compare (3) with (4).

                       Pol.   Repl.
(4) ʋ̀ɛ̀ ʋ̀ɛ̀ dɛ   →   ʋ̀ɛ̀ ʋ̀ɛ̀ dɛ́   →   ʋ̀ɛ̀ ʋ́ɛ́ dɛ́

2. Data and Analysis

2.1. _Methodology_. In addition to our auditory perception and the writer's
knowledge as a native speaker, the data for this analysis were documented by test
recordings from seven subjects which were analysed on a pitch metre. The pitch
level of items with different tone patterns were first observed in isolation.
These were then recorded in different positions in various grammatical construc-
tions such as simple statements, yes/no questions, and a few complex sentences.
The speed of the utterances is that of a normal conversational register, and we
also extracted utterances from ongoing dialogues.

    The average intonation curve for each utterance was taken by comparing pitch
curves as produced by each of the subjects (from the pitch meter onto the mingo-
graph). On the basis of this, we were able to identify five distinct pitch lev-
els which are represented schematically below.

(5)
                              ————————————1
                              ————————————2
                              ————————————3
                              ————————————4
                              ————————————5

    Pitch level 1 is a downglide, a low-falling pitch. It is unmarked on the
vowel. Pitch level 2 (PL.2) is the level of a low tone and marked ` on the
vowel. Pitch level 3 (PL.3) is that of a mid tone and it is marked ¯ . This is
the raised low. Pitch level 4 (PL.4) is the level of a high tone and marked ´
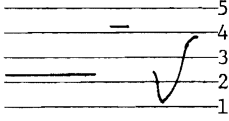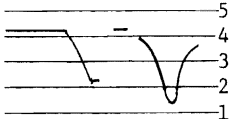
on the vowel. PL.5 is slightly higher than the level of a high tone. This is
referred to as the superhigh level and marked ' . What generally obtains here
is an upglide from high to the superhigh level.

It is necessary to add that sometimes we do get intermediate levels. For
instance, a H may be raised above PL.4 but below PL.5 as in the case of the H^s
in the High tune of the positive declarative statement (2.2.2). PL.5 is set up
on the basis of what obtains in the negative interrogative sentence. The sen-
tence itself is marked by a final floating H tone. Floating tones H or L func-
tioning as features of intonation have remarkable effect of raising or lowering
the pitch of the syllable (or vowel) on which they are segmentalised.

L tones are also observed to be raised without getting to PL.3. PL.3 is set
up on the basis of what obtains in the case of final raised L tones in positive
statements. The overall pitch contour of each sentence is labelled a tune, and
this is considered a unit of intonation.

2.2. The intonation tunes. From our examination of the pitch contours of dif-
ferent constructions, the following tunes are identified: Low, High, Rising,
and Falling. Each of these tunes can mark more than one construction type.

2.2.1. The Low Tune. This marks negative declarative and positive interrogative
sentences. In negative declarative sentences, every syllable before the negative
particle maintains either a PL.2 or PL.4 depending on the basic tone of the vow-
el. A distinctively lowered pitch is realised on the syllable immediately before
the negative particle as well as the negative particle itself, which is marked by
an initial floating low tone that has a lowering effect on preceding syllables.

(6) a. ɔ̀bɔ̀   ɔ̀nà ɔ̀   dɛ ɔ̀bì ˋhV̌V̌   ɔ̀bɔ̀nà ɔ̀ dɔ́bihl̀í
    doctor the Scm buy book neg.

    (neg. = negative particle)

    'the native doctor didn't buy a book'

    b. ɔ́mɔ́   ɔ́ɾá   ò   ţo   úyó   ˋhV̌V̌   ɔ́mɔ́ɾá ò ţúyóhòó
    child yours Scm steal money neg.

    'your child didn't steal (any) money'

Note that the final H tone of the negative particle is below PL.4 while the
preceding L tone is below PL.2.

In the case of the positive interrogative sentence, all tones remain at PL.2
or 4 as the case may be up to the final vowel of the sentence, where a distinctly
lowered pitch is heard. This sentence is distinguished from its negative counter-
part by the presence of a final floating L tone.

(7) a. ɔ̀bɔ̀   ɔ̀nà ɔ̀   dɛ bì   ˋ   ɔ̀bɔ̀nà ɔ̀ dɔ́bi
         doctor the Scm buy book Pq

         (Pq = positive question marker)

         'did the native doctor buy a book?'
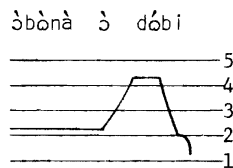
    b. ɔ́mɔ́   ɔ̀nà ò   to   úɣó   ˋ   ɔ́mɔ́nà ò túɣô
         child the Scm steal money Pq

         'did the child steal money?'
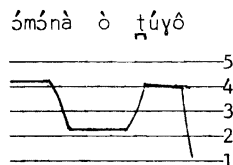
2.2.2. The High Tune. This tune marks positive declarative and imperative sen-
tences. Whereas in the declarative, the high pitch is identified towards the
end of the verb phrase, in the imperative, it is identified from the beginning
to the end of the VP.

All final L tones in these two sentence types are raised to PL.3. There is
no limit to the number of L tones that can be raised in this position provided
there is no intervening H [Elugbe 1977]. In the case of positive declarative
sentences it happens, however, that there is always an intervening H tone before
the last syllable of the VP. This is because the Vs is either preceded by a L
tone Scm, to which that of the Vs polarises to become H, or a H tone Am.

All high tones in these sentences remain at PL.4 except those within the VP
which are raised slightly above PL.4 but below PL.5.

(8) a. ɔ̀bɔ̀   ɔ̀nà ɔ̀   dɛ ɔ̀bì   → ɔ̀bɔ̀nà ɔ̀ dɔ́bⁱ
         doctor the Scm buy book

         'the native doctor bought a book'
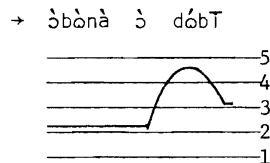
    b. ɔ́mɔ́   ɔ̀nà ò   to   úɣó   → ɔ́mɔ́ná ò túɣó
         child the Scm steal money

         'the child stole (some) money'
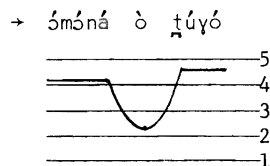
As for the imperative sentence, the L tone of the Scm is replaced by a H tone
while the rest of the sentence ends like the positive declarative sentence.

(9) a.   v̀ɛ̀ v̀ɛ̀ dɛ ìbì   →   v̀ɛ̀ v̀ɛ́ dT̄bT̄
       you Scm buy books

       'buy books!'
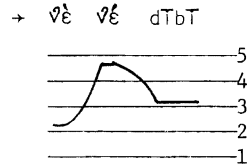
     b.   ímɔ́   v̀à dɛ íyó   →   ímɔ́ v̀á díyó
       children Scm buy cup

       '(children) buy cups!'
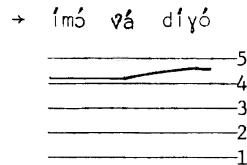
There may be a few unanswered questions with the high tune we have set up.
A high tone is not raised before the VP. Within the VP all Hs are raised to the
same level. Within the VP a L tone which is followed by a H tone is not raised.
If the key point of identifying this pitch contour is within the VP, why is the
raising of the L tones restricted to only final position while that of the H is
not?

2.2.3. <u>The Rising Tune</u>. This tune marks the negative interrogative sentence.
As opposed to the positive interrogative sentence, it has earlier been said that
the negative interrogative is marked by a final floating H tone.

There is a slight lowering of the pitch of the voice at the beginning of this
sentence, followed by a gradual rise of the pitch of every syllable until one
gets to the last syllable where a distinct rise is heard. All Ls and Hs before
the last syllable are heard above PL.2 and PL.4 respectively. One gets the im-
pression that there is a gradual updrift in the pitch of the whole sentence.

The final floating H tone, as usual, contracts with a preceding H while it
forms a L͡H rising contour tone with the preceding L. The contracted H tone
gives an upglide while the LH contour tone rises from a level slightly above PL.2
to PL.5.

(10) a. ɔ̀bɔ̀   ɔ̀nà ɔ̀ dɛ ɔ̀bì   ′   →   ɔ̀bɔ̀nà ɔ̀ dɔ́bY̌
       doctor the Scm buy book Nq

       'didn't the native doctor buy a
           book?'
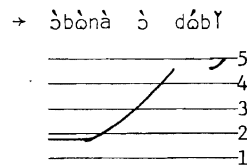
     b.   ɔ́mɔ́   ɔ̀ a ò ṭo   úyó   ′   →   ɔ́mɔ́nà ò ṭúyó
       child the Scm steal money Nq

       'didn't the child steal any money?'
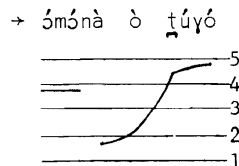
2.2.4. The Falling Tune. This tune marks all non-final pause groups such as
conditional clauses, relative clauses at the beginning of a sentence, and co-or-
dinate constructions of the listing type.

   The falling pitch contour of the conditional and relative clauses is identi-
fied at the beginning and at the end of the VP. In this construction type the L
tone of the Scm is replaced by a H which is slightly raised above PL.4 while the
construction itself is marked by a final floating L tone which occurs after the
last vowel of the VP.

   This floating L tone causes a preceding L tone (by contraction) to fall with
a downglide from PL.2 to PL.1 and a preceding H tone to fall from PL.4 to a lev-
el slightly below PL.2 (by contour tone formation). All other tones in the sen-
tence remain at PL.2 or PL.4 as the case may be.

(11) a. ɔ́mɔ́   ó   té to   úγó   ʻ / ɔ̀   ɔ̀   tí   dɛ   éγó   →
         child Scm if steal money   he Scm will buy cup

         ɔ́mɔ́   ó   té tↄ́γô   ɔ̀   ɔ̀   tí   déγó
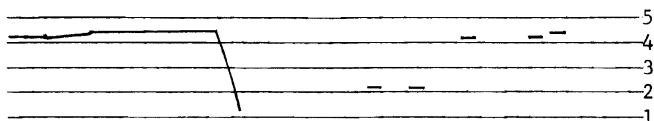
         'if the child steals money he will buy (a) cup'

     b. ὸbì   ɔ̀nɔ̀   ɔ̀bà   ɔ̀   dɛ   ò   ò   vɾu   nò   →
         book which doctor Scm buy   it Scm lose already

         ɔ̀bↄ̀nɔ̀   ɔ̀bà   ɔ́   de   ò   ò   vɾú   nō
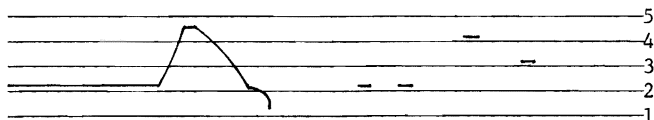
         'the book that the native doctor bought, is lost'

   When a sequence of pause groups occur in a list each group is marked by a fi-
nal floating L tone; the pitch of the final syllable of each group thus ends with
a fall. The fall is either from PL.4 to 1 depending on the basic tone of the
syllable.

(12)   ónì   ɔ̀mɛ́ ʻ / te   ɔ́sὲ   ɔ̀mɛ́ ʻ / gbὲ   ɔ̀bɔ̀   ʻ /
        mother mine,   with father mine,   as well as doctor,

        ávɔ́ ɔ́mɔ́   ɔ̀nà ʻ / à   à   kpe   èkì   →
        and child the   they Scm go   market

ónìmê tɔ́sèmê gbɔ̀bɔ ávɔ́ ómóna à kpékT
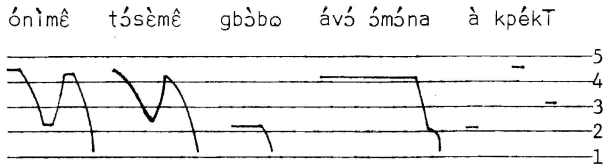
'my mother, my father, and (the) native doctor as well as the child
      went to the market'

Unlike the relative and conditional clauses, all the high tones of the list-
ed items of the co-ordinate construction are heard above PL.4 before the fall on
the last syllable. This construction type differs from those marked by a Low
tune in the sense that in the latter, all tones, H or L of every syllable occur-
ring before the end of the VP (which is the key point of identifying the Low
tune) remain at PL.4 or PL.2 as the case may be.

3. Summary

Isoko is a tone language with intonation. Since both tone and intonation are
pitch features, it is difficult to understand how intonation operates in the lan-
guage without a preliminary knowledge of the overall tone system.

The two basic tones H and L, apart from their lexical function, are often
used as manifestations of intonation. Whereas the H and L tones function as
floating tones distinguishing various pitch contours, there is no floating mid
tone. The mid tone is only a raised form of the L tone, just as the upglide is a
raised form of the H tone marking the pitch of certain utterances. It is not a
downstep High as Mafeni [1969] claims.

All Hs after Ls maintain their constant pitch levels and can only be raised
or lowered when they occur at the key place for identifying particular intonation
contours. These changes are certainly not characteristic of downdrift which Ma-
feni also claims to be present in Isoko. The error in his analysis not with-
standing, his pioneer work in this area has served as an incentive for the study
of Isoko intonation.

This is only a preliminary analysis of intonation in Isoko, since in the in-
vestigation of more complex sentences, more tunes may be identified. However, it
is hoped that this analysis will inspire further investigation of the presence
and use of intonation in Isoko and in languages of the Edoid family.

                          REFERENCES

Elugbe, B. O. 1977. "Some implication of low tone raising in Southwestern
      Edoid." In M. Mould and T. J. Hinnebusch (eds.), *Papers from the Eighth
      Conference on African Linguistics*, pp. 53-62. *Studies in African Linguis-
      tics*, Supplement 7.

Mafeni, B. O. W. 1969. "Isoko (Uzere)." In E. Dunstan (ed.), *Twelve Nigerian
      Languages*, pp. 115-124. London: Longman.

A SEGMENTAL, AUTOMELODIC VIEW OF MENDE TONE

David Dwyer
Michigan State University

1. Background

Autosegmental phonology, depending on how it is constrained, offers a variety of related phonologies. Clearly then, one level of discussion within this approach will have to do with finding the most appropriate version of autosegmental phonology for each language. This paper explores the potential for a "segmental" version for Mende, a Southwestern Mande language spoken primarily in Sierra Leone.

2. Formalization

Briefly the formal properties of the "segmental" version are defined as follows:

(1) All autosegmental formal properties, e.g. tonal tier, segmental base, lines of association, no crossing of lines, obtain.

(2) In Mende lexical representations, all tonal associations are fully specified and obey the autosegmental conditions of association.

(3) The melodic tier conforms to the Obligatory Contour Principles (hereafter OCP).

(4) Mende does not permit three associations per tone-bearing segment. In fact two associations per segment are termed "tense" and are under pressure to resolve themselves to expel one tonal association.

While other formulations of Mende tone may provide workable treatments of Mende tonal phenomena, I offer this one because it permits an interesting treatment of (1) lexical and derived grammatical downstep and (2) an apparent tone rule conspiracy.

3. The Facts of Mende

3.1. <u>Downdrift</u>. The approach taken here is to treat both downdrift and downstep as a register phenomenon rather than one involving the gradual slippage of tone as is the usual practice, an approach which necessitates placing an iterative N-ary rule of downdrift within the domain of binary rules. With the imposition of the OCP, a Mende tonal register can be defined as an H L melodic sequence, regardless of the number of syllables involved. Thus instead of downdrifted high tones, there are downdrifted registers as shown in (1).

(1)
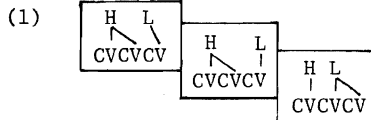
3.2. Downstep. A common historical derivation of downstepped high tone is through the loss of a low note between two highs, whether through a deletion or a raising of the low. In a register approach, this results in the adjacency of the high notes of two registers as shown in (2) below.

(2)
```
┌────┐
│HL  │
│ ╲  ┌──┐          ┌──┐
│CV  │H │          │H │
└────┤ │           │ │┌──┐
     │CV│  loss of low  │ │H │
     └──┘    →      │CV│ │ │
                    └──┤ │
                       │CV│
                       └──┘
```
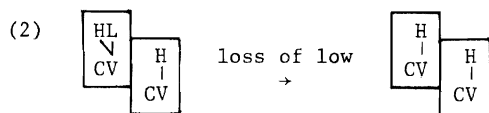
The representation in (2) appears to violate the OCP because it permits two adjacent high notes. However, the original purpose of the OCP was to prevent a problem of over-distinctiveness (3) where the same phonetic form could have two distinct representations.

(3) a. H   b. H H
       ╲   │ │
       CVCV   CVCV
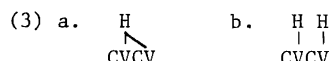
However with the concept of register, these forms can be seen to be distinct, for the second H in (3b) marks the onset of a new register which normally downshifts.

Not only does the OCP make possible the identification of registers as H L sequences, it allows for the lexical representation of downstep without the need for special symbols. In (4) the second syllables of (b) and (d) are downstepped.

(4) a. H   b. H H   c. H L   d. H HL
       ╲   │ │   ╲╲   │ ╲╱
       ngulu   toto   ngɔngɔ   gɔnɛ
       'tree'   'begin'   'tooth'   'cat'

       ‾‾‾‾‾   ‾‾‾‾   ‾‾‾‾‾‾   ‾‾‾‾‾
       ngulu   toto   ngɔngɔ\   gɔnɛ\
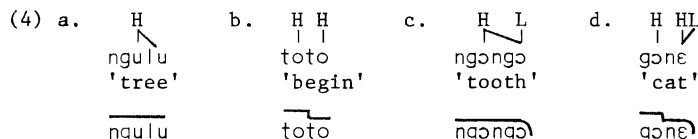
As long as registers can be characterized in this way, there is no need to insert an n-ary downdrift rule in among the binary rules. Consequently the register marking of downstep avoids the problem raised above of interspersing binary and n-ary rules.

This use of register raises the question of whether register boundaries correspond to grammatical boundaries. To this end, I note that Mende has an automatic register change (shown in the following examples by x) between subject NP and VP (5a) and between object NP and VP (5b) (but not between clitic object pronouns and the verb (5c)).

(5) a. L H   H   H
        ╲ ╲   │   ╱╲
       mahɛiji x lɔ x gílima   'the chief is thinking'

    b.   H   H   LH   H   L
        ╲   │   ││   ╲   │
       ndoi x lɔ x mbɛi x yeyama   'the child is buying rice'

    c.   H   L   H
        ╲╲╲   ╲   │
       ngí-bí-gava-ni x lɔ   'I-you-cheat-ed'
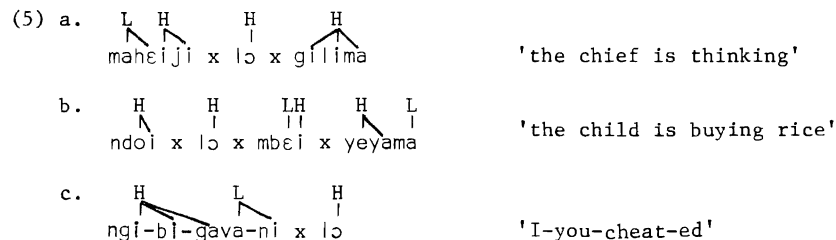
From the available evidence, Mende appears to change registers automatically across word boundaries but not within where, when two H's are juxtaposed as a result of suffixation, no downstep is observed.

(6)
```
     H        H              H
      ╲       │    OCP        ╲
   ngu│u  +   i     →      ngu│i-i
```

The process illustrated in (6) could be handled by proposing that the OCP operate across morpheme boundaries but not word boundaries. This proposal would eliminate the need to state that register shifts occur at word boundaries since this is an automatic consequence of the proposal. This would thus eliminate the need to mark such boundaries through the grammatical insertion of floating low tones.

With reference to register, I also note that Progressive Reduction (see next section) does not apply across register boundaries (7).

(7)
```
   L H  H L  →   L H  H L             L   H L
    ╲╱  ╱╲ │      │ │  ╱╲ │           ╱╲  ╱╲ │
  maha lɔɔlu     maha lɔɔlu    not  maha lɔɔlu
```

The task of defining register shifts in terms of word boundaries will necessitate a redefinition of what constitutes a Mende word, something which I feel on other grounds has been warranted for some time.

3.3. Tonological tension. In section two, I introduced the concept of tonological tension. Interestingly, the tension reduction requires the conspiratorial action of three distinct rules.

3.3.1. Progressive Reduction. The first choice for the resolution of tension will apply if the rightmost association of a tense segment connects with a tone which has at least one other association (to the right). Here the melody is preserved through the dissolution of the rightmost tense association, as illustrated in (8).

(8) a.
```
     L H       →    L H      →    L   H
      ╲╲╲            ╲╲╲╲          ╲   │
    pele-i          pele-i        pele-i      'the path'
```

   b.
```
     L HL           L HL          L H   L
     │ ╲╲╲          │ ╲╲╲         │ │   ╲
   nyaha-ngaà     nyaha-ngaà    nyaha-ngaà   'women'
```

3.3.2. Low Expulsion. The second choice of tension reduction differs from the first in two ways: (1) it applies to the left-most tone association of a segment, and (2) it applies only if that association involves a low tone. The process involves the dissolution of that low tone association. If, as in example (9a), that low tone is also associated with the preceeding syllable, the dissolution of the low tone association results in a simple L H tone pattern in a way not unlike Progressive Reduction.

(9) a.
```
     L H      →    L H      →    L H
      ╲╱            ╲╱            │ │
    pele           pele          pele             'a path'
```

b.   L HL H →   L HL H →   L H H
      \ \ | \ \ | | | |
     nyahɛ-i   nyahɛ-i   nyahɛ-i   'the woman'

But if the tense low tone is preceded by a high note (9b), the dissolution
of the low tone results in the loss of the disassociated low note. At first
glance, this appears to represent a case where the melody has been lost. Howev-
er, given the redefinition of the OCP, the sequence of two high *notes* remains
distinct marking a change of registers and with the second high tone showing up
as a "downstepped" phonetically.

3.3.3. Utterance finally. The two reductions described above will reduce all
tonologically "complex" segments except for falling tones occurring at the end
of an utterance. In this situation neither the high nor the low tone are ex-
pelled and the segment remains a falling tone. However my data suggests that
there is an optional rule which can apply in this situation to reduce the ten-
sion by adding another tone-bearing segment to the string. This segment, being
tonally unmarked, acquires a low tone association. Then progressive reduction
would apply to reduce the tension of the falling tone. Consequently the net re-
sult of this process, shown in (10), is a long falling tone.

(10)   L HL V Addition   L HL L Association   L HL Prog. Red.   L HL
         | V   → | V   → | W   → | | |
       nyaha#   nyahaa#   nyahaa#   nyahaa#
                                                                    'a woman'

3.3.4. Underlying Representations. It should be borne in mind that because of
the reduction operations described above, underlying tonally tense segments will
only appear where the possibility for alternative reductions are possible, that
is, at morpheme boundaries. Furthermore, given the priority of the progressive
reductions, these alternations are only possible morpheme finally. Morpheme in-
ternal and morpheme initial tone bearing segments will therefore lack tonal al-
ternations and can only appear lexically as H or L.

3.4. Tone Extension. In Southwestern Mande, when tone copying rules are char-
acterized as the extension of a line of association to the next tone bearing
unit, the result will be a tonologically tense tone as in the case of the Mende
compound rule (11).

(11) Mende Compound Tone Extension

$$\left[\begin{array}{cc} <H> & L \\ | & | \\ ...CV & + \ CV... \end{array} \right]_{\substack{nom \\ comp}} \quad \rightarrow \quad \left[\begin{array}{cc} <H> & L \\ & \\ ...CV & + \ CV... \end{array} \right]$$

These derived tense tones are also reduced by the above-mentioned tone re-
duction rules as shown in (12).

(12) a.   H L H   H L H   H   L H
          | \ | →   \ \ | →   /\ | |
        bi-bɛlɛ-i   bi-bɛlɛ-i   bi-bɛlɛ-i   'your trousers'

b. H L H   →   H L H   →   H   H   'your rice (def)'
    | | | | | | /\ |
    bì-wɛ-ì   bì-wɛ-ì   bì-wɛ-ì

c. H L   →   H L   →   H L   'your rice (indef)'
    | | | | | |
    bì-wa   bì-wa   bì-wa

In Bandi, which is variously considered a dialect of Mende (Welmers) or a closely related language (Dwyer), we find in addition to two high tone extension rules a low tone extension rule. When seen as a rule which extends the domain of a L one (half) syllable to the right, the observed results of the Low Tone Extension rule can be obtained by using these same reduction rules (8), (9), and (10) as shown in (13).

(13) a.   L H   →   L H   →   L H
          | | | |
          CVCVCV   CVCVCV   CVCVCV

     b.   L H L →   L H L →   L H L
          | | | | | | |
          CVCVCV   CVCVCV   CVCVCV

     c.   L H   →   L H   →   L H
          | | | | |
          CVCV   CVCV   CVCV

Case (13a) conforms to Progressive Reduction while (13b) and (13c) show the effects of Low Expulsion, which returns the string to its initial configuration.

4. Conclusion

This paper has explored the possibilities inherent in an analysis of Mende tone using an Autosegmental version which proposes (1) that Melodic-Tonal associations are fully specified and (2) that the Obligatory Countour Principle is in force. This formalization, when coupled with a register view of downdrift and downstep, permitted the identification of register changes thus eliminating the need for special symbols for marking either register or downstep. The paper then went on to point out that register changes also occur at word boundaries although at this point some details are still unclear. The active use of the OCP within word boundaries but not across them permits the prediction of word boundary register shifts without having to resort to floating tones or the like. Principle (1) above also enabled the establishment of a concept of *phonological tension* (occurring whenever two lines of association were drawn to the same segment). Phonological tension then served as the principle which lay behind a Mende tone rule conspiracy; that is the different rules conspired, each in their own way, to resolve (reduce) the tension of both lexically tense segments as well as those which arise through tone extending rules.

[The revised version of this paper has profited from comments made by Larry Hyman and John Goldsmith at the 15th Conference on African Linguistics where this paper was read.]

SWAHILI GESTURES:
COMMENTS (vielezi) AND EXCLAMATIONS (viingizi)

Carol M. Eastman, University of Washington

Sh. Yahya Ali Omar, University of London (SOAS)

While putting together an instructional video program entitled "Swahili Ges-
tures",[1] we found we were variously naming some gestures or using whole sen-
tences to represent others. As a gesture was to be done we would, for example,
make reference to it by the verbal expression used to accompany it, e.g.
ng'o ng'o , or use a verb referring to the gesture's behavior, e.g. kuramba
kishogo 'to lick the back of one's neck', or use a phrase indicating what the
gesture means, e.g. hichi changu 'this is mine'. In this paper we present
some of the specific gestures independent of speech, requiring accompanying
speech, or substituting for speech. We also describe the function of these prag-
matic context-sensitive "Parts of Communication" making some attempt to relate
this gestural aspect of Swahili to the study of language use in context. We as-
sert that whereas exclamations (viingizi) are verbal/audible gestures,
vielezi as comments (lit. explanations) linked to gesture are gestural/visible
speech.

Forms labeled kl. (kielezi, vielezi pl.) in the Kamusi ya KiSwahili
Sanifu cover many usual language functions including adverb, exclamation, and
preposition. None are listed in the dictionary as requiring gestures when they
are used even though we "know" we should, e.g. wiggle the hands with the adverb-
ial alhasili to illustrate the idea of many things mixed together. Where cer-
tain vielezi may be accompanied by gestures to illustrate the comment they
make, others go with gestures in such a way that the two form a unitary expres-
sion meaningless apart.

Here we also focus on some culturally specific gestures used by Swahili
speakers as an extension of the class of exclamation (viingizi) to the nonver-
bal realm. In this category fall a number of gestures that may be referred to
by verbs. That is, the activity they represent may be referred to in conversa-
tion though the gesture itself is nonverbal. One such verb "meaning" gesture is
ku-suta . To -suta , one points the middle finger of the right hand down re-
peatedly over the head of another person accusing the other of having done the
thing under discussion. Usually women do this to each other, e.g. if two women
are talking about a third who had an affair, the first may -suta the second
meaning, "Who are you to talk about affairs?" much in the sense of English, "It
takes one to know one."

In Swahili the verb phrase -ramba kishogo 'to lick the back of one's neck'
like -suta refers to a gesture but is *never said* in conjunction with it. The
phrase refers to the act of sticking out your tongue as a sign of contempt when
someone's back is turned from you to nonverbally tell one person you don't like
another.

There is a gesture said to be used only by women who hold up the right thumb

and index finger to form a circle while keeping the mouth open to match. This is used, for example, when a woman finds that another has done something she too has done, and both are embarrassed about it. The gesture is a comment of shared complicity. The gesturer might say something like ela mena wewe! 'I say—me AND you'.

In general it seems that the less associated with a verbal form a verbal independent gesture is, the more exclamatory it is (opposed to being explanatory, commentative) in function. Thus, we assert that emblematic gestures used in a Swahili-speaking community which are not referred to by verbal forms have an exclamatory function while verbally independent gestures that are associated with speech, e.g. -suta, -ramba kishogo , serve as comments within the context of discourse. Both gestural exclamations and comments are distinct from strictly verbal exclamations and strictly verbal comments, i.e. other "words" categorized as vielezi . The three categories of communication (excluding non-gestural vielezi) are interpretable only in a discourse context functioning either to evoke an expected behavior or comment on one that has just taken place. That is, gestural exclamations and comments and verbal exclamations are pragmatic aspects of communication.

In addition to such gestural exclamations, gestural comments, and spoken exclamations, there is a fourth category of communicational forms in Swahili that are pragmatic in nature. These require both the auditory and visual communicative channels working together in order to be interpreted. They involve the union of the spoken with the seen, the heard with the performed. Where many spoken exclamations (viingizi) are evoked by the discourse context, and all intend to evoke behavior in context, all gestural/speech units are evoked by context and are a reaction to it. They are emphatic responses to behavior with emphasis indicated by the combination of the two communication channels.

Gestures without necessary verbal accompaniment such as -suta , -ramba kishogo , and the thumb plus index finger circle in front of the mouth, are geared to the visual channel only. We now turn to the verbal dependent gestures that emerged during our gesture video-taping project. All may be seen to function as vielezi , i.e. to express views on the cultural behavior taking place in the discourse context, and are evaluative, i.e. used when either speech or gesture alone would be inappropriate. The verbal dependent gestures starting with the most arbitrary language and gesture combinations as the most opaque to the most transparent (visually and linguistically rather obvious) include:

salala - performed by placing both hands palm down on top of your head while uttering the syllables as a commentative response to a question such as Itakuwaje mtu mmoja anywe pipa zima la maji? 'How would it be if a person were to drink a whole cask of water?' The comment explains that this is "impossible", and one should not even say such a thing.

tongo - said while placing the extended forefinger of one hand below the center of the eye (left hand/left eye/and vice versa) and tugging the skin downward expressing the idea that what you, the gesturer/speaker, have just reported is absolutely accurate. The eye-pull has the effect of showing there's no tongo 'sleep' in your eye to have interfered with the accuracy of your perception. If you were inaccurate, perhaps you deserve tongo to the extent you'd be blind. Unlike the European eye-pull (gesture-only form), tongo has an alertness or

awareness after the fact dimension, emphasizing the accuracy of a previous comment made in the discourse.

hng'?ng' -   involves a breathy syllabic velar nasal followed by a glottal catch and another syllabic velar nasal. Clearly aberrant in syllable structure and usual sound combination for Swahili, the vocalization itself is constrained by the gesture that accompanies it. Both hands push the nose inward on each side starting from the top of the nose and moving down while the lips are closed, and the sound is emitted with a high pitch. When the hands reach the tip of the nose they release the nose, the lips are opened, and the vocalizing ceases in an audible release. This spoken gesture indicates to others that the gesturer detects a bad smell. Without the vocalization, this gesture might be thought of as mime. The specificity of the vocalization, however, lends the gesture combined with it enough of the requisite abstraction and convention to analyze it as a symbolic form. The hands on the nose might mean "smell" imitatively but the value "bad" assigned to the verbal/gestural unit clearly involves an abstraction from and understanding of the syllables emitted via the hands moving down the nose while the lips are closed and then released.

us (ush) - like hng'?ng' , is tied to and constrained by its gestural aspect. It requires that the index finger be placed to the parted lips at the time of vocalization. At first glance, this, too, might appear more imitative than symbolic. But, us· as a verbal/gestural unit means more than the obvious exclamatory warning "shut up!" conveyed by us! alone without the associated gesture. It is used after certain behavior has led you to believe someone is about to make a scene, create noise, or start to cry in earnest. When used by an adult to a child it means, "I sense something about to start." It is a comment on behavior that has led the gesturer to expect that a scene is imminent.

fu (bu) - like salala and us is an exclamation when used without an accompanying gesture and a comment on behavior when matched with its specific gestural form. It stands midway between us and salala in terms of syllable structure being appropriately CV but somewhat aberrant as a single "word" in being monosyllabic. fu as a comment is uttered while a person wipes the right hand (palm inward) across the mouth from left to right. With this gesture fu is uttered with a high pitch (falsetto). It is used commonly after the verbal expression of an unfortunate deed, e.g.

ankila   fu

'she ate it'   "<u>all of it</u>" (...and, it was supposed to be saved and shared
                            (with you))

ng'o - (also ng'o ng'o) is an expression, often perceived and intended as rude, accompanied by placing the right thumb under the front teeth (while the other four finders are loosely held in a fist form). While saying ng'o , wrist motion may be used to flick the thumb out from behind the teeth. ng'o , like fu often follows a verbal statement to reinforce what the speaker/gesturer has just said and to add more emphasis to it, e.g.

sikupi   ng'o
'I won't give you any'   "you're not anyone I'd *ever* give something to, you so
                    and so"

Some verbal dependent gestures take phrasal verbal forms rather than single words or syllables. One of these is hichi changu (or hiki changu) which has the literal meaning, "This is mine." hichi 'this' refers to 'chin' (kidevu), and the gesture accompanying the phrase involves the thumb and index finger of the right hand encircling the chin (index finger on top, thumb below) and then pulling the chin sideways to the right. This spoken gesture asserts that a person, who appears not to, "should have respect for other people's property" [Claessen 1982:24]. One context for using this (pronounced hiichichángu when gesturally accompanied) would be if your child had bad companions, you might perform hichi changu to mean "It's my chin", i.e. if the child screws up, it's going to reflect on you, and what's more, you feel the child will screw up given the company s/he is keeping.

We may look at these Swahili verbal forms that are associated with gesture as speech plus gestural combinations ranging from units of referential vocalization plus imitative gesture to units of arbitrary vocalization plus arbitrary gesture. The forms described here represent five different types: language-like as exemplified by hichi changu , nonverbal or gesture-like as seen with ng'o , units of referential vocalization plus arbitrary gesture such as salala , cases of onomatopoetic vocalization plus imitative gesture as with hng'?ng' and us , and one instance of onomatopoetic vocalization combined with an arbitrary gesture fu .

When we look at gesture as communication, and, as here, communication closely linked to language, we begin to blur any language use/communication distinction as well as any distinction between verbal and nonverbal forms of communication. In fact, we begin to see communication as a multi-channeled form of expressive behavior. Here we saw hand and facial movements particularly related to the concomitant production of sound with a communicative function. In [Eastman 1983] I described exclamations in Swahili as a "special" part of speech in which every member is associated with particular cultural behavior and understood only with reference to its context of use. In essence, exclamations in Swahili were seen to be verbal gestures, tied together by the fact that they call for behavior to take place in that context.

Here we've seen another class of items in Swahili that are context sensitive. We've seen further that not all such items are actually "words" in any real speech sense per se. Some are expressions gesturally independent of speech, some may be referred to in speech (with verbs expressing the act they represent). Thus, one may -suta a person, openly "fingering" them commenting that they did a certain deed; one may -ramba kishogo behind someone's back to express contempt for that person. These gestures without verbal accompaniment that are "named" function as vielezi , i.e. comments on and elaborations of certain behavior.

Other gestural forms stand for whole utterances that remain unsaid. They are looked at here, too, as functioning to elaborate the verbal discourse or cultural scene. These gestures (such as holding up the thumb and index finger in shared complicity), we suggest, like those with verbs referring to them, also fall into the kielezi 'comment' (explanation) category.

Described in most detail here were gestures always associated with specific speech forms, i.e. gestures perceived as unique combinations of visual and audi-

tory stimuli functioning to comment on context-based behavior. We feel that the
more verbally associated a gesture is, whether united to a word (salala), ex-
pressable by one (-suta), imitative of a phrase (hichi changu), or onomato-
poetic (ng'o), the more likely it is to function more as a comment than as an
exclamation. We are intrigued by the crossover of linguistic function seen here
between verbal and visual speech. Particularly noteworthy to us is the observa-
tion that linguistic exclamations and imitative gestures function primarily to
call for behavior while speech + gesture units and gestures that substitute for
utterances are commentative.

REFERENCES

Claessen, A. 1982. "An investigation of non-verbal communication behavior re-
    lated to conversational interaction between mother tongue speakers of
    Swahili." Paper presented at the Working Party on Swahili Language and
    Society (SOAS, April), Joan Maw organizer.

Eastman, Carol M. 1983. "Exclamations in Standard Swahili as cultural communi-
    cation." *Journal of African Languages and Linguistics* 5:157-180.

Kamusi ya KiSwahili Sanifu [Dictionary of Standard Swahili]. 1981. Dar es
    Salaam: Oxford University Press.

EGYPTIAN ARABIC AND ENGLISH:
NATIVIZATION PROCESS

Atteya Yussif El-Noory
University of Illinois-Urbana

"Anyone who speaks English is a citizen of the world." These were the words
Bruce Pattison [1956] used in describing the internationally widespread use of
English. Kachru [1980a], on the other hand, distinguishes between two different
varieties or uses of (non-native) English: *institutionalized* varieties, e.g.
English in India, and *performance* varieties, e.g. English in Egypt. In both
types of use, English has undergone what came to be known as *nativization* (Kach-
ru, among others), namely, it has been, consciously and/or unconsciously, to
some extent adapted to suit the norms of the host languages. In this paper I
will attempt to examine some of the nativization processes that speakers of
Egyptian Arabic have imposed on borrowings from English as well as a few other
related issues.

1. English in Egypt

    English came to Egypt with the British occupation (1882-1952). Habry and El-
9azzawy [1960] reported that the occupation authorities worked for the replace-
ment of Arabic by English as a medium of instruction in primary and secondary
schools. At the same time, the British administration encouraged foreign mis-
sionaries to set up preaching schools on entirely foreign lines. After indepen-
dence (1952), however, the introduction of English was delayed until the seventh
grade where it continues to be taught as a compulsory subject all the way
through college. Conrad and Fishman [1977] reported that 1,554,809 Egyptian
students studied English in secondary schools in 1971, thereby ranking Egypt, at
least statistically speaking, first in Africa in this respect in that year.

    Certain social, political and economical factors have led to the predomi-
nance of English as the major foreign language taught and used in Egypt. The so-
called "open-door" economical policy of the government, claims Bowers [1983],
has increased the employment projects of the fluent user of English. On the oth-
er hand, tourism from countries where English is spoken either as a first or a
second language has stressed the need for the use of English within the country.

    At least two English language newspapers are currently published in Egypt:
the Egyptian Gazette whose 1970 circulation was, according to Smith [1970b],
45,000, and the Egyptian Mail. Besides, both radio and television feature var-
ied programs in English. Such programs are, however, listened to by the highly
educated elite as well as by youths belonging to affluent families.

2. Lexical borrowings of English in Egyptian Arabic

    English borrowings can be heard in Egypt in radio and television programs
and commercials, naturally in lectures, and in everyday conversation. Newspa-
pers, popular magazines and books, though to a lesser extent, all use borrowings
from English. There is a cline of foreignness for English loans [Stanlaw 1982].
Some words seem to be regarded as completely Arabic by Egyptians, e.g. /radyu/
'radio', /sigārah/ 'cigarette', film, etc. Others, especially very recent

borrowings, are short-lived or have limited circulation, e.g. /kundíshan/ 'air condition', /kãsit/ 'cassette', /vⁿfidyu/ 'video', etc.

English loanwords may be brought in to fill certain "lexical gaps" as in the case of "video" above, but many other examples show that the filling of lexical gaps is only one reason for the English borrowing process. Kachru [1978a] uses the term "contextual units" to explain the "lexical sets" of borrowed items. The borrowing may depend on register or style; or there may be a mutual dependency between the lexical borrowing from a particular language and a specific register.

English loanwords are used by Egyptians regardless of age, sex or education. The range and complexity of English borrowings will, however, increase as one goes up the educational ladder, culminating in the use of technical and scholarly terms by specialists.

Following is a partial list of English loanwords in Egyptian Arabic (modified from Zughoul [1978]), divided wherever convenient by area.

2.1.   Items for modern inventions and machinary. Most of these words are internationally used: /kundíshan/ 'air condition', /kumbyútar/ 'computer', /lóⁿūri/ 'lorry', /muⁿatūr/ 'motor', /tiⁿaliⁿafōn/ 'telephone', etc.

2.2.   Food and related items. /hambuⁿirgar/ 'hamburger', /bíbs(i)/ 'pepsi', /subarmãrkit/ 'supermarket', etc.

2.3.   Professions. /duⁿactuⁿūr/ 'doctor (male)', /miⁿakanĩki/ 'mechanic', /sikirtěrah/ '(female) secretary', etc.

2.4.   Measurement units. /kartūnah/ 'carton', /galūn/ 'gallon', /ṭinn/ 'ton', /fⁿvult/ 'volt', /wãṭ/ 'watt', etc.

2.5.   Sports, recreation, and related items. /kãsit/ 'cassette', /gōnⁿl/ 'goal', /bãṣi/ 'pass', /bilänti/ 'penalty', /tinis/ 'tennis', etc.

2.6.   Clothes and related items. /b(i)lózah/ 'blouse', /faníllah/ 'flannel', /shurt/ 'shorts', etc.

2.7.   Miscellaneous. /aⁿisbirĩn/ 'aspirin', /kart/ 'card', /shĩk/ 'check' (n.), /bank/ 'bank', /kirísmas/ 'Christmas', etc.

3.   Processes of Nativization

3.1.   Phonology. Most of the borrowings are phonologically treated as if they were Arabic words. First, no consonant clusters exist initially in Egyptian Arabic, and a maximum of two consonants in a cluster is allowed medially and finally. Therefore vowels are inserted between two consonants in most borrowed English words, e.g. /kirismas/ , /asbirĩn/ .

Second, some English sounds are usually altered to meet the fundamental phonetic habits of Egyptian Arabic: /p/ → /b/ as in /asbirin/ and /bibs(i)/ (this rule is blocked if /p/ is followed by a voiceless stop, e.g. /kaptin/ 'captain'); /v/ → /f/ as in /shifurlēh/ 'Chevrolet' (the sound /v/ will tend to remain unchanged in the speech of the "educated"); /ch/ → /sh/ as in /shĩk/ 'check' (n.); /s/ → /ṣ/ next to /a/ as in /bãṣi/ 'pass' and /ṣalūn/ 'saloon'; /e/ → /i/ as in /kãsit/ and /bibs(i)/; /v_i/ → /v_ii/ as

in /kartūnah/ 'carton' and /galūn/ 'gallon'. This change takes place mostly
in the second syllable of a two-syllable word.

3.2. <u>Morphology</u>. All the borrowings are morphologically treated as if they
were Arabic words. They are pluralized either by adding the plural inflection
of Arabic or by changing the form to fit any of the Arabic paradigms. The fol-
lowing nouns take the plural feminine inflection /āt/ :

> /sinama/   /sinam-āt/   'cinemas'
>
> /fʌvult/   /fʌvult-āt/   'volts'

Examples of plural paradigms that are fitted into are:

	sg.		pl.
Model 1	/masruf/	'expenditure'	/masarīf/
	/kartunah/	'carton'	/karatīn/
Model 2	/xadd/	'check'	/xudūd/
	/bank/	'bank'	/bunūk/
	/kart/	'card'	/kurūt/

Arabic does not have a neuter gender. Accordingly, the borrowings are given
either masculine or feminine genders depending on how they sound. For example,
bank, doctor and film are treated in the singular as masculine whereas words
like cinema and lamp /lambah/ are treated as feminine. English words that ap-
ply for both the masculine and feminine such as "doctor" are considered mascu-
line and inflected to indicate femininity as in the following examples:

> masc.   fem.
>
> /duʌaktuʌūr/   /duʌaktuʌūrʌah/
>
> /sikirter/   /sikirter-ah/

The largest percentage of the borrowings are nouns. However, some verbs were
either borrowed or derived from these nouns. The verbs are treated as other
verbs in Egyptian Arabic and inflected for present and order to fit the three
forms of verb, e.g.

	past(root)	present	order	
model	sāfir	yisāfir	sāfir	'travel'
	kansil	yikansil	kansil	'cancel, ignore'

Most of the borrowed items have maintained only one of their original meanings
when used in Egyptian Arabic, depending on the area in which the word was bor-
rowed. For example, the word /flāsh/ is only used in photography, the verb
/dublar/ (from "to double") is used to mean 'to repeat a course or a year in
school', whereas the lexical items /āw(i)t/ 'out', /gōnʌl/ 'goal', /bāṣi/

'pass' occur only in meanings related to soccer. Very few words have expanded in meaning, e.g. /yikansil/ 'to cancel' is used to mean both that and "to ig-nore".

4. <u>Attitudes towards English mixing in Egypt</u>

Two studies by El-Dash [1973] and El-Dash and Tucker [1975] showed that the Classical Arabic speakers, and, in general, the speakers of American English, British English, and Egyptian English were considered more highly educated than the vernacular speakers. However, opinions vary when it comes to the question of code mixing with English, or any other language for that matter. Al-Bakry [1976] bitterly criticizes such "lamentable innovation which some call franco-arab" and wished that they had elected (if they had to) to either use the for-eign language all the way or, better still, use their own mother tongue, not ex-cluding the vernaculars in this respect. At the public level, there seems to be a cline of acceptability for code mixing and borrowing in general. For example, the instances of code mixing cited by El-Bakry [1976] which includes /iftah ilwindu plīz/ 'open the window, please' and /ʔinnahardah ilgaww viri nays/ 'today the weather (is) very nice' will certainly call for sarcasm. On the oth-er hand, utterances such as /ḥammatt ilfilm fi ilustudyu illi ganb ilbank/ '(I) developed the film at the studio which (is) next to the bank' will go unnoticed.

5. <u>Conclusion</u>

The possibility of institutionalizing English in Egypt is a farfetched one regardless of how highly some Egyptians may think of English. A number of fac-tors distinguish the Egyptian context from, say, the Indian or Nigerian context. First, Egypt enjoys an ethnic and a linguistic homogeneity. Second, Egyptians think highly of Arabic; in fact most of them would think in terms of Arabic, at least at the lexical level, influencing English rather than the opposite. Third, the belief in the richness and flexibility of Arabic, among other reasons, has been behind the enthusiastic attempts for Arabicization. For this purpose, lan-guage academies have been established in Cairo, Damascus, and Baghdad. Sharaf [1976] believes that Arabicization has started to pay off, giving illustrations of a considerable number of previously popular (foreign) lexical items, e.g. ref-ereee, team, etc. that have actually given way to their Arabicized counterparts.

Taking into consideration all the attempts at Arabicization as well as the official and public feelings about it, what would the Arabic of the future look like? Ferguson [1959] attempts an answer to this question: "...There is almost full unanimity (in the Arab world) that Arabic of the future will not be a form of colloquial Arabic. It will be a 'modern' slightly streamlined form of Clas-sical Arabic, purified of all regionalism or of excessive foreign vocabulary ... Some believe it will take ten years, others go as high as fifty...." Twenty-five years have already passed since Ferguson first wrote this. Do we already have that modern, purified Arabic? Maybe not. Yet things are surely a lot bet-ter now than they were twenty-five years ago.

REFERENCES

Al-Bakry, Hazim. 1976. "Lughatuna al-?asilah. *Al-Lisan al-9arabi* 13:169-174.

Bowers, Roger. 1983. "English in Egypt: opening doors." In *English Around the World*, No. 28, pp. 4-8.

Conrad, Andrew and Joshua Fishman. 1977. "English as a world language: the evidence." In J. Fishman et al. (eds.), *The Spread of English*, pp. 3-76.

El-Dash, Linda. 1973. "Reactions of Egyptian students to five language varieties." M.A. Thesis, American University in Cairo.

El-Dash, Linda and Richard Tucker. 1975. "Subjective reactions to various speech styles in Egypt." *International Journal of Sociology of Language* 6:33-54.

Ferguson, Charles. 1959. "Myths about Arabic." *Language and Linguistics Monograph Series*, No. 12, pp. 75-82. Georgetown University.

Habry, Muhammad and E. El-9azzawy. 1960. "Education in Egypt in the 20th century." *Ministry of Education Publications*. Cairo.

Kachru, Braj. 1978a. "Toward structuring code mixing: an Indian perspective." *International Journal of the Sociology of Language* 16:27-46.

Kachru, Braj. 1980a. "Models for New Englishes." *TESL Studies* 3, pp. 117-150. Division of English as a Second Language, University of Illinois.

Pattison, Bruce. 1956. "English as a foreign language over the world today." *English Language Teaching* 13:2-10.

Sharaf, 9abdel 9aziz. 1976. "Al9ilm Walughat al-Hadarah." *al-Lisan al-9arabi* 13:175-244.

Stanlaw, James. 1982. "English in Japanese communicative strategies. In B. Kachru (ed.), *The Other Tongue*, pp. 168-179.

Smith, Herbert et al. 1970b. *Area Handbook for the United Arab Republic (Egypt)*. U.S. Government Printing Office, December 23, 1969.

Zughoul, Muhammad. 1978. "Lexical interference of English in Eastern Province Saudi Arabic." *Anthropological Linguistics* 20(5):214-225.

QUESTION FORMATION IN KUSAAL

Nora C. England and William A. Ladusaw
University of Iowa

1. Introduction

Kusaal is the language of the Kusasi, who live in the northeast part of Ghana and adjacent Upper Volta. It is a member of the Gur (Voltaic) branch of Niger-Congo, sister to Dagbani and Moore (among others). Our analysis is based on data from Robert Agunga, a native speaker of the Bawku (Ghana) dialect.

In this paper we present a brief sketch of its structure and discuss the formation of Yes/No Questions (hereafter, merely "questions"), a process which seems to fall midway between inflection and cliticization.

Questions are formed from declaratives by the addition of a final Low tone, which is associated with the last word of the sentence. The addition of the tone triggers segmental operations which are in some cases phonologically predictable, while in others dependent on the morphological features of the last word in the sentence.

2. Grammatical Sketch

2.1. Syntax and Morphology. Kusaal is a rigidly SVOX language. Its NPs have prenominal possessor NPs, but postnominal adjectives, relative clauses, and determiners (in that order). There is no agreement marking on the verb. Nouns can be divided into inflectional classes according to which pair of singular and plural suffixes they take. Words which translate into English as adjectives may occur with inflectional suffixes drawn from a subset of the noun suffixes or as true verbs (or as both). The former type of adjective we refer to as N-form adjectives and the latter class as V-form adjectives. In general, number is marked on an NP only on the rightmost inflecting element. Hence Nouns in construction with N-form adjectives and Nouns and N-form adjectives in construction with certain determiners appear in their base forms. Thus, there is no real agreement between nouns and adjectives within the noun phrase. These features of Kusaal are illustrated in (1)-(4):

(1) awín góttɛ́   bā: 'Awin is looking at a dog'
     (name) look at-Impf dog

(2) ò yɛ̀t puá? vɛ́lTŋ   'he sees a beautiful woman'
     he sees woman beautiful

(3) m̄ yɛ́t daú? wáʷkla   'I see the tall man'
     I see man tall-the

(4) wá̰:m   vɛ̀l   ká̰ŋŋa̰? mʉ́ḛya̰ 'this beautiful calabash is red'
     calabash beautiful this   is-red

2.2. Phonology. The inventory of underlying segments is given below.

p	t	k	kp	i	u	(long and short,
b	d	g	gb	e	o	nasal and oral)
m	n	ŋ	(m?)	ɛ	ɔ	
f	s			a		Plus weak harmonizing
v	z					vowel [ɩ,ꞷ,ə]
w	y	l	r	h	?	

There are a labial, alveolar, velar, and labiovelar series of stops. The pa-
renthesized [m?] occurs only word-finally, but its distribution is so far un-
predictable. The units [kp] and [gb] occur only morpheme-initially. There
are no word-final occurrences of [v], [z], [w], or [y]. The velar nasal
[ŋ] occurs only finally or as an intervocalic geminate. There are seven dis-
tinctive vowels: [i], [e], [ɛ], [u], [o], [ɔ], and [a], which may oc-
cur as either [±long] or [±nasal]. Additionally there seems to be a weakly
harmonizing vowel, realized variously as [ɩ], [ꞷ], or [ə]. There are
three distinct level tones: H ($'$), M ($^-$), and L ($`$). Mid tone is comparative-
ly rare.

Final oral stops are devoiced and nasally released. Vowels following nasal
consonants are nasalized, though the nasal/oral contrast is maintained before
nasal consonants. The glides [w] and [y] are nasalized (almost to the
point of nasal consonant articulation preceding nasal vowels). The morpholog-
ically sensitive rule in (5) is of relevance here.

(5) Stem Truncation: CV
                              CV: $\Big\}$ → CV? / ___ #
                              $CV_i ?V_i$

When a verb or adjective occurs in its base form, the contrast between short
vowel, long vowel, and V-?-copy V is neutralized to a short vowel, checked by a
glottal stop. Noun stems similarly neutralize a long vowel/short vowel con-
trast. The singular noun suffixes [-og], [oŋ], and [-ok] are realized as
rounded [g], [ŋ], and [k] respectively when attached to stems which end in
nonround vowels (cf. wawk in (3)).

3. The Formation of Questions
     From this short sketch, let us highlight two points crucial to our analysis
of questions. A question is marked by the addition of a low tone to the end of
the sentence. The tone is associated as the last tone of the last word of the
sentence. Given the syntax of Kusaal, the last word of the sentence can be of
any category, as illustrated in (6-7). The last word may end in any vowel or
any of the consonants [p], [b], [m], [t], [d], [n], [k], [g], [ŋ],
[m?], [f], [s], [l], or [r]. Questions corresponding to the sentences in
(6) are given in (7).

(6) a.   awɩn wá?ád   (7) a.   awɩn wá?ádâ:
         'Awin is dancing'   'is Awin dancing?'

(6) b. awín yɛ́t bó:g
     'Awin sees a goat'

  c. awín yɛ́t bó kódr̀
     'Awin sees an old goat'

  d. awín yɛ́t bó:gwà̰
     'Awin sees this goat'

  e. ò nà yó:m bɛ̀:ʷg
     's/he will sing tomorrow'

(7) b. awín yɛ́t bó:gâ:
     'does Awin see a goat?'

  c. awín yɛ́t bó kódrɛ̀:
     'does Awin see an old goat?'

  d. awín yɛ́t bó:gwà̰:
     'does Awin see this goat?'

  e. ò nà yó:m bɛ̀:gɔ̀:
     'will s/he sing tomorrow?'

Though the formation of questions by the addition of a formative at the margin of a sentence is quite common for verb-final languages, we do not know how common it is for SVO languages. One's initial expectation for Kusaal would be either that the formative marking the question would be invariant or that any variation in its realization would be phonologically predictable. In short, we would expect a full formative or a clitic.

This expectation arises from the same principles which stand behind Zwicky and Pullum's [1982] criteria for distinguishing between cliticization and inflectional affixation. They offer three criteria to which we would add D below:

  A. Clitics exhibit a low degree of selection with respect to their hosts, while inflectional affixes exhibit a high degree of selection.

  B. Arbitrary gaps in the set of combinations are more characteristic of inflectional affixes than of clitics.

  C. Morphological idiosyncrasies are more characteristic of inflectional affixes than of clitic groups.

  D. Inflectional affixes are restricted to attaching to a limited range of syntactic categories, though clitics may attach to a wide range of hosts.

Question formation in Kusaal shows a mixed set of properties with respect to these criteria. The formative attached to the last word regardless of its syntactic category, and for every declarative sentence there is a well-formed question. In these respects it is like cliticization. Yet the segmental bearer of the added tone cannot be phonologically predicted. The generalizations must in some cases mention the syntactic category of the host word and its morphological features.

4. Analysis

The low tone which is added to a declarative to form a question must be incorporated into the last word of the sentence. Where the last element in the sentence ends in a long vowel, this tone is simply associated with the final vowel, creating a falling tone, as in (8).

(8) a. fō gɔ́t bā:
     'you look at a dog'

  b. fō gɔ́t bā̄:
     'are you looking at a dog?'

One might expect then that the form of a question would follow from indepen-
dently motivated rules governing the association of tones. This is only partly
true.

    We assume that only one tone may be associated with a short vowel, but that
a long vowel may (but need not) bear two tones. Tone patterns in monosyllabic
lexical items support this assumption; there are no stems with moving tone on a
short vowel, but there are stems with moving tones on long vowels, such as
those in (9):

(9) éːl 'horn',   níːŋ 'bird',   náːf 'cattle',   yóːm 'song'

There are then two possibilities for adding a sentence-final low tone to a word
which ends in a short vowel which already bears a tone: the new tone could re-
place the original tone, or the vowel could lengthen in order to accommodate
the association of two tones, the original (lexical) tone and the question-
forming tone. The second possibility, that of lengthening the final short vow-
el, is what occurs in Kusaal, as shown in (10) and (11).

(10) a. fō bód zá?   b. fō bód záː
         'you plant late millet'   'do you plant late millet?'

(11) a. bà wòmyá̰?   b. bà wòmyá̰ː
         'they sing-Per'   'have they sung?'

    The addition of the low tone blocks the application of stem truncation (5).
Example (12) shows that a short vowel which arises by Stem Truncation from a
$V_i?V_i$ stem bears the low tone on the vowel after the glottal. Therefore the
form of all vowel-final elements to which the question tone is added seems pre-
dictable from the rule in (13).

(12) a. m̄ ná wá?   b. m̄ ná wá?à
         'I will dance'   'will I dance?'

(13)   T   T   =>   T   T
           \ /   \   /
            V   Vː

    It is with consonant-final words that the phonological predictability
breaks down. In these cases (excepting a class of forms which end in [m]), a
vowel is added which bears the tone. The added vowel is one of the low vowels
[ɛ] , [a] , or [ɔ] . Which vowel is added is not completely predictable from
the phonology of the word. One must make reference to the morphological fea-
tures of the word to which the tone and its vowel are incorporated.

    To state the patterns of vowel association with consonant-final words, it is
necessary first to distinguish verbs (and V-form adjectives) from nouns (and N-
form adjectives). Every constituent which is not a noun, verb, or adjective
either patterns like a noun or ends in a vowel. It is also necessary to exclude
and treat separately three noun classes: the class which forms its plural with
the suffix -nam , that which forms its plural with the suffix -b (the "Peo-
ple" class), and mass nouns terminating in [m] . Finally, at least one class

of derived nouns must be excluded: those formed with the diminutive -bil .

     Verbs pattern differently from nouns. Verbs in the aorist and future can
be consonant final, while other tense/aspect suffixes end in vowels and follow
the lengthening rule. Consonant-final verbs in the Aorist may terminate in
[d] , [t] , [m] , or [n] and all add [a] . Verbs in the future that end in
consonants other than [m] add [ɛ] . Verbs ending in [m] lengthen the [m]
as if it were a vowel.

	Declarative	Question		
(14) a.	ò bùn	ò bùnná:	(Aorist)	bún
b.	ò nà bún	ò nà búnɛ́:	(Future)	'harvest sorghum'
(15) a.	ò dùm	ò dùmmà	(Aorist)	dùm
b.	ò nà dùm?	ò nà dùm	(Future)	'bite'
(16) a.	ò lùgíd	ò lùgídá:	(Aorist)	lúg
	ò nà lúg	ò nà lúgɛ́:	(Future)	'swim'

     Excluding the four exceptional classes mentioned for nouns, then, the rules
may be stated in terms of the final segment of the word. These rules seem,
however, far from natural.

     Nouns ending in the suffixes [-b] or [-f] take [ɔ] ; those ending in
[m] or a coronal take [ɛ] , and those ending in velars take either [a] or
[ɔ] . The distribution of the question vowel with velars depends partly on
whether the velar is in the stem or is a noun-class suffix, and (if a suffix)
on the form of the suffix. The noun-class suffixes (singular) [-og] , [oŋ] ,
and [-ok] take [ɔ] as the question vowel, while the suffix [-g] or a stem
final [ŋ] or [k] take [a] .

     The four exceptional noun-classes mentioned above are exception in that the
vowel which is added in the question form is not the one expected from the pat-
tern laid out above. Their exceptionality is unified by the morphological
properties of the words.

     Though all other [l]-terminal words add [ɛ] , if the noun ends with the
diminutive suffix [-bil] , [a] is added. Hence the question form of
[nòbíl] 'little toe' (cf. [nòbrá:wg] 'toe') is [nòbílá`] . Similarly for
[wẽ̀dbíl] 'star' (cf. [wẽ̀díg] 'moon').

     The noun class whose plural is formed with the suffix [-nam] and the
class whose plurals are formed by adding [-p] or [-b] all take [a] in
their question forms. The majority of nouns in both classes are words for peo-
ple, e.g. 'man', 'woman', 'witch', 'father', 'chief', 'midwife'. Some forms
appear in both classes. The [nam] class also contains emphatic pronouns and
some borrowings, e.g. [lór] 'truck'.

     Finally mass nouns generally lengthen their final [m] just as [m]-final
verb stems do in the future, but unlike count nouns and aorist verbs. Hence
the question form of [zé:m] 'blood' is [zé:m:] , that of [yá?am] 'wisdom'
is [yá?am:] . Yet even here we find two apparent mass nouns (dé?ɛm̄ , 'algae'
and tá?ām 'rope fibre') whose question forms suffix [ɛ] .

The schizophrenic nature of [m] in this process (acting now as a vowel, now as a consonant) is intriguing. We have not yet found any way of predicting which final [m]'s act in which way, nor have we found any independent reason to posit two distinct segments.

5. Conclusion

It is obvious that a fair amount of memorization is required to master this process. Our informant has occasionally been unsure of which vowel to add for some nouns, in exactly the forms that seem to admit of more than one morphological analysis. For instance, he gave both [a] and [ɔ] as question vowels associated with the form mūmūg 'small calabash', and eventually decided that he preferred the [a] terminal. This uncertainty is expected, since the form mūmūg could be interpreted as a member of the [-g] suffixing class (in which case it should take [a]) or the [-og] suffixing class (in which case it should take [ɔ]). In most cases, however, there was no uncertainty, since the generalizations are sensitive to information that is readily accessible to the native speaker.

In spite of a certain amount of lexical idiosyncracy, most of the forms are entirely predictable. Taken bit by bit, each part of the question formation process involves reasonable rules, but as a whole, it is a generalization that cuts across the usual domains for rules: the phonological, the lexical, and the syntactic.

REFERENCE

Zwicky, A. and G. Pullum. 1982. "Cliticization versus Inflection." Indiana
      University Linguistics Club.

RIVERS PIDGIN (CREOLE) ENGLISH:
TONE, STRESS, OR PITCH-ACCENT LANGUAGE?

Nicholas Faraclas
University of California, Berkeley

1. Possible Analyses of Pitch Phenomena in Rivers Pidgin English (RPE)

In Rivers Pidgin English (the dialect of West African Pidgin English spoken
in the eastern part of the Niger Delta and throughout the southeast of Nigeria)
we find such minimal pairs of words as (an acute accent indicates high pitch
while a grave accent indicates low pitch):

/gó/   '(to) go'   À gó mákẹt.   [à gó 'mákèt]   'I went to market'

/gò/   future marker À gò gó mákẹt. [à gò gó 'mákèt] 'I will go to market'

/mǒda/   'mother (biological)'   ['mǒdà]

/mòda/   'school marm'   ['mòdá]

Is the pitch distinction between the two members of each pair cited above best
analyzed as tonal (as in Gokana bá 'hand' vs. bà 'eat') stress-related (as
in English ímpòrt vs. ìmpórt) or part of a pitch accent system (as in Ijọ
aká' 'tooth' vs. aká 'maize')? Some of the arguments for and against each
analysis are now summarized.

1.1. Arguments for a stress analysis. The argument for a stress analysis of
pitch phenomena in RPE is supported by the existence of a phrase-level system
of accentuation which is clearly stress-related, the limited scope and primari-
ly grammatical nature of almost all critical pitch distinctions in the language,
and the clear correlation of stress placement over English words to the assign-
ment of high pitch over most RPE words derived from English. An apostrophe
precedes a syllable which receives phrasal stress-accent:

/jám/   ['jâ:m]   'yam'   [à sí mákɛ́t 'jâ:m] 'I found the market yams'

/mákɛt/ ['mákèt] 'market' [à sí jám 'mákèt]   'I found the yam market'

1.2. Arguments for a tonal analysis. The argument for a tonal analysis of RPE
involves the correspondence of pitch patterns over words borrowed into Pidgin
from other Nigerian languages with the tonal patterns found over those words in
the source languages, the failure of such words to be affected by phrase-level
stress-accent, and the fact that fundamental frequency (pitch) level is the on-
ly reliable cue for accentuation phonetically in RPE. Another tone-like aspect
of the behavior of units bearing high pitch in RPE is the fact that they do not
cause reduction (lowering of pitch) of surrounding pitch-bearing units:

Igbo: ákọ̀m 'fever'   Pidgin: ákọ̀m shọ́tọ́p [ákɔ̀m ʃɔ́'tɔ̂:p] 'ákọ̀m shut up'
                                                              (malaria medicine)

1.3. Arguments for a pitch-accent analysis. The pitch-accent argument re-
volves around the way in which strings of connected speech are parsed for
phrase-level accent assignment, which corresponds rather closely to that found
in Japanese [McCawley 1965] and Ịjọ [Williamson, personal communication].
Another accent-like characteristic of the RPE system is that for items derived
from English (the great majority of words), only a very restricted number of
pitch patterns may occur in relation to the potential number of patterns, given
the existence of two distinctive levels of pitch. An equal sign = symbolizes
an accent group boundary:

/nó=ím báj jám=fɔ̀ mákɛt/   ['nô: ím báj 'jâ:m fɔ̀ 'mákɛ̀t]

'no, he bought yams in the market'

2. RPE: A Mixed System

    The only satisfactory solution to the problem outlined above, that is, the
only analysis that can predict pitch patterns over utterances in a unified way
involves the interaction of tonal, pitch-accent, and stress units. Tone is as-
signed to words lexically, words from tonal languages being fully specified
(one tone per syllable) and words from English being underspecified in most
cases (often one tone per word). Underspecified items would then be assigned
additional pitches on the basis of their position within a stress-accent group
or phrase as well as in relation to the type of tone assigned to them lexical-
ly. The existence of a mixed system of pitch assignment and realization in RPE
reflects the mixed origins of the language which include stress languages (Eng-
lish, Portuguese), tonal languages (Igbo, Yoruba, etc.), and pitch-accent lan-
guages (Ịjọ). At the surface, one is tempted to apply a stress analysis but
the actual system is in many ways a reinterpretation of stress in terms of tone
and pitch-accent.

2.1. Implications for theories of pidginization/creolization. The RPE data re-
affirms the importance of substrate-basilectal speech patterns on the underly-
ing structures and processes in Pidgins and Creoles. It also indicates that
speakers of Pidgins and Creoles operate from unified systems rather than from a
loosely bound set of parasystems, each corresponding to the system as it exists
in one or another of the input languages. In other words, a Pidgin or a Creole
may behave at the surface in a way which is very much like the acrolect and per-
haps very much unlike the basilect. A more careful analysis usually results in
the discovery that the strategies used by speakers in the production and proc-
essing of surface forms are strikingly similar to those typical of basilect,
rather than acrolect speakers.

2.2. Implications for phonology. Linguists are only now coming to recognize
the importance of processes such as pidginization/creolization in the develop-
ment of *all* languages. One of the implications of this realization will have
to be the recognition of the possibility that mixed systems like the one out-
lined for RPE above are not restricted to languages generally classified as pid-
gins or creoles but may in fact be quite widespread and that such mixed systems
where they do exist, function as unified systems rather than as sets of para-
systems. This may explain the recent successes of the autosegmental model for

the analysis of suprasegmentals, which in effect is supple enough to at least begin to accommodate itself to the analysis of systems which have elements of both stress and tone, tone and accent, etc.

2.3. Implications for the study of African languages. There seems to have been a certain reluctance on the part of many Africanists to even consider the existence of any non-tonal pitch phenomena in the languages that they study. It is obvious that such attitudes can do nothing to advance, but much to hinder the scientific description and analysis of African languages. In many parts of Africa intermarriage, bi- and multilingualism, and other forms of interethnic contact and exchange are the rule rather than the exception. The traditional bias in linguistics against pidginization/creolization as a model for language change has had for this reason even more of a negative impact on the study of African languages than it has had in other areas. Africanists must learn to recognize, describe, and analyze mixed systems wherever they occur. Mixed systems can in fact shed much light on some of the most important unresolved questions facing the linguist in Africa. For example, the analysis of RPE pitch patterns as the result of a mixed system has allowed the division of lexical items into distinct classes each of which corresponds to a particular historical stage or source of borrowing of vocabulary items into the language. This in turn has provided critical evidence concerning such problems as the nature and extent of the influence of Sierra Leonian/West Indian Krio on Nigerian Pidgin English during the 19th century.

BORROWED LOGOPHORICITY?

Zygmunt Frajzyngier
University of Colorado

The aim of the present paper is to propose, for the first time,
a comparative study of the form and function of logophoric sys-
tems in Chadic languages and to formulate a hypothesis regard-
ing logophoricity in Proto-Chadic.

1. The Two Systems

1.1. The three sets of Mapun. The logophoric system of Mapun consists of the
following sets of pronouns. (Tones are not relevant to the problems of this pa-
per and hence are left unmarked; 'b and 'd indicate labial and alveolar
glottalized stops respectively):

	A	B	C
3 p. m. sg.	wur	'di	gwar
f. sg.	war	'de	paa
pl.	mo	'du	nuwa

   The deciding factor for the use of the three sets is whether the pronoun of
the embedded clause refers to the speaker, i.e. the subject, or to the addressee
of the main clause (cf. Stanley [1982]).

1.2. Reference to the subject. In sentential complements following the verb
sat 'say', set A indicates disjoint reference and set B indicates coreference
with the speaker of the main clause, i.e. the subject of the verb sat . Com-
pare (1a) and (1b).

(1) a.   wur/war/mo sat ni   wur/war/mo ta dee n   jos
         he/she/they say Compl he/she/they stop stay Prep Jos

         'he(1)/she(1)/they(1) said that he(2)/she(2)/they(2) stopped over in Jos'

    b.   wur/war/mo sat ni 'di/'de/'du ta dee n jos

         'he(1)/she(1)/they(1) said that he(1)/she(1)/they(1) stopped over in Jos'

   Set B above has also its object counterparts, viz. 'din (m), 'de (f) and
'dun (pl). The object pronouns of the sentential complements behave in the same
way as subject pronouns. The system further makes explicit whether or not 3rd
p. sg. is a part of the set referred to by the 3rd pl., e.g.

(2) a.   wur/war sat ni n nas mo   'he(1)/she(1) said that I beat them(2)',
                                        i.e. "he/she" is not part of "them"

(2) b. wur/war sat ni n nas 'dun   'he(1)/she(1) said that I beat them(1)',
                                         i.e. "he/she" is part of "them"

(3) wur sat ni ta   'du dee n   jos
                stop 3pl stay Prep

    'he said they stopped over in Jos', i.e. "he" is part of "them"

    In environments other than those that involve the complements of the verb
sat , instead of the three systems of pronouns only one system, A, is used in
all persons. Unlike the case in environments of the complements of the verb
sat , such a use more often than not indicates coreference, e.g.

(4) yak si wur man me   takarda wur cin n   an n   tan
     then   take some book   give Prep 1sg 1sg read

    'then he took a book and gave it to me to read' (D. D. biography, 47)

(5) n   tal pi wur a   ni ko ket wur ki   la   siwol ni a
     1sg ask Prep 3sg Cop Def Interr 3sg Compl receive money Def Interr

    'I asked him whether he has received money'

(6) a. n naa wur wur pi   dim n kaano   'I saw him going to Kano'
             see   Prog go

    b. *n naa wur gwar pi dim n kaano   'I saw him going to Kano'
                  3sg

In (5) the 3 p. m. sg. pronoun wur in the embedded clause may or may not be
coreferential with the same pronoun in the main clause.

1.3. Reference to the addressee. If the third person pronouns in the embedded
clause refer to the addressee rather than to the speaker of the main clause,
then the pronouns must be drawn from set C but never from set B. Compare the
following examples with pronouns drawn from set C, followed by an ungrammatical
example with pronouns drawn from set B:

(7) a. n   sat n war ni   paa naa ki   n k'es makaranta
        1sg say Ben 3f Compl 3f look Compl 1sg finish school

    'I told her, look, I have finished school'

    b. n sat mo ni nuwa naa ki n k'es makaranta
              3pl   3pl

    'I told them, look, I have finished school'

    c. n sat n wur an ni   gwar tan me   mbi n   an
              3sg 1sg Compl 3sg find some thing Ben 1sg

    'I told him that he should find something for me'

(8) *n sat n wur   ni 'di   naa ki n kes makaranta
              3sg(A)   3sg(B)

    'I told him, look, I have finished school'

1.4. The function of sets A and C. If the verb of the main clause is sat ,
then pronouns of either set A or set C may be used in the subordinate clause.

    Pronouns of set C are used when the third person represents the addressee
of the reported speech. Pronouns of set A will be used when the third person
is not the addressee of the reported speech.

(9) a. n sat n wur taji   wur dim n kaano
                      Prohib.   go

      'I told him(1) that he(2) may not go to Kano'

   b. n sat n wur taji gwar dim n kaano

      'I told him(1) that he(1) may not go to Kano'

    One can use the set C pronoun in the subordinate clause without having any
third person pronoun in the main clause, e.g.,

(10) an ni   ko a   iri 'dak 'di gwar sin an 'be   an mbi cin ni
      1sg Compl any Copula kind work Rel 3sg give 1sg consec 1sg Fut do it

    'I said that any kind of work which he gives me, I will do it'

Thus the function of set C is fundamentally different from the function of set
B. The pronouns of set B indicate coreferentiality with the subject of the main
clause, are syntactically determined, and have an anaphoric function. The pro-
nouns of set C do not indicate coreferentiality and are not anaphoric. They
have a deictic function and are not syntactically, but rather pragmatically, de-
termined.

1.5. Origin of the three sets. Set A pronouns are identical to the set of sub-
ject or object pronouns of the main clause. Pronouns of set B all have the same
initial consonant /'d/ and they differ only in the vowel that follows it. It
is possible that the pronouns of the Set B derive from demonstrative pronouns,
which also have 'd as initial consonant.

    There is no clear indication about the origin of set C. The word /gwar/
occurs as the independent lexeme meaning 'man'. I do expect that the remaining
elements of the set, viz. /paa/ and /nuwa/ also derive from independent
words.

2. Comparative Data

2.1. Angas Group. At least two other languages, Sura and Angas, have logopho-
ric pronouns. The pronouns in Angas are cognate with the pronouns of Mapun:

Set B: dyii (m.) 'da (f.) 'du (pl.)

Set C: gwa (m.) pe (f.) ŋywe (pl.) [Burquest 1973:195]

In Angas the two sets have functions similar to those of sets of Mapun. The data for Sura [Jungraithmayr 1963] indicate only the anaphoric function.

On the basis of the three languages belonging to the Angas group one can certainly postulate that logophoricity as described for Mapun was also a feature of Proto-Angas.

2.2. <u>West Chadic</u>. The only West Chadic language outside of the Angas group for which logophoric pronouns have been observed and described is Pero (cf. Frajzyngier [in press]).

In Pero there are two sets of pronouns, which differ only in the form of the second person markers. In one system these pronouns are ka (m) and ci (f) and in the other, peemu (m) and peeje (f).

The "peemu" set in Pero may, but does not have to, occur in sentential complements of the verb 'say'. The data clearly indicate that the "peemu" set refers to the second participant, i.e. to the addressee of the reported speech. Thus Pero has only the equivalent of set C of Mapun, i.e. in the logophoric context it has only the deictic and not the anaphoric function.

It is important to note that the second element of the logophoric pronouns in Pero also seems to be derived from demonstrative sets, for the form -mu is similar to the demonstrative suffix -mo .

2.3. <u>Other branches of Chadic</u>. In East Chadic a logophoric system has been reported for Kera [Ebert 1979:260 ff.]. The logophoric pronouns, identical with independent pronouns, indicate coreferentiality with the subject of the main clause. They correspond thus to set B of Mapun, i.e. they have an anaphoric function.

3. <u>What Can be Reconstructed for Proto-Chadic?</u>

3.1. <u>Anaphoric set</u>. The anaphoric set has been noted in two branches, West and East Chadic. In West Chadic the anaphoric set was certainly present in Proto-Angas. There are no claims that any other language of this branch has the logophoric system of set B. This set cannot be reconstructed as a retention from Proto-West Chadic. Although a logophoric system has been reported in Kera, such a system is not universal to the East branch. There is therefore no evidence to show that Proto-Chadic had a set B logophoric system. Unless more Chadic langauges are shown to have such a system one would have to assume that set B logophoric systems in Angas languages and in Kera result from borrowing of an areal feature from one or more of the non-Chadic languages. In the same general geographical area, one may note studies of logophoricity in the Ubangi languages by Cloarec-Heiss [1969], Tuburi by Hagege [1974], Gokana by Hyman and Comrie [1981], Ewe by Clements [1975], and Tikar by Stanley [1982].

3.2. <u>Deictic set</u>. Since no evidence for the existence of set C has been found outside of the West Chadic branch one cannot postulate the existence of the deictic logophoric pronouns in Proto-Chadic. Within West Chadic, however, the markers of set C are cognate, mainly because of the forms involving /p/ in the

Pero "peemu" set and "paa" in the Angas group. The fact that outside of the
Angas group only Pero has the set C mitigates against reconstruction of the set
C for Proto-West Chadic. It is possible that this set developed within the
West Chadic branch only as a result of borrowing of an areal feature.

REFERENCES

Burquest, D. 1973. "A grammar of Angas." PhD Dissertation, UCLA.

Clements, G. N. 1975. "The logophoric pronoun in Ewe: its role in discourse."
     Journal of West African Languages 10(2):141-177.

Cloarec-Heiss, F. 1969. *Les modalités personnelles dans quelques langues
     oubanguiennes (Discours direct-Discours indirect)*. Liege: SELAF.

Ebert, K. H. 1979. *Sprache und Tradition der Kera (Tschad). Teil III:
     Grammatik*. Berlin: Dietrich Reimer.

Frajzyngier, Z. in press. *A Grammar of Pero*.

Hagège, C. 1974. "Les pronoms logophoriques." *Bulletin de la Société de
     Linguistique de Paris* 69:287-310.

Hyman, L. M. and B. Comrie. 1981. "Coreference and logophoricity in Gokana."
     In W. R. Leben (ed.), *Précis from the Twelfth Conference on African Lin-
     guistics*, pp. 64-77. *Studies in African Linguistics*, Supplement 8.

Jungraithmayr, H. 1963/1964. "Die Sprache der Sura (Maghavul) in Nordnigeri-
     en." *Afrika und Übersee* 47:8-89.

Stanely, C. 1982. "Direct and reported speech in Tikar narrative texts."
     Studies in African Linguistics 13:31-52.

AUTOSEGMENTAL BABANKI

Gary M. Gilligan
University of Southern California

0. Introduction

The initial goal of this paper is a brief exposition of Babanki noun tonol-
ogy, in the form of an autosegmental reanalysis of Hyman [1979a]. There fol-
lows a sketch of the immediate ramifications of this analysis, which range from
a reconsideration of the well-formedness conditions on autosegmental associa-
tion to a series of arguments concerning the proper representation of downglide.

1. Tonal Alternations

Babanki, a Western Grassfields Bantu language of Cameroon, exhibits four
surface phonetic levels: H, M, L, and X (a lowered low tone). In the ensuing
discussion, it will be argued that there are actually six different tones, or
tone reflexes, and that these are derivable from only two underlying tones, giv-
en an abstract enough underlying form.

Nearly sixty percent of all Babanki nouns are L-H in isolation, where the L
tone falls on a prefix and the H on the monosyllabic noun stem. The rest of
the nouns, in isolation, are either L-L or L-X. When the L-H nouns appear in
different environments, however, they break down into four groups, which will
be exemplified by kəkəm 'crab', kəfo 'thing', kəfǫ 'medicine', and
kəŋkwi? 'belt'.

The varied environments used in this paper will be the two noun slots in
the associative construction. The construction is similar to the postnominal
genitive in English, such that the first noun is the head and the second the
possessor. In addition, both constructions have a particle separating the two
nouns, although in Babanki this particle is segmentally identical to the prefix
of the head noun.

When head of the associative construction, all four nouns are followed by a
H associative prefix. In this position, kəkəm remains L-H. The other three
are also L-H, but the associative particle and all subsequent H tones are low-
ered to a M level, which suggests downstep. Following a suggestion by Clements
and Ford [1979] that downstep is a "floating" L tone between two "anchored" H
tones, it would appear that the underlying representation of the latter three
nouns includes a L tone, while the former does not.

When the possessor noun and preceded by a L associative particle, kəkəm
and kəfǫ appear as L-L, while kəfo and kəŋkwi? are L-H. Since kəkəm is
argued to be without a L tone above, then some rule must be responsible for
"bumping" the H tone. Apparently the latter two are resistant to this rule.

When the possessor noun and preceded by a H associative particle, kəfo is
H-L, which suggests that some rule has spread the associative H to the prefix.
Kəfo and kəkəm surface as H-M, in which the M-level tone is actually down-
stepped, given a rule of H-spread, the L tone which is displaced by that rule,
and the preceding discussion of downstep representation. Finally, kəŋkwi? is

M-H, which is the only true M tone found in this paper, since it is followed by other H tones.

Since the above nouns, when in head position, occasion H associative parti-cles, it is tempting to posit an underlying H tone prefix. Given this hypo-thesis, a rule which subsequently lowers the initial syllable of a string and rules which spread H and L tones and create M tones, it is possible to recon-struct underlying forms with only H and L tones, although it is then necessary to posit underlying floating tones in some cases. Kəkəm is H-H, kəfo H-HL, kəfo̹ H-LH, and kəŋkwí? L-HL. The unusual L tone prefix for the latter noun turns out to be characteristic of all nouns which begin with nasal clusters, and it is also related to the appearance of M tones. Note that there are also classes of nouns which are H-L, L-L, L-LH, and L-H, although they have been ig-nored for the sake of brevity. X tones will be introduced and explained in a later section.

2. Autosegmental Analysis

The logic of the present analysis thus far parallels Hyman's original ac-count. The introduction of the autosegmental framework, however, makes possible a massive clarification and simplification over Hyman's segmental analysis. Ab-stractions and redundancies which are inseparable from the previous work, e.g. contour tones as intermediate forms and two sources for M tones, disappear com-pletely. In addition, the number of rules necessary is cut in half. Finally, a transparent rule ordering, not at all obvious before, is discovered.

The first step in any autosegmental analysis is the rule by which tones are associated with their tone-bearing units (TBU's). The rule adopted here differs only minimally from the one in Goldsmith [1976].

Association rule: Associate each TBU with a single tone, one-to-one, beginning with the leftmost TBU:

```
    kə-fo            tə-kwə?tə
    |  |             |    |
    H- HL            H-   L
```

Note that the level of association is the morpheme, i.e. that prefixes are as-sociated separate from the roots.

Every autosegmental analysis incorporates well-formedness conditions (WFC's) to further regulate underlying association. Some are uncontroversial, others essential.

WFC 1: All TBU's must be associated with some tone:

```
        tə-kwə?tə
        |   |⁄‾
        H   L
```

WFC 2: Association lines do not cross.

Since there are no contour tones in Babanki, save for those created by vowel elision, it is unnecessary to adopt a third (language-specific?) WFC.

WFC 3: All tones must be associated with some TBU:

$$*k\mathschwa\text{-}fo$$

H HL

The rules which mediate between the underlying associations and the surface forms are of two distinct types. The first type, which includes H-bump and L-bump, alter associations. H-bump "floats" an anchored L tone when it is preceded by an anchored H tone and followed by any tone (whether floating or anchored); L-bump "floats" a bracket-final anchored H tone when preceded by an anchored L tone. The second type, which includes M-formation, X-formation, and initial TBU lowering, changes the value of anchored tones. The two types can be distinguished in many ways: autosegmental rules, the first type, are ordered first and sensitive to floating tones, tone-depressors, and tones attached to segmentally-null morphemes; segmental rules are blind to information on the autosegmental tier and only refer to adjacent information.

3. Representation of Downglide

Given the breakdown of the phonological rules into autosegmental and segmental, it is possible that downglide may be stated at either of the two levels, or, alternatively, at neither. As it turns out, attempts have been made to claim all three positions.

Some investigators of African tones (cf. Stewart [1971]) have attempted to group downstep and downglide together, because they both lower tones. As downstep (in this paper) is a L tone floating between two anchored H tones, one might suppose that downglide is an anchored L tone followed (or preceded) by a floating L tone. There are two reasons why this is incorrect: it necessitates a redundant LL melody, which contradicts the Obligatory Contour Principle [Leben 1976], and it leads to contradictions in the H-bump rule which lead into a paradox.

Alternatively, downglide could be a result of segmental rules. In fact, X-tones, hitherto ignored, are phonetically identical, even if X-tones are restricted to very few positions outside of string-final position, where they often become indistinguishable from downglide. If the X-formation rule is rewritten from lowering any anchored, bracket-final L tone preceded by an anchored L tone to any anchored, bracket-final L tone, the two tones can be collapsed, although it overgenerates madly. Another alternative is to reorder the rule before H-spread, which bleeds it. However, this step introduces what is at best an opaque rule-ordering, if not an outright violation of levels, and in addition, fails to provide the correct results.

Therefore, given the failure to provide a representation of downglide at either the autosegmental or segmental levels of phonological representation, it is concluded that downglide is instead to be represented as a final anchored L tone at the phonological level, which is subsequently lowered at the phonetic level.

REFERENCES

Clements, George N. and Kevin C. Ford. 1979. "Kikuyu tone shift and its
    synchronic consequences." *Linguistic Inquiry* 10:179-210.

Goldsmith, John. 1976. "An overview of autosegmental phonology." *Linguistic
    Analysis* 2:23-68.

Hyman, Larry M. 1979a. "Tonology of the Babanki noun." *Studies in African
    Linguistics* 10:159-178.

Hyman, Larry M. 1979b. "Babanki and the Ring Group." In Larry M. Hyman and
    Jan Voorhoeve (eds.), pp. 225-258. *Noun Classes in Grassfields Bantu.*
    Paris: Centre National de la Recherche Scientifique.

Jisa, Harriet. n.d. "Babanki field notes." ms.

Leben, William R. 1976. "The tones in English intonation." *Linguistic Analy-
    sis* 2:69-107.

Stewart, John M. 1971. "Niger-Congo Kwa." In Thomas A. Sebeok (ed.),
    Linguistics in Sub-Saharan Africa, pp. 179-212. Current Trends in Lin-
    guistics, Volume 7. The Hague: Mouton.

BANTU -a- :   THE FAR PAST IN THE FAR PAST

John Goldsmith
University of Chicago

1. Summary of the Hypothesis

The familiar structure of the Bantu verb takes the form

Subject Marker	Tense Marker	Object Marker	Radical	Extensions	Final Vowel

In many Bantu languages, there are one or two past tense markers of the shape
-a- .   When there are two, they differ in the degree of remoteness of the
past time referred to, and they also differ in their tonal properties. In this
latter respect they may differ, in the first place, in their own inherent tonal
marking, one being High, the other Low; in addition, frequently it is found that
one (usually the Far Past) places a High tone on the next mora or else can be
analyzed as having descended from an earlier period in which that behavior could
be found.

Thus at one stage, -a- was a "post-High" morpheme in the sense that it
placed a High on the following mora. It seems likely that this unusual behavior
was linked to its unusual phonological shape, being of the form -V-, not -CV-.
At an even earlier stage, we may hypothesize that the tone shift was due to syl-
lable merger with consequent simplification of the resultant contour tone syl-
lable:

(1)   CV - a - CV   CG a - C V   CG a - C V
       | | | →   /\ | → | /*
       T   H   (T)   T H   (T)   T   H (T)

2. General Comments and Terminology

Correspondences to early Bantu *High* tone will be marked with either a High
tone or an asterisk (*) on a vowel, since it is often no longer easily identifi-
able as a High tone synchronically. In a number of cases, such as Tonga or Shi,
early Bantu High tone most clearly corresponds to Low tone. .

I will use the term "Meeussen's Rule" to refer to the rule lowering High af-
ter High [Goldsmith 1983, 1984], as in (2), and the term "plateauing", after Ha-
zel Carter, to refer to the raising of Lows between Highs, as in (3). In some
languages this is restricted to a single Low found between neighboring Highs; in
others, it applies to any sequence of Highs.

(2) Meeussen's Rule: H H → H L

(3) Plateau: Bounded: H L H → H H H

              Unbounded: H L$_\phi$ H → H H$_\phi$ H

If there is a post-High tense marker, in the simplest case we will find the following effects:

    1. No contrast between the tone patterns of High and Low toned radicals when no object markers are present, with the neutralization in favor of the High toned pattern.

    2. If there are Low toned object markers, the contrast between High and Low toned radicals will rearise after these object markers; furthermore, what would otherwise be Low toned object markers behave High toned.

3. Luganda

    In the Far Past in Luganda, the tense marker -a- has the "post-High" behavior noted above. This High placement is followed by Meeussen's Rule and then by a rule of Unbounded Plateauing. In the example below, we see a High tone on the first syllable of the radical for both Low tone verbs and High tone verbs in this tense; the tone patterns of the two kinds of verbs are neutralized in favor of the High tone verb pattern (examples from Hyman and Comrie [n.d.]):

(4)   Low tone verb   High tone verb
      'he economized'   'he looked after'

      y a báliIiI a   y a IábiIiI a
          | |
          H   H

This tense actually places a High tone in addition on the extensions, associating with the 2nd mora of the stem. In the examples above, it has been suppressed, since it is lowered by Meeussen's rule. It is included in the examples below, taken from Stevick [1969]:

(5)   High   y a Iéet a   y a gú Ieet a   (circled High tones lower
       tone | | | |_| by Meeussen's Rule)
       stem   H(H)   H (H H)

       Low   y a kwéek a   y a gú kwéék a   (Plateauing here)
       tone | | | |
       stem   H(H)   H   H

NB: Object marker as noted, and /gu/ is underlying High; /a/ places a High on what follows; the final H is a past tense tonal suffix.

4. Tonga

    It is argued in Goldsmith [1983] that the anomalous tonal behavior of the Recent Past in Tonga should be analyzed as a shifting of accent induced by the Tense Marker -a- in the strong form of the Recent Past when it is accented. This is schematized in (5), where the -a- is the tense marker in question:

(6)   * *   *   *
       a v v → a v v

The accent, symbolized as "*", is itself realized as Low in tone generally in
Tonga. Vowels between accents are High. This is illustrated in (7), using da-
ta from H. Carter:

(7) example of tone realization from -!a- tense:

```
      *         *
ba !á mú bon a
   |  \  /    |
   L   H     L
```
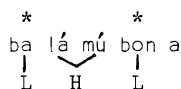
The unusual behavior of the Recent Past (focus on verb form) is illustrated in
(8):

(8) Recent Past (focus)

```
           *   *              *    *
   nd(i) a si!ik a  >   nd(i) a si!ik a  >   [nd a sí!ik a]
                             |   |
                             L   L
```
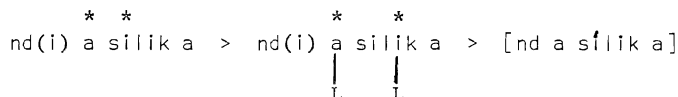
But if the verb stem is unaccented, then -a- is not followed by a High tone.
That is, it can no longer be analyzed as simply placing a High on what follows,
though this was undoubtedly the original condition (according to our hypothe-
sis):

(9)   *
   nd(i) a tobe! a   [nd a tobe! a]
          |
          L

5. Ruri

   The material discussed here on Ruri (CiRuri, closely related to Jita and
Kwaya) comes from Massamba [1982, 1983]. An underlying High is realized on the
following syllable except when it is on the penultimate syllable of the word;
in that case, it is realized on its own syllable. This is schematized in (10).
A phrase-final High tone is realized phonetically as a Rise-fall pattern spread
over the last two syllables; a High on other word-final syllables shifts to the
first syllable of the following word.

(10)   *   *
      -a- CV → a - CV

For example: *
            o ku sumík a   'to tie'

            o ku Birim a   'to run'

In the Far Past, the Final Vowel is assigned a High tone, and both High and Low
stems act like High tone stems.

(11)   na a sumik ire   'I tied'   [na a sumík ìr ê]
              | |
              H   H

       na a Birim ire   'I ran'   [na a Birím ìrê]
              | |
              H   H

We cannot test further behavior in this tense with object markers because all
object markers are underlyingly High toned and remove a High tone (by Meeussen's
Rule) from an immediately following verb stem.

6. Digo

   The data and much of the analysis assumed here comes from Kisseberth [1983],
although I will make a crucial assumption that is significantly at odds with
Kisseberth's proposal, as I will note below.

   In Digo, a single High tone (indicated here by *) always migrates to the Fi-
nal Vowel (I will call this the *End Run Rule*). In addition, Digo manifests
Meeussen's Rule and Unbounded Plateauing (the latter blocked by depressor conso-
nants).

   What if there are two High tones? There are two possible analyses: 1.
that of Kisseberth [1983], where the *rightmost* High shifts to the end and the
leftmost shifts rightward to the object marker or radical; 2. that the *leftmost*
High undergoes End Run (if Final Vowel has no High tone).

   If the latter course is chosen—and this is still open to dispute, although
a good case can be made for it—then the -a- *Past* is another relevant case for
our hypothesis. The -a- places a High tone on the stem that follows; the Fi-
nal Vowel carries a High tone, much as in Ruri.

(12)   Low-toned stem (-tsukur- 'carry')

       n(i)-a-tsukur-a   [n a tsúkúr â]
              | /\
              H   H L

7. Rundi

   In Rundi (Ki Rundi), the recent past is marked by a Low tone -a- tense
marker and the Far Past by a High tone -a- tense marker. The Far Past marker
is followed by a -ra- Focus Marker (when focus is on the verb or the entire
verb phrase) and then by object marker(s) and the verb stem. The verb stem is
always on a High tone regardless of the lexical tone of the stem in the Far
Past, e.g.:

(13)   ba-á-ra-sóm-a
          | |
          | | placed there by the *tense*
          H   H

       they-past-Focus-read-Final Vowel

       'they read (far past)'

This, too, would look like a post-High placed by the Tense Marker except for
the -ra- Focus marker that is in the way. However, the Focus marker is it-
self a recent innovation shared with Kinyarwanda but no other languages (a re-
analysis of what was formerly the present tense marker, presumably). Thus the
post-High behavior of the tense marker was reanalyzed as a morphological rule
(rather than being triggered by linear position following the -a- Tense Mar-
ker) when the Focus Marker arose as a slot in between the Tense Marker and the
Stem or Object Markers.

8. Conclusions

    I have presented several sets of facts from Bantu tone systems which have
been studied in some depth over the last few years. These detailed studies per-
mit us to isolate the more puzzling synchronic characteristics, such as those
we have looked at here. I hope that these observations may call attention to
the rich prospects inherent in these materials, so that a thorough comparative
study of this and other tenses can be undertaken, a study which will provide us
with a deeper understanding of the evolution of tonal systems and, equally, with
a deeper understanding of the nature of morphemes that place tone and accent on
the following syllable ("post-accenting", "post-High" morphemes).

REFERENCES

Carter, Hazel. 1962. *Notes on the Tonal System of Northern Rhodesian Plateau
    Tonga*. London: Her Majesty's Stationery Office.

Clements, G. N. and John Goldsmith. 1983. *Autosegmental Studies in Bantu Tone*.
    Dordrech: Foris Publications.

Goldsmith, John. 1983. "Tone and accent in Tonga." In Clements and Goldsmith,
    pp. 19-51.

Goldsmith, John. 1984. "Meeussen's Rule." In M. Aranoff and R. Dehrle (eds.),
    Language Sound Structure, pp. 245-259. Cambridge: MIT Press.

Goldsmith, John and Firmard Sabimana. 1984. "The KiRundi verb." Ms: Indiana
    University.

Hyman, Larry and Bernard Comrie. n.d. "Notes on Luganda." Ms: University of
    Southern California.

Kisseberth, Charles. 1983. "Digo tonology." In Clements and Goldsmith, pp.
    105-182.

Massamba, David. 1982. "Aspects of tone and accent in Ci-Ruri." PhD disserta-
    tion, Indiana University.

Massamba, David. 1983. "Tone in Ci-Ruri." In Clements and Goldsmith, pp.
    235-254.

Stevick. Earl. 1969. "Pitch and duration in Luganda." *Journal of African
    Languages* 8:1-28.

CLEFT CONSTRUCTIONS

H. F. Hailu
Howard University

1. Purpose of the Study and its Theoretical Framework

    The impetus for a detailed and deeper analysis of cleft constructions came
from the revolution in linguistics initiated by Chomsky [1957]. Since then a
considerable number of studies on various aspects of cleft constructions have
been done, e.g. Akmajian [1970], Bach [1970], Schachter [1973], Hawkins and Hy-
man [1974], Givon [1976], Simon [1982].

    The purpose of this study is the analysis of the structure of cleft con-
structions in present day Ethiosemitic (ES). The approach is generative-trans-
formational. The illustrative examples will be drawn from Amharic (hereafter
Amh), primarily; citations from other ES languages may also be used for illu-
strative purposes of when the particular language shows some divergence from
Amharic.

2. Description of Cleft Clauses

    Cleft and relative clauses have very similar structure. In both, the ab-
sence of a major constituent (except for the main verb) is a characteristic of
their surface structure. Both clauses are marked by a particle which we desig-
nate as rm (= relative marker); rm is prefixed to the main verb of the clause
if there is no overt auxiliary. If there is an overt auxiliary rm is prefixed
to it. In (1) and (2) below, the respective clauses are shown within labeled
brackets. The abbreviations df and dm stand for definite article and direct ob-
ject marker, respectively.

Cleft:

(1) a. $[_{NP}[_S$Almaz $\emptyset_i$ yä-säddäb-äčč (-w)]] $[_{VP}$tämari-očč-u-n näw]
        Almaz   rm-insulted-she(-him)   students-pl-df-dm is-he

            'it is the students that Almaz insulted'

    b. $[_{NP}[_S$Almaz $\emptyset_i$ tɨ-sädb yä-näbbär(-äw)]] $[_{VP}$tämari-očč-u-n näw]
        Almaz   she-insulting rm-was(-him)   students-pl-df-dm is-he

            'it was the students that Almaz was insulting'

Relative:

(2) a. $[_{NP}[_S$Almaz $\emptyset_i$ yä-säddäb-äčč-aččäw] tämari-očč$_i$]
               $\emptyset_i$ rm-insulted-she-them students$_i$

            '(the) students whom Almaz insulted'

    b. $[_{NP}[_S$Almaz $\emptyset_i$ tɨ-sädb-aččäw$_i$ yä-näbbär(-u-t)] tämari-očč]
        Almaz $\emptyset_{she}$-insulting-them rm-was(-they-df) student-pl

            '(the) students whom Almaz was insulting'

The structural similarities between the two clause types is clearly evident in the examples cited. Nonetheless, there are already differences in the grammar of the two clause types. For example, in (1) tämari-očč is not in the subject NP; in (2) it is the head of NP. In the section on derivation below an explanation will be given which correctly accounts for the differences.

In ES, the basic word order is

(3)   S C V

If V is transitive, C is an O; if V is the copula, i.e. the equivalent of be , then C stands for its complement ranging over NP, AP, PP, and other major grammatical functions.

(4)   Yonas sah∔n säbbär-ä   'Yonas broke a plate'
            plate broke-he

(5)   Yonas tämari näw   'Yonas is a student'
            student is-he

(6)   Yonas ∔-bet-näw   'Yonas is at home'
            at-home is-he

In constructions where the main verb is doubly transitive and VP includes PP, word order is normally as in (7), as sentence (8) shows:

(7)   S IO DO PP V

(8)   Almaz lä-tämäri-očč m∔g∔b   bä-mäkina lak-äčč
            to-student-pl provisions by-car   sent-she

      'Almaz sent provisions to students by car'

In matrix/simplex (hereinafter matlex) sentences in which the equivalent of the verb be is main verb, a right dislocation rule, which moves the subject to the end of the clause, may be operative. The triggering factor is TOPIC(alization) when it is applied to (one or more combination of the major constituents of) the subject clause or to the complement. Schematically, the dislocation rule works as follows:

(9)   TOPIC
            ↓
        S   C   V
        1   2   3   →
        Ø   2   3   1

    Application of rule (9) to sentences (5) and (6), results, respectively, in

(10) tämari näw   Yonas   'Yonas is a STUDENT'
        student is-he Yonas

(11) ∔-bet   näw   Yonas   'Yonas is AT HOME'
        at house is-he Yonas

Cleft constructions are basically sentences in which the matlex verb is the copula. The subject is a headless clause. The targeting of the complement by TOPIC triggers the operation of rule (9). Non-topicalized constituents, except for the complement, are moved to the end of the sentence.

(12) a. $[_{NP}[_{S}$Yonas yä-ayyä(-w)]] $[_{VP}$Mary-ɨn näw]
           rm-saw(-he) (-him)   -dm is-he

   b.   Mary-ɨn näw Yonas yä-ayyä(-w)
            [from topicalizing the complement]

   c.   Yonas Mary-ɨn näw ya-ayyä(-w)   'it is MARY that Yonas saw'
            [from topicalizing the subject of
             cleft clause]

As is indicated in (12), the dislocation rule (9) has various strategies for moving (one or more constituents of) the subject clause. To incorporate this fact, rule (9) should perhaps be reformulated as in (13) below when it is to be applied to cleft constructions.

(13) $[_{NP}[_{S}$X V$_2$]] C V$_1$
             1 2   3 4   →
   a.   1 ∅   3 4 2
   b.   ∅ ∅   3 4 1 2

where V$_1$ is the copula, V$_2$ is the main verb of the cleft clause (hereinafter cleft verb) and X ranges over the other major constituents of the cleft clause, either singly or in combination. Thus, (12a) is a result of TOPIC ranging over X; (12b) is a result of TOPIC ranging over the C, the focus constituent. Thus in ES the focus and the topic constituents need not be the same. Whichever strategy is used, the cleft verb is moved and placed at the end of the resulting structure.

3. Control of Concord in Cleft Constructions

    In all other constructions in which the verb is finite, the subject controls agreement on its clause-mate verb. In cleft constructions, the situation is a little more complex. The subject of a cleft sentence is a headless, non-adjectival clause (see Palmer [1962], Abraham and Hailu [1966], Gragg [1972], and Hailu [1972] for other views of the structure of cleft clause in ES). As a result we may find the cleft clause controlling agreement on the copula. In such cases, irrespective of the person, gender, and number of the major constituents of the cleft sentence, and provided the missing constituent is not the subject of the cleft verb, the copula may be marked for agreement with 3 msg (in Tny), and has to be so marked in other ES languages, e.g. Kɨstanɨnya (Kɨst) and Amh.

(14) Tny: nɨhna ∅ zɨ-rɨʔ na (-yo,-ya)   nɨ-Abrähät iyyu
             we   rm-saw-we (-him,-her) dm-   is-he

(15) Amh: ɨñña ∅ yä-ayyä-n(-äw,-at)   Abrähät-ɨn näw
             we   rm-saw-we(-him,-her)   -dm is-he

(16) Kɨst: ɨñña Ø yä-ažžä-nä (-ɨnn,-ɨnna) yä-Abrähät-ɨn
            we   rm-saw-we (-him,-her) dm   -is-he

All three sentences mean 'it is Abrahat that we saw'. If, however, the comple-
ment is nominative (Nom), the missing constituent in the cleft clause is the
subject of the cleft clause. In all such constructions there is person, gen-
der, and number agreement among the cleft verb, the complement and the copula.

(17) Amh: Ø Almaz-ɨn yä-ayyä-n(-at,-*äw) ɨñña nän   (*näw)
            Almaz-dm rm-saw-we(-her,-*him) we   are-we (*is-he)

(18) Kɨst: Ø yä-Almaz yä-ažžä-nä(-ɨnna,-*ɨnn) ɨñña nänä   (*-n)
            dm-Almaz rm-saw-we (-her,-*him) we   are-we (*is-he)

(19) Tny: Ø nɨ-Almaz zɨ-rɨʔ-na(-Iyya,-*Iyyo) nɨhnä ina (*-Iyyu)
            dm-Almaz rm-saw-we(-her,-*him)   we are-we (*is-he)

        'it is us who saw Almaz'

Again, rule (13) with its strategies may apply. The dislocation rule has no ef-
fect on agreement. The rules of agreement may be summarized as follows:

A. If complement is non-Nom

    (i)   in all ES copula is 3 msg (see (14-16))

    (ii)   in Tny, alternatively, subject of cleft clause may control agreement
        on copula. Compare (20) below with (14).

(20) nɨhnä zɨ-rɨʔ-na (-yo,-ya)   nɨ-Abrahat ina
     we   rm-saw-we (-him,-her) dm-Abrahat are-we

     'it is Abrahat that we saw'

B. With respect to the recalling of a missing DO or IO in the cleft clause,
    the pragmatics of the discourse context plays a decisive role. Consider
    the following:

(21) a. ɨñña yä-matta-n-at Almaz-ɨn näw   'it is Almaz that we hit'
        we   rm-hit-we-her Almaz-dm is-he

    b. ɨñña yä-mätta-n-äw Almaz-ɨn näw
                      -him

    In sentence (21a) the presupposition is that some female was hit. In (21b)
the object suffix -äw 'him' attached to yä-mätta-n 'that we hit' reflects
the presupposition that some hitting took place, and in ES an unspecified NP is
marked as 3 msg.

    The same kind of consideration accounts for the two modes of formulation of
cleft sentences in which the complement is in an IO case. Thus, for instance,
in the cleft clause (22a), the presupposition is that the book was given to
some female; in (22b) the presupposition is simply that someone was given a
book.

(22) a. ɨne mäs'haf-u-n yä-sätʼtʼš-hu-at   lä-Almaz näw
         I book-the-dm rm-gave-I   -her to-Almaz is-he

  b. ɨne mäs'haf-u-n yä-sätʼtʼš-hu-t   lä-Almaz näw
                                  -him

      'it is to Almaz that I gave the book'

    In contrast to the cleft clause, the relative clause, being a modifier or
adjectival, forms a unitary major grammatical category with its head. As such,
the grammar does not allow the removal of any material out of the NP of which
it is a part.

    The derivation of cleft and relative clauses in ES that we suggest is rough-
ly represented by (23) and (24) respectively (cf. Schachter [1973], Gragg
[1972], Hailu [1972]).

(23) S_0 tree: S_0 dominates NP and VP. NP dominates S; S dominates Comp (rm) and S_1; S_1 dominates ...$\emptyset_i$...V. VP dominates C_i and V; V dominates Copula.

(24) NP tree: NP dominates S and NP_i. S dominates Comp (rm) and S_1; S_1 dominates ...NP_i...V.
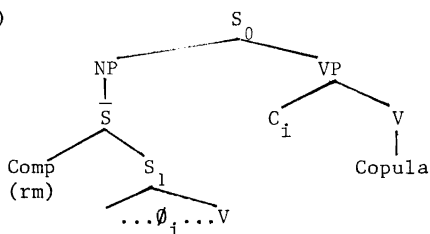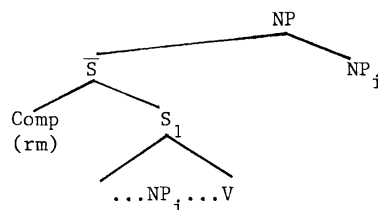
In (23) $\emptyset_i$ represents a gap (absence of information) which is interpreted as be-
ing filled by the complement both in terms of grammatical category/relation and
in terms of reference. S_1 , in structures like (23), represents an underlying
structure for cleft clauses and cannot have a modifier function. Additionally,
no material is extracted from it, for the candidate for extraction is phonolog-
ically null. In (24), on the other hand, S_1 is a modifier, hence a relative
clause. The inner NP_i upon deletion leaves, except under specifiable conditions,
a resumptive suffix pronoun reflecting its grammatical function in S_1. To il-
lustrate, we represent (25) and (26) as in (27) and (28) respectively.

(25) Kist: Almaz $\emptyset$ yä-alläf-ätt bä-mäkina-ɨn   'it is by car that Almaz left'
                  rm-left -she by-car   -is-he

(26) Amh: Yonas $\emptyset$ yä-agäbba-at   setɨyyo   'the woman who(m) Yonas
                  rm-married-he-her woman   married'

(27)
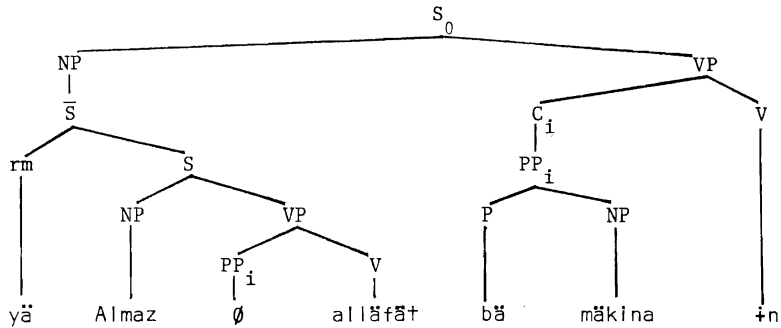
(28)
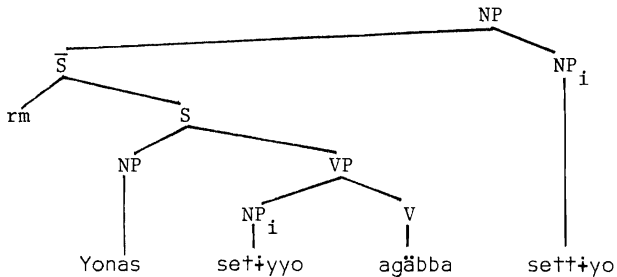
4. Conclusion

To summarize, a cleft clause is characterized by a configuration which is much like that of a sentential complement governed (by the equivalent of) the complement "that" with no head; the only formal difference is that there is an obligatory absence of a major category/grammatical relation in the underlying source of a cleft clause. The presence of a gap or an empty category gives it the appearance of a relative clause. The non-existence of a head relates it to a sentential subject complement.

REFERENCES

Abraham, D. and F. Hailu. 1966. "The adjectival and naw clauses in Amharic."
     Proceedings of the Third International Conference on Ethiopian Studies II:
     Addis Ababa: Haile Sellassie I University Press.

Akmajian, A. 1970. "On deriving cleft sentences from pseudo-cleft sentences."
     Linguistic Inquiry 1:149-168.

Bach, E. 1970. "Is Amharic an SOV language?" *Journal of Ethiopian Studies*
     8:9-20.

Chomsky, N. 1957. *Syntactic Structures.* 's-Gravenhage: Mouton.

Givón, T. 1976. "Topic, pronoun and grammatical agreement." In C. Li (ed.),
     Subject and Topic, pp. 149-188. New York: Academic Press.

Gragg, G. B. 1972. "Cleft sentences in Tigrinya." *Journal of African Lan-
     guages* 2(2):74-89.

Hailu, F. 1972. "On Amharic relative clauses." *Bulletin of the School of
     Oriental and African Studies* 35:497-513.

Hawkins, A. and L. Hyman. 1974. "Hierarchies of natural topics in Shona."
     Studies in African Linguistics 5:147-170.

Palmer, F. R. 1962. "Relative clauses in Tigrinya." *Journal of Semitic
     Studies* 7:36-43.

Schachter, P. 1973. "Focus and relativization." *Language* 49:19-46.

Simons, P. 1982. "NE . . . BA marking in Lele: a cleft construction?"
     Studies in African Linguistics 13:217-229.

SOME SYLLABLE STRUCTURE BASED RULES
OF TUNISIAN ARABIC

Hafedh Halila
University of Southern California

The title of this presentation refers to my ongoing investigation of the morphemic variations exhibited by surface forms of Tunisian Arabic (TA). For the purpose of this presentation I will focus on variations in the feminine possessive forms and propose an analysis of these forms using the notion of extrametricality [Hayes] 1982]. I will first present some general properties of a model for the morphology and phonology of TA. Given the space and time limitations on this presentation, these properties will be treated as assumptions. Then I will present three different possible analyses of the feminine possessive forms and argue for the one based on the above assumptions and using the notion of extrametricality.

1. Morphology and Phonology of Tunisian Arabic

TA differs from other dialects of Arabic in that it allows a wide range of surface syllable structures and surface clusters of up to three consonants. Syllabification and syllable structure in TA can be captured straightforwardly through a multiple template approach à la Clements and Keyser [1983], subject to certain Negative Syllable Structure Constraints. Some of these constraints are given in (1).

(1) a. $*[_\sigma CCV..$

    b. $*[_\sigma ..VCCC$

    c. $*[_\sigma ..VVCC$

    d. $*[_\sigma C]$

    e. $*[_\sigma V]$

Furthermore, I assume that morphological processes in TA are of at least two types. The first type is lexical and involves the formation of lexical items and syntactic categories of the $X°$ type (all references to syntactic categories will be given in the framework of $\overline{X}$ theory). This includes categories such as verbs, adjectives, adverbs, masculine and feminine nouns, their dual and plural forms, etc. These formation processes procede by prosodic derivational templates arranging the distribution of consonants and vowels, in pretty much the same way proposed by McCarthy [1981] for Classical Arabic. These templates represent the underlying representations and may differ from the actual surface forms.

The second type of morphological processes is a different sort of word formation which takes place at the phrase level. It involves suffixation, prefixation, compounding and cliticization. Crucially, these processes depend on information from the syntax. They operate on $X°$ categories within larger categories, namely $\overline{X}$ and $\overline{\overline{X}}$ categories. These morphosyntactic processes take place post-

lexically through the operation of morphological and phonological rules. The
overall picture of the model that is being proposed here for the morphology and
phonology of TA is shown in (2).

(2)

Lexical Under-
lying Represen-
tations

non-derived lexical items + syntactic mor-phemes	root morphemes
	↓
	derivational templates

```
          ↓                    ↓
     ┌──────────────────────────────┐
     │   syntax = cliticization     │
     │   lexical insertion          │
     └──────────────────────────────┘
                    ↓
```

Postlexical level

```
          ┌──────────────────────┐
          │ phonological and     │
          │ morphonemic rules    │
          └──────────────────────┘
                    ↓
               ┌────────┐
               │ output │
               └────────┘
```
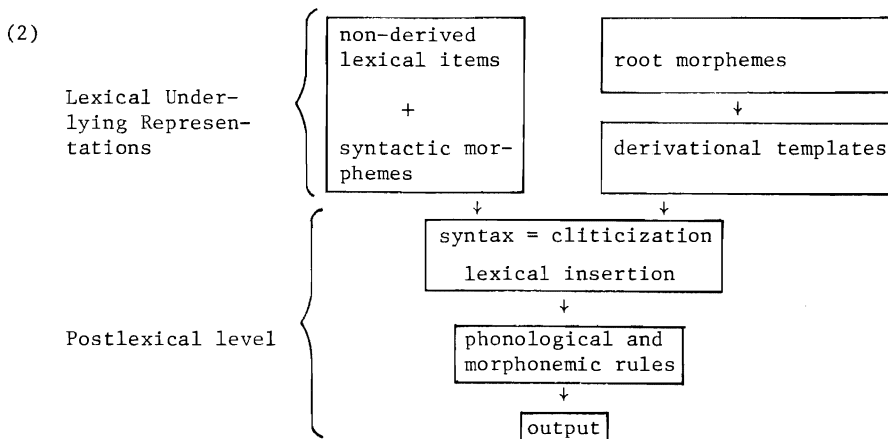
    The morphonemic alternations in TA argue in favor of such a model. In par-
ticular, tests of stress assignment and the internal structure of cliticized
forms show that it is less redundant to have phonological rules and morphonemic
rules apply postlexically. Since these rules are sensitive to syllable struc-
ture and also affect syllable structures, I will assume that syllabification ap-
plies before and after the application of each rule.

    Before we move on to the analysis of the feminine possessive forms, we need
to point out two major morphonemic rules in TA. The first striking characteris-
tic of surface forms in TA is the presence of a vowel alternation between "neu-
tral" forms and suffixed forms. Wise [1983] accounts for these alternations by
a rule of posttonic vowel truncation which accounts for the alternations in (3),
and a rule of metathesis which accounts for the alternations in (4).

(3) ɣáaliṭ   'wrong (masc.)'   ɣáalṭa   'wrong (fem.)'

     máxzin   'storage room'   máxznii   'my storage room'

(4) sñán   'a plate'   sñanna   'our plate'   sáñnii   'my plate'

     šhár   'a month'   šáhriin   'two months'

In Wise's analysis, the feminine form and the possessive form in (3) are derived
from the masculine and "neutral" forms, respectively, through the operation of
suffixation and rule (5).

(5) Short Vowel Deletion

     $V \rightarrow \emptyset \: / \: C\_\_CV$

Rule (5) is in fact a reflex of a general surface constraint in TA which disal-

lows sequences of open light syllables. The analysis of the feminine possess-
ive forms below will argue for a different statement of the same rule.

As for the forms in (4), Wise proposes the following metathesis rule:

(6) $\left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$ CCVC#V $\rightarrow$ $\left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$ CVCCV

We will show subsequently that rule (6) is also a reflex of the same rule of
short vowel deletion.

The last rule to be mentioned is that of i-epenthesis which is quite com-
mon in other dialects of Arabic. In TA, i-epenthesis is a consequence of syl-
labification rules and the Negative Syllable Structure Constraints. An epen-
thetic i is inserted before a segment left stranded by syllabification.

(7) $\emptyset \rightarrow$ i / $\left\{ \begin{matrix} \_C \\ C\_ \end{matrix} \right\}$ where C does not belong to a σ .

(7) must follow all the other rules discussed so far but must apply before
stress assignment.

2. An Analysis of the Possessive of Feminine Nouns

The possessive forms of feminine nouns in TA present an interesting prob-
lem. In these forms, a [t] which does not appear in the citation forms of
these nouns surfaces when possessive suffixes are added to feminine nouns or in
the genitive constructions with feminine nouns, as shown in (8) and (9).

(8) Possessives of feminine nouns

a.	bágra	'cow'	bágrti	'my cow'	bágritna	'our cow'
b.	krúuma	'neck'	kruúmtik	'your neck'	kruumítkum	'your (pl) neck'
c.	kílma	'word'	kílmtu	'his word'	kilmíthum	'their word'
d.	mánšfa	'towel'	manšáfti	'my towel'	manšfítna	'our towel'

(N.B. The vowel final possessive suffixes in (8 a,c,d) have underlying long
vowels which surface as short ones).

(9) Genitive constructions with feminine nouns
     a. bagrít maħmúud   'Maħmuud's cow'
     b. manšáft ħammáam   'a bath towel'

Notice also the vowel alternations in the above forms. The final vowel of the
unsuffixed forms drops when a suffix is added and an i appears in its position
in the plural forms. In (8d), another vowel alternation involving a is pres-
ent.

By contrast, masculine nouns do not have [t] in their possessive forms
but exhibit the same type of vowel alternation.

(10)   Possessives of masculine nouns

a.   kálb   'dog'   kálbi   'my dog'   kálbna   'our dog'
b.   tmár   'dates'   támru   'his dates'   tmárhum   'their dates'

The question now is how to analyse this [t] in the feminine possessive forms
and how to account for the vowel alternations in the stems and possessive suf-
fixes.

One possible analysis is to assume that the ending of feminine nouns takes
three different surface forms:

-ə   before a pause

-t   before vowel initial suffixes and in genitive constructions

-it   before consonant initial suffixes.

In fact, this analysis was proposed by Wise [1983]. But it can easily be shown
that even within the framework proposed by Wise, this analysis gives the wrong
results. Consider the derivation of [manšáfti] 'my towel' and [márti] 'my
wife', as given in (11), using the metathesis rule proposed by Wise.

(11)   /manšf + it + ii/   and   /mr + it + ii/

    metathesis   mansiftii   mirtii

    output   *manšífti   *mírti

The above analysis is missing a generalization about endings of feminine nouns
in TA and particularly fails to recognize that the i in the feminine ending
[-it] is the result of i-epenthesis.

The second possible analysis of the possessives of feminine nouns is based
on diachronic considerations. In Classical Arabic, feminine nouns end in
[-at]. This final t appears in all of the regular morphological derivations
involving feminines in Classical Arabic, such as the dual forms and the regular
plurals. If we assume that TA, in its diachronic changes, has kept basically
the same derivational templates of Classical Arabic, then we should expect the
final [t] to appear in the dual forms and plurals of feminine nouns in TA.
This is the case as shown in (12). The dual is derived by adding the suffix
[-iin] to the singular and the plural by lengthening the vowel of the final
syllable.

(12) a. Dual of feminine nouns   b. Plural of feminine nouns

         bagrtiin   '2 cows'   bagraat   'cows'
         manšaftiin   '2 towels'   mnaašif   'towels'
                                          manšfaat   'towels' (marginally
                                                                acceptable)

The evidence in (12) can be taken in favor of an analysis which assumes that
a reanalysis of the possessive forms of Classical Arabic has happened which re-
sulted in the [-t] of the feminine being analyzed as part of the possessive

suffixes and dual suffixes. Consequently, TA ends up having two classes of
possessive suffixes. One class is added to consonant final nouns and another
one, having [t] as initial consonant, is added to the feminine nouns ending
in [a].

To test this hypothesis, we will consider the derivation of [manšáfti]
'my towel' and of [manšfítna] 'our towel'.

(13)   /manšfa + tii/   /manšfa + tnaa/

    metathesis   NA   NA

    rule (5)   NA   NA

    i-epenthesis   NA   NA

    output   manšáfti   *manšfatna

The possible analyses proposed above, besides leading to wrong surface
forms, fail to capture the generalizations that we proposed for underlying and
surface forms of TA. In what follows, I would like to propose an analysis which
considers the alternations exhibited by the possessive of feminine nouns as part
of the general morphonemic variations associated with suffixation and cliticiza-
tion in TA. More specifically, I propose to characterize this funny final [t]
as extrametrical, where by extrametrical I mean peripheral. For the purpose of
this analysis, I keep the assumption that the lexicon in TA contains the core
templates of masculine and feminine nouns. The templates of feminine nouns end-
ing in [a] end in an extrametrical [t]. This [t] is peripheral and lies
outside the core template and therefore can join any clitic suffix subject to
syllabification postlexically. It ceases to be peripheral when a vowel initial
suffix is added. Because of (1d), it must syllabify with it. But crucially it
cannot join the coda of the preceding syllable in the core template.

Furthermore, if we assume that TA has kept the same derivational templates
as Classical Arabic and that these templates are entered in the lexicon as un-
derlying representations, vowel alternation can be accounted for by reconstruct-
ing the alternating vowel in the underlying representations of the forms which
exhibit morphonemic vowel alternation. Consequently, we may find sequences of
light open syllables in underlying representations and surface consonant clus-
ters are created through the operation of the short vowel deletion rule. How-
ever, we need to reformulate rule (5) as rule (14).

(14)   Short Vowel Deletion

$$V \rightarrow \emptyset \ / \ C \overset{\sigma}{\overset{\wedge}{\underline{\quad}}} (C)\overset{\sigma}{\overset{\wedge}{CV}}(C) \qquad \text{Left to Right iterative.}$$

Rule (14) scans the relevant domains from left to right and applies iteratively
whenever its environment is met. Being a postlexical rule, it cannot have ac-
cess to the internal structure of the lexical word unless an element of the lex-
ical word is included in its environment. The crucial examples for this analy-
sis are words with surface clusters of three consonants. Again, the derivation
of 'my towel' is given in the left hand column of (15) and that of 'our towel'
in the right hand column. The square brackets labeled LW mark the boundaries of

the lexical word and those labeled PLW delimit the boundaries of the postlexical word. The horizontal lines mark the domain of application of rule (14).

(15) $[_{PLW}[_{LW}$ manšafa] tii] $[_{PLW}[_{LW}$ manšafa] tnaa]

                NA   Rule (7)   i
        manšáfti   Output   manšfítna
        'my towel'   'our towel'

Notice that in the derivation of 'my towel' rule (14) cannot delete the a of /-ša-/ because it does not have access to the lexical word. It must scan elements from the derived environment so that its application is triggered.

3. Conclusion.

    In this presentation then, I have presented an anlysis of the possessive of feminine nouns which fits into the overall model proposed for the phonology and morphology of TA. I have shown that by making certain minimal assumptions about the nature and properties of the underlying representations in TA, which are independently justified elsewhere in the grammar, we are able to account for the morphonemic alternations of the possessives of feminine nouns in a simplified and unified manner. Moreover, I have presented evidence against the existence of a metathesis rule [Wise 1983] and shown how the notion of extrametricality can be used to characterize the [t] of the feminine forms.

REFERENCES

Clements, N. and S. Keyser. 1983. *CV Phonology: A Generative Theory of the Syllable.* Cambridge, Massachussets: The MIT Press.

Hayes, B. 1982. "Extrametricality and English stress." *Linguistic Inquiry* 13:227-276.

McCarthy, J. 1981. "A Prosodic theory of nonconcatenative morphology." *Linguistic Inquiry* 12:373-418.

Wise, H. 1983. "Some functionally motivated rules in Tunisian phonology." *Journal of Linguistics* 19:165-181.

THE ARABIC DOUBLED VERB CONSPIRACY AND MORPHEME INVARIANCE

Grover Hudson
Michigan State University

1. Introduction

This paper is an argument for the true generalization condition [Hooper 1976:13]. It deals with the basic facts of Arabic so-called "doubled verbs" (roots of the pattern 122), comparing an "autosegmental" grammar with one governed by the condition to show the superiority of the latter with regard to these facts. Another purpose is to argue against unprincipled grammatical theories in general.

Principled grammatical theories are those governed by objectively applicable, empirical principles. Not among these are informal, subjectively interpreted principles such as Postal's [1968:56] "naturalness condition": "the relation between phonological and phonetic structure is a *natural* one." A preference for "naturalness", so defined, is as helpful as a similarly defined preference for "abstractness", or "concreteness". Such preferences for grammars is not helpful because it is obvious that languages have both natural and unnatural and abstract and concrete aspects. As linguists we would agree that language is so important to knowledge, and understanding the structure of language so important to human understanding in general, that the meanings of words like "natural", "concrete", and "abstract" are bound to be profoundly affected by whatever understanding we achieve of language, both as a social institution and a cognitive structure.

Nor are would-be formal principles of languages helpful if they lack empirical applicability, for example, those which merely declare something to be "costly" rather than to exclude it, such as Kiparsky's 1974 [1968] "alternation condition". There is inflation in linguistics as in economics. It does no good to have a constraint on rules unless you have a constraint on lexical entries, nor to have a constraint on lexical entries unless you have one on rules. It doesn't do any good to claim, for example, that the feature SYLLABIC is autosegmental and then allow ad hoc exceptions to the claim.

My claim, which I believe is the essence if not the totality of the true generalization condition, is that rules don't change, move, or delete features or segments. This is not entirely consistent with Vennemann's or Hooper's practice in their work on "natural generative phonology".

2. Arabic Doubled Verbs

The Arabic doubled verbs illustrate a little conspiracy against certain sequences of like consonants separated by a short vowel. Two alternations take place in fulfillment of the conspiracy:

(1) a. samm-a   'he poisoned' (*samam-a ; cf. katab-a   'he wrote')

    b. ya-summ-u 'he poisons' (*ya-smum-u ; cf. ya-ktub-u 'he writes')

b. ǰarr-a   'he pulled'   (*ǰarar-a ; cf. kaṭab-a)

c. ya-ǰurr-u   'he pulls'   (*ya-ǰrur-u ; cf. ya-ktub-u)

The first alternation is the presence and absence of a second vowel in the
stem of form I perfects. The 3m.sg. form I perfect of smm 'poison' is
samm-a , not samam-a , which is the pattern of the regular verb roots such as
ktb 'write', i.e. kaṭab-a . The second alternation is in the left-to-right
arrangement of the second consonant of the root and the vowel of the form I im-
perfect stem. The 3m.sg. form I imperfect of smm is ya-summ-u , not
ya-smum-u , which is the pattern of the regular verbs, e.g. ya-ktub-u . These
distinguishing characteristics of the doubled verbs appear in other forms which,
like the 3m.sg., have vowel-initial suffixes.

The doubled verb alternations are not unusual. They, like the pronunciation
prab'ly for *probably* and the inspiration for tongue twisters like *rubber baby
buggy bumpers*, are owed to the physiological complexity in repeating like conso-
nants separated by only a short or unstressed vowel.

3. Two Analyses of the Doubled Verb Conspiracy

The tradition of generative grammar is to think of these alternations of
form in the perfect and imperfect stems as owed to *transformations* of the stem-
pattern of the regular verbs. This is the approach of the autosegmental analy-
sis of Arabic verb morphology by John McCarthy [1982]. In this analysis, the
stem of a verb is the tier of consonants and vowels or of the feature SYLLABIC.
Input to the autosegmental derivation of the form I perfect and imperfect stems
katab/ktub are the following: the root tier ktb (said to be all the features
of ktb less SYLLABIC); the vowel tiers a perfect/ u imperfect; and the "tem-
plate" tiers for CVCVC/CCVC, consisting of the feature SYLLABIC only. This is
shown in (2).

(2)   Perfect I   Imperfect I

      ktb   →   ktb   ktb   →   ktb
                 ⟋ | \ | | \
      CVCVC   CVCVC   CCVC   CCVC
                                              ⟋
      a   a   u   u
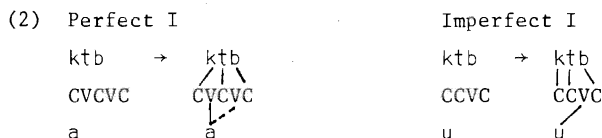
The root tier ktb associates appropriately with the Cs of the template tier ac-
cording to the autosegmental convention of grammar of "left-to-right" associa-
tion. The single vowel of the vowel tier replicates by another convention.

The doubled verb conspiracy is expressed by McCarthy [1982:399] as rule (3).
This is effectively a collapsing of a metathesis and a deletion rule. This is
not obvious since rule (3) is unprecedented in form and effect.

(3)   1 2 3 4 5

      <V> C V C V → 1 <3> 245
       a   \   ⟋   b
        \   \   ⟋
      ×──────∨
              α
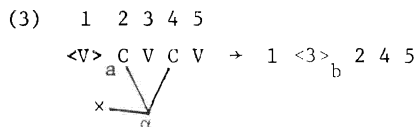
      Condition: a ⊃ ~ b

Interpretation of the angle brackets requires the subscripts a and b and the
footnote to the rule. In the perfect, where a occurs, b is deleted. In the
imperfect, where a doesn't occur, b does (contradicting the usual interpreta-
tion of angle brackets), but then b (that is, 3) inverts with 2. The alpha,
with its lines, is said to provide that the affected consonants are like conso-
nants, and the x that the left-most consonant is unlike these—that is, the
rule affects a doubled verb.

I suggest that this rule doesn't provide a very revealing account of the
doubled verb conspiracy. It seems strictly ad hoc. It's unusualness, consider-
ing that the doubled verb alternations are quite reasonable from the point of
view of articulatory phonetics, may reasonably be an argument against the auto-
segmental analysis of which it is a part. An alternative understanding, which
makes reference to the explanation mentioned, is the negative condition (4).
Presumably at first purely phonological, this condition is now (I think) mor-
phologized by the boundary.

(4)   * $\left\{ \begin{matrix} V \\ C \end{matrix} \right\}_\alpha$ $C_\beta V C_\beta$] V

In (5) are shown the non-transformational observationally valid rules of Ar-
abic for expanding roots as stems of the perfect and imperfect. Note the
straightforward relation of association between input and output consonants in
(5).

(5) a.   CCC → CaC(a)C / perfect I   (i.e. smm → sam(a)m)

   b.   CCC → C-C,u-C / imperfect I   (i.e. smm → s-m,u-m)

The left-to-right order of input consonants is necessarily preserved in the out-
put, a necessity which follows from the true generalization condition prohibi-
tion of movement rules.

Perhaps the main argument given by McCarthy [1982:375] for the autosegmental
analysis of Arabic root and pattern morphology is that in the usual transforma-
tional grammar all the input and output consonants in rules like (5) must be in-
dexed, so that, assuming always the possibility of movement, these can be
matched up correctly. The autosegmental grammar solves this problem with its
convention of left-to-right association. According to the true generalization
condition this is a principle of analysis: movement rules are prohibited as vi-
olations of the condition.

The second thing to notice about the rules (5) is the parentheses in the
rule for the perfect stem. This is traditional in interpretation: the paren-
thesized vowel may or may not appear—this is the vowel absent in doubled verbs
when a vowel-initial suffix follows. Finally notice the hyphens and comma in
the rule for the imperfect stem. This notation abstracts invariant linearity
from this stem. It expresses the possibility that the segments between the hy-
phens may or may not occur in the left-to-right order given. These are the seg-
ments which vary linearity in doubled verbs.

The parenthesis and comma-hyphen notations interact with the negative condi-
tion (4), the explanatory generalization over the doubled-verb alternations, to
provide the correct outputs of doubled verbs. The necessary implication of (4),

given the variable outputs from (5) provided by these notations, is the expression of the doubled verb conspiracy. This is shown in (6):

(6) a.   sam(a)m] a → samm]a   by (4), otherwise, e.g. katab]a

 b.   ya-s-m,u-m] u → yasumm]u   by (4), otherwise, e.g. ya-ktub]u

Since each of the rules of (5) provide two possibilities, and according to rule (4) one of these is impossible for the doubled verbs, it follows deductively that the doubled verbs take their allowed form. By a general convention of the grammar—effectively proper inclusion precedence [Sanders 1974]—the other, regular, verbs are considered to take the other form of the alternatives provided by (5).

The statement of the facts of Arabic (4) and (5), with the prohibition of movement and deletion rules following from the true generalization condition, are a principled and explanatory understanding of the doubled verb conspiracy. The analysis (3), by contrast, is just a description, and not a very clear or interesting one at that.

4.   Other Evidence: a Language Game

After the oral presentation of this paper Bruce Hayes reminded me of an argument given by McCarthy in a footnote (p. 396). In the autosegmental grammar the doubled verbs may be treated as biliterals, e.g. sm rather than smm , since by the left-to-right convention CaCC would be completed as samC , and by the convention for associating a remaining C or V on the CV tier (p. 382), this would become, correctly, samm . This approach is said to follow from the "obligatory contour principle" (p. 383) according to which identical adjacent segments of a tier are disfavored (not disallowed). McCarthy suggests (p. 396) that this prejudice against identical adjacent segments in a tier explains the limitations of Arabic root structure discovered by Greenberg [1950], e.g. *smm , but in fact these are diverse, extending well beyond any simple prohibition of identical adjacent segments on an autosegmental tier (for some discussion see Lightner [1973]).

The argument for biliteral doubled verbs is found in an Arabic language game, in which ktb can be realized variously as tkb , btk , etc., but the doubled verb ḥll only as lḥḥ . This follows from lexical ḥl , permuted as lḥ , which forms the correct stem laḥḥ . But these same facts follow very reasonably in the principled grammar of (5) given ḥll , since this could be permuted by the game rule as lḥl and llḥ , but neither of these patterns $(C_1C_2C_1$ and $C_1C_1C_2)$ are generally found as Arabic roots; the latter never, the former only rarely [Greenberg 1950]. They may be considered systematically disfavored. But if we assume that, in the game, doubled verbs are retained as doubled verbs, the impass is avoided by the game pronunciation lḥḥ .

Notice that on this analysis movement DOES occur (in the conversion of ktb to tkb , etc.), but in the game lexicon, not in derivations. This is what is significant about language GAMES—they do things not possible in grammars but still in linguistically principled ways. Here the game violates the true generalization condition, but only as in a sound change (metathesis), not as synchronic movement. In the autosegmental-transformational theory, on the other

hand, movement is possible anywhere (cf. McCarthy's metathesis-derivation of form VIII, p. 390), so the fact that the language game allows this only in the lexicon would not be predicted. It happens that the autosegmental grammar handles the language game facts, but so does the non-transformational grammar, and only the latter does it in a fully principled way.

REFERENCES

Greenberg, Joseph. 1950. "The patterning of root morphemes in Semitic." *Word* 6:162-81. [Reprinted in S. Al-Ani (ed.), 1978, *Readings in Arabic Linguistics*, pp. 431-456. Bloomington: IULC.]

Hooper, Joan B. 1976. *An Introduction to Natural Generative Phonology*. New York: Academic Press.

Kiparsky, Paul. 1974 [1968]. "How abstract is phonology?" In O. Fujimura (ed.), *Three Demensions of Phonological Theory*, pp. 5-56. Tokyo: TEC Co.

Lightner, Theodore. 1973. "Against morpheme structure conditions and other things." In M. Kenstowicz and C. Kisseberth (eds.), *Issues in Phonological Theory*, pp. 53-60. The Hague: Mouton.

McCarthy, John. 1982. "A prosodic theory of non-concatenative morphology." *Linguistic Inquiry* 12:373-418.

Postal, Paul. 1968. *Aspects of Phonological Theory*. New York: Harper and Row.

WH-MOVEMENT AND RELATIVIZATION IN TWO CREOLE LANGUAGES: CAPE VERDEAN (CV) AND HAITIAN (H)

John P. Hutchison
Boston University

1. Introduction

The structural similarities between WH-question formation and relative clause formation (and the often related cleft, pseudo-cleft, and embedded question constructions) have been observed with regard to many languages. In cleft constructions, a left focussed constituent is followed by a clause bearing a syntactic resemblance to the relative clause construction in a significant number of languages. Givon [1979:217-218] explains this by suggesting that the cleft structure arose diachronically as a result of tacking the presupposed relative clause portion onto the focussed constituent as an afterthought, paratactic construction.

The languages here under consideration attest these paratactic RC-like structures, for many NP positions, under questioning and relativization. Thus the RC-like embedded S may be characteristic of the WH-question, the RC construction, the embedded WH-question, and the cleft and pseudo-cleft constructions. The similarities are indeed apparent from the following data set. Here the CV COMP KI is shown in capital letters, as is the H DET LA , the latter being shown without its usual phonological assimilation. CV precedes H.

(1) WH-QUESTION

    (ki) kuz(-e) KI   bu kre?   'what do you want?'
    WH   thing COP COMP 2S want

    (ki) sa   u te ašte LA?   'what did you buy?'
    WH   that 2S PST buy DET

(2) RESTRICTIVE RELATIVE CLAUSE

    kel kumida KI   bu kre e   kacupa   'the food that you want is kacupa'
    the food   COMP 2S want COP

    m we liv yo u te ašte LA   'I saw the books that you bought'
    1S see book PL 2S PST buy DET

(3) EMBEDDED WH-QUESTION

    n ka sabe (ki) kuz-e   KI   bu kre   'I don't know what you want'
    1S NEG know WH   thing COP COMP 2S want

    m pa kon ki sa u te ašte LA   'I don't know what you want'
    1S NEG know WH that 2S PST buy DET

(4) CLEFT

    e kumida KI bu kre   'it's food that you want'

se liv u te ašte LA   'it's a book that you bought'

(5) PSEUDO-CLEFT/FREE RELATIVE

kuza KI n kre e kumida   'what I want is food'

sa u te ašte (LA) bo   'what you bought is good'

In addition to marking the RC-like structures of (1-5), both the CV COMP KI
and the H DET LA play important roles in their respective systems of comple-
mentation, as shown in (6-7).

(6) NP COMPLEMENTATION

vini I vini (LA) neve m   'the fact that he arrived upset me'

(7) VP COMPLEMENTATION (that-S)

n fra-I   KI-el   ten ki bai   'I told him that he must go'
1S tell him COMP he must go

m te di li te vini (LA)   'I said that he had come'
1S PST say he PST come   DET

H LA may be optional in embedded S-final position both in WH-questions and in
examples like (6-7). Lefebvre [1982:46] is the only author to describe the pre-
suppositional role played by LA in the S-final position. Indeed there is an
expectation, or the presupposition, that the COMP-S will be or has been realized
when the LA occurs.

2. WH-Questions in CV and H.

     In both languages, the questioning of subject, direct object, and also indi-
rect object NPs involve a gapping strategy. Both have obligatorily dative-
shifted indirect objects which take no adpositional marking either in declara-
tives or when questioned or relativized. In H, when the subject is either
questioned or relativized, ki occurs obligatorily in subject position in the
stead of the questioned or relativized subject NP constituent. In its relative
use, Hall [1979:49] referred to this ki as a relative pronoun which is the
subject of the embedded clause.

     In (9), in the presence of the full analytic CV WH form ki kuza , with or
without the copula, the COMP KI is obligatory. When the reanalyzed kuze
with apparently accreted copula is used, the COMP KI is then optional. The
obligatory use of the COMP KI in the presence of the WH-word KI suggests
that a RC is involved since in all RCs the COMP KI is obligatory. However,
whether or not kuza 'thing' is the head of the RC or whether the RC structure
is a paratactic free appositive RC of the type proposed by Givon is unclear.
This is due in part to the freedom to delete or omit the copula and the freedom
of movement of the copula in these questions, as in clefts and pseudo-clefts,
and also due to the ongoing processes of reanalysis and natural change in creole
languages. The following are WH-questions on major NP positions.

(8) ken(-e) KI   ben?   ki mun   ki te vini LA?
     who COP COMP come   WH-person SUB PST come DET

     'who came?'   'who came?'

     *ken (e) ben?   *ki mun te vini (LA)?

(9) ki kuz -e   KI   bu ta faze?   ki sa   u ap fe LA?
     WH thing COP COMP 2S PRG do   WH-thing 2S PRG do DET

     'what are you doing?'   'what are you doing?'

     *ki kuze bu kre?   *ki sa ki u ap fe LA?

It is possible that the structure involved in (9) is comparable to that of Igbo
WH-questions as analyzed by Goldsmith [1981]. He treats such structures as the
verbless juxtaposition of a WH-word and a RC. Thus for (9), 'what is the thing
that you are doing?' rather than 'which thing is it that you are doing?' If
this is the underlying structure of the CV example then it does not represent a
case of WH-movement. In the alternative structures without the COMP KI in CV,
WH-movement to initial position is obligatory, and the in situ WH-question is
unacceptable in all cases. This suggests that WH-movement is becoming obliga-
tory for the set of reanalyzed WH-words in CV.

In oblique WH-questions, a preposition is required if one is also required
in its unquestioned form. For many temporals and locatives prepositions are not
necessary in either case.

(10) ku kuza(-e KI) n ta korta pon?/kuza(-e) KI n ta korta pon ku el?

      'with what am I going to cut the bread?'

(11) ak ki sa m pral kupe pẽ LA?/*ki sa m pral kupe pẽ ak (li) LA?

      'with what am I going to cut the bread?'

3. Relative Clause Formation Strategies in CV and H

In all CV relative clauses, the COMP KI is obligatorily preposed to the
RC. In H, LA is obligatorily postposed to the RC. Similarly the formation
strategies for the two languages match within the RC, differing only with regard
to subject relativization, Haitian having the relative pronoun-like KI in sub-
ject NP position within the RC, CV having a gap since CV KI is here analyzed
as a non-WH COMP element. Indirect object relativization also differs among the
two in that in CV a resumptive pronoun may occur obligatorily in data-shifted po-
sition, whereas in Haitian only the gapping strategy is used. Both languages
use resumptive pronoun strategies for all prepositionally marked oblique NPs and
for genitives.

(12) MAJOR NP RELATIVIZATION

      kel omi KI bai   'the man who went'

      kel omi KI n oja   'the man that I saw'

      mun LA ki te vini LA   'the person who had come'

    tab LA m te ašte LA   'the table that I bought'

(13)   OBLIQUE NP RELATIVIZATION

    kel omi KI n papia ku el   'the man with whom I talked'

    *kel omi ku el n papia/
    *kel omi ku KI n papia

    kel omi KI-es oĵa se muje   'the man whose wife they saw'

    šez yo sîta su yo LA˙   'the chairs on which they sat'

    šyẽ m te kase pat li LA˙   'the dog whose leg I broke'

4.   The Haitian NP

    The word order of the Haitian noun phrase constitutes a typological anomaly.
This anomaly is at the root of noun phrase complementation and the structure of
the complex NP of the language, in all of the forms here under consideration.
In Haitian, all of the definitizing and deictic/anaphoric elements of the deter-
miner system are postposed. Thus the genitive determiners, demonstratives, the
definite article LA , and RCs all follow the head noun. Modifying preposition-
al phrases also follow the head. All quantifiers and adjectives however pre-
cede the head N. It is the DET LA which has been observed in its role in the
NP and VP complementation systems. Hall [1964:32] describes LA as the "Deter-
minant, or 'definite article', which serves to make a nominal phrase out of any
phrase to which it is added, and makes it refer to a specific thing or things,
acting as a 'nominalizer'." Hall thus captured the role of LA in relation to
the embedded S.

    The distribution of LA in embedded S-final position indicates that it has
been reanalyzed as more than a simple DET. In the literature there has been
significant disagreement on how the determiner LA should be treated. Differ-
ent understandings of the role of DET LA in relation to the relative and non-
relative embedded S are the reason. Lefebvre [1982:174] states, "We should re-
member that LA is obligatory in the environment of a restrictive RC, and that
the presence of LA in this environment is essentially deictic." She com-
pletes her analysis of LA by ranking it together with the S-initial COMP po-
sition, as a "DET of S" [1982:46].

    If COMP can evolve from a DET, then any language with postposed DETs is a
candidate for having a postposed COMP, H would certainly not be unique in having
a COMP which has evolved from a DET. Indeed, other creole and non-creole lan-
guages demonstrate comparable characteristics. Sankoff [1981:32] reports on the
evolving Tok Pisin relativizer ia , whose development she has traced from a
place adverb (from the English 'here'), through demonstrative or deictic, to
relative marker. She argues that Tok Pisin uses ia on either side of the RC
to syntactically bracket the RC as a step toward the syntacticization of embed-
ding. I would instead interpret the Tok Pisin structures as instances of a RC
construction with a definite head noun marked by the postposed DET ia , fol-
lowed by the RC also marked by ia in its COMP function.

5. Conclusions

It has been observed that in CV and H, WH questions typically have more
than one strategy: the clefted strategy in which the COMP element KI and the
H DET cum COMP LA are used, and the non-clefted strategy in which these COMP-
elements are absent. Further, for many positions, the WH-question strategies
do not match those of their relative counterparts. The H WH-questions on prepo-
sitional NP positions do not allow the resumptive PRO strategy of their in situ
relative counterparts. Instead they require fronting of the entire WH phrase
with preposition and no possibility of stranding a preposition. Questioning the
same positions in CV, we observe either the same WH-fronting strategy as in Hai-
tian or the in situ PP, just as in the CV relative counterpart. I would suggest
that WH-movement is not characteristic of the basilectal forms of either of
these creoles. WH-words and movement are certainly absent from the RC-formation
strategies where deletion and resumptive pronouns are used. In questions, I
would argue that the cleft construction is basilectal and that WH-movement char-
acteristics are coming into these languages as the result of the reanalysis of
Wh-words and of contact with superstrate languages.

The present paper assumes an analysis of the H determiner LA as a comple-
mentizer and thus posits two COMP nodes in H, one preceding and one postposed to
an embedded S. Therefore the sentence-LA structure represents an embedding,
whether it be a nominalization or a clefted RC-like structure.

REFERENCES

Givon, Talmy. 1979. *On Understanding Grammar*. New York: Academic Press.

Goldsmith, John. 1981. "The structure of WH-questions in Igbo." *Linguistic
     Analysis* 7.4, pp. 367-393.

Hall, Robert A. 1979. *Haitian Creole*. Millwood: Kraus Reprint Co.

Lefebvre, Claire et al. 1982. *Syntaxe de l'haitian*. Ann Arbor: Karoma
     Publishers.

Sankoff, G. and P. Brown. 1980. "The origins of syntax in discourse." In G.
     Sankoff (ed.), *The Social Life of Languages*, pp. 211-255. The University
     of Pennyslvania Press.

DEPENDENCY RELATIONS IN SYNTAX: THE MYSTERIOUS CASE OF THE
EMPTY DETERMINER IN AGHEM

Larry M. Hyman
University of Southern California

[This paper is a summary of the invited plenary address—Ed.]

    In Hyman [1979a] I presented a list of environments in which the determiner
-ɔ́ occurs in Aghem, a Grassfields Bantu language spoken in Cameroon. In this
paper I would like to replace this list with an outline of a formal account of
this problem. To begin, consider the examples in (1).

(1) a. ò mɔ̀ tàŋ   tɨ́-bvʉ́ 'nɛ́   'he counted dogs today' [P₁ = today
        he P₁ count dogs   today   past tense]

    b. ò kà   táŋ   bvʉ́ 'tɔ́ nɛ́   'he didn't count dogs today'
        he NEG-P₁ count dogs   D today

    c. táŋ   bvʉ́ 'tɔ́ nɛ́   'count dogs today!'
        Ø count dogs   D today

In the earlier study it was demonstrated that -ɔ́ , which occurs in (1) with
class 10 tɨ́- agreement, is a determiner (D), since it (a) occurs in the same
"slot" as the three demonstratives in the language, e.g. following adjectives
but preceding numerals, and (b) is mutually exclusive with these demonstratives.
In (1a) we observe that a noun immediately following an affirmative verb (in a
main clause) must occur without -ɔ́ , while the corresponding object noun must
occur *with* -ɔ́ after a negative verb in (1b) or an imperative (in (1c)). Thus,
we are dealing with a problem in complementary distribution: environments where
-ɔ́ must appear vs. those where it must not. (In the case where the D "slot" is
filled by a demonstrative, the Ø/-ɔ́ complementarity is of course not observed.)
Finally, the tɨ́- prefix of tɨ́-bvʉ́ 'dogs' not found in (1b,c) is deleted by a
general rule of prefix deletion which applies whenever a head noun is followed
by an agreeing element other than a numeral (cf. bvʉ́ 'táŋá 'my dogs',
bvʉ́ 'tɨ́n 'these dogs', etc.).

    I propose that the D node is obligatory in Aghem, either being filled lexi-
cally by one of the three demonstratives or remaining as an empty element eD.
If the eD is "syntactically well-formed" it surfaces as Ø ; if it is not well-
formed, it must be spelled out post-lexically via the -ɔ́ . The well-formedness
conditions on eD are of three types: (a) internal conditions on the NP; (b) ex-
ternal conditions on the NP vis-à-vis its governing head; and (c) external con-
ditions on the NP *or* its governing head with respect to modality and clause-
type. I illustrate each briefly below.

    In order to capture the conditions on eD internal to the NP, consider the
Aghem noun phrase structure rules in (2).

(2) a. $\overline{\overline{N}}$ → $\overline{N}$ SPEC

    b. SPEC → $\left\{ \begin{array}{l} D \text{ (Num)} \\ \overline{\overline{N}} \end{array} \right\}$

c. $\overline{N}$ → N (A*)

The rule in (2b) accounts for the fact that there can be at most only one de-
monstrative (or -ɔ́) and only one numeral per maximal NP. Thus, while one can
say 'books$_i$ of child$_j$ these$_i$' or 'books$_i$ of child$_j$ that$_i$', one cannot say
*'books$_i$ these$_i$ of ^{j}child$_j$ ^{i}that$_i$' or 'books$_i$ of ^{j}child^j these$_i$ that$_i$', etc.,
and similarly for numerals. Turning to the problem at hand, the eD is well-
formed internally if it is preceded only by lexical nouns. Thus, in (3a) we
see that an adjective occurring anywhere in the NP will make the eD ill-formed,
and in (3b) we see that an empty head of the NP will do likewise (these phrases
without -ɔ́ are ungrammatical):

(3) a. fú kì-dú'ú kɨ́ tɨ́-'bvʉ́ tɔ́   'big rat of the dogs' (kɨ́-fú 'rat' [cl. 7])
        rat big   of dogs   D

    b. [$_N$e] kɨ́ tɨ́-'bvʉ́ tɔ́   'that of the dogs', e.g. the rat of the dogs
              of dogs   D

    c. fú kɨ́ tɨ́-'bvʉ́ e   'rat of dogs'
        rat of dogs   D

Had there been no adjective, and had the head noun been lexical (rather than
empty), then eD would have been well-formed, as it is in (3c).

    The tree structures generated by the rules in (2) for (3a,b), which are
given in (4a,b), demonstrate that the eD is ill-formed when it fails to be
properly governed by every N within the NP, where proper government requires a
lexical governor which c-commands the empty element (c-command meaning here
that the first branching node dominating the governor must also dominate the
empty element). Structures (4a,b) are ungrammatical, therefore, by a chain
version of the empty category principle of Chomsky [1981] and others (cf. below).

(4) a.
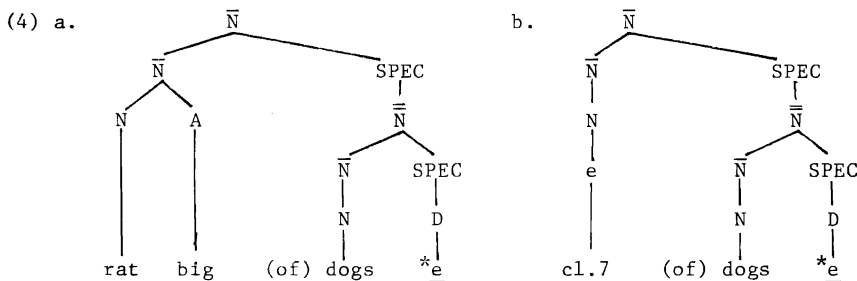
Note that an adjective occurring anywhere in the NP will render eD ill-formed,
while the offending empty noun head is grammatical only in the highest position
of the maximal NP.

    The sentences in (5) demonstrate that when the direct object NP is separated
via focus-movement by either other post-verbal element(s) or by the subject, the
eD is ill-formed, even if the NP-internal conditions are met.

(5) a. ò mɔ̀ tàŋ   nɛ́   'bvʉ́ 'tɔ́   'he counted dogs *today*' (*dogs e̲)
       he P₁ count today dogs D

   b. à mɔ̀ tàŋ   ɛ́-wɛ́   bvʉ́ 'tɔ́ nɛ́   '*children* counted dogs today'
      DS P₁ count children dogs D today   [DS=dummy subject; *dogs e̲]

Noting that the immediate post-verbal position is the focus position [Watters 1979], and accepting the basic sentence structure in (6),

(6)
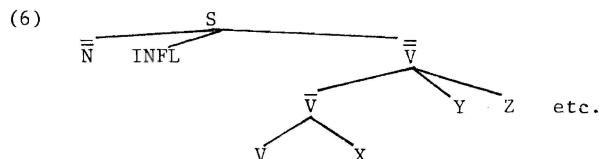
a post-verbal NP will be governed by the verb only if it is in X (focus) position, assuming the same definition of c-command given above. From (1a) we observe that the e̲D is externally well-formed in X position, but not, as in (5a, b), if its NP is in Y (or Z, etc.) position. Thus, a necessary external condition on a post-verbal e̲D is that its NP be governed by the verb.

    This does not explain, however, why the negative and imperative sentences in (1b,c) and the focused auxiliary sentence in (7) disallow e̲D in the immediate post-verbal NP object.

(7) ò máà   táŋ   bvʉ́ 'tɔ́ nɛ́   'he *did* count dogs today' (*dogs e̲)
    he P₁-FOC count dogs D today

For (1b) we note the often observed "looser bond" between a negative verb and its object which may result in the failure of the verb to assign accusative case to its object and/or provide a prosodic break between the (negative) verb and its object (cf. Hopper and Thompson [1980]; Hyman and Watters [1984]. The auxiliary features NEG, IMPER, and FOC all have this effect in Aghem, i.e. the effect of removing the verb's ability to govern its object. Though I shall attempt a different solution below, one might try to account for this formally by either requiring that the X position of (6) be empty just in case one of these features is present or, equivalently, that these features "copy" into the X position itself, thereby assuring that the NP object will not be governed by the verb. In (8) it is noted that only the object of the first verb is affected by negation in a serial verb construction:

(8) ò kà   nì   ñɨ́   fɔ́ kɨ̀a kɨ̀-fú 'he didn't take the knife and cut the
    he NEG-P₁ take knife D cut rat   rat' (*knife e̲; *fú kɔ́ 'rat D')

    Turning to clause-type considerations, the sentences in (9) show that e̲D is well-formed in subject position in a main clause (9a) but ill-formed in subject position in a relative clause (9b).

(9) a. tɨ́-bvʉ́ e̲ tɨ́-bɨ́ghà mɔ̂ bvʉ̀ nɔ̀   '(the) two dogs fell' (*bvʉ́ 'tɔ́)
       dogs   D̲ two   P₁ fall FOC

   b. bɛ́   'kɨ̄l 'á bvʉ́ 'tɔ́ tɨ̄-bɨ̀ghà mɔ̂ zɨ̄
      fufu DEM REL dogs D   two P_1 eat

      '(the) fufu that (the) two dogs ate' (*dogs <u>e</u>)

Two additional facts are that (a) *if* and temporal clauses have exactly the same
properties as relative clauses, and (b) <u>e</u>D is not well-formed in an immediate
post-verbal NP in any of these subordinate clauses, as seen in (10).

(10) a. fú kɨ̄l 'á kɨ̄ mɔ̀ tâŋ bvʉ́ 'tɔ́ '(the) rat that counted (the) dogs'
       rat DEM REL SM P_1 count dogs D   (*tɨ̄-bvʉ́ <u>e</u>)

     b. búghɔ́ ò mɔ̀ tâŋ bvʉ́ 'tɔ́   'if he counted (the) dogs'
         if   he P_1 count dogs D   (*tɨ̄-bvʉ́ <u>e</u>)

     c. ghɨ̄'á ò mɔ̀ tâŋ bvʉ́ 'tɔ́   'as he counted (the) dogs'
         as   he P_1 count dogs D   (*tɨ̄-bvʉ́ <u>e</u>)

However, as seen in (11),

(11) wìzɨ̄n wɨ̄l à   ò mɔ̀ dzɛ̂ ñɨ̄'á wò mɔ̀ tàŋ   tɨ̄-bvʉ́
     woman DEM REL SM P_1 say that you P_1 count dogs

     '(the) woman who said that you counted (the) dogs'

a *that*-complement clause does not cause the <u>e</u>D to be ill-formed in object (or
subject) position, even if embedded in a relative clause as it is in (11). We
therefore need to group together main and complement clauses vs. relative, *if*,
and temporal clauses (among others), a distinction which I identify with Emonds'
[1976] root/non-root S dichotomy. The table in (12) summarizes the differences:

(12)

		Root S	Non-root S
Pre-verbal subject:		<u>e</u>D = OK	<u>e</u>D = *
Post-verbal NP	:	<u>e</u>D = OK/*	<u>e</u>D = *
INFL ("aux")	:	full range of tenses ($P_1 \neq P_2$) & [+/-FOC]	$P_1 = P_2$, no [+/-FOC] distinction
FOC marker nò	:	OK	*

Not only is there a difference in the well-formedness of <u>e</u>D, but there are im-
portant differences concerning the tense morphology and the distribution of the
focus marker nò [Watters 1979] according to the root/non-root status of an S.

    To follow through with the above discussion of government and its relation
to the <u>e</u>D, it is necessary to say that for these purposes the subject of a root
S is governed, while both the subject and the object of a non-root S are not.
The analogy with tensed/non-tensed S's is intriguing. To account for these
facts a combination of feature specification plus tree configuration will be in-
voked. I propose the following: (a) each S̄ has a focus feature [+F]; (b) this
[+F] is assigned either to the COMP, in which case we have a non-root S, or to

the S, in which case we have a root S; (c) if [+F] is assigned to COMP, it is copied as well onto INFL; and (d) the auxiliary features NEG, IMPER, and FOC have a second "intrinsic" [+F] ("auxiliary focus"; cf. Hyman and Watters [1984]). With these features assigned, a head attraction rule roughly of the form in (13) joins the head (X°) of a maximal projection to a preceding [+F] element.

(13) [+F] [= $\overline{X}$ (X) Y]   (informal approximation)

The result, as seen in (14), is that the N of a subject NP will be attracted to the [+F] of a non-root S COMP and the V of the VP will be attracted to a [+F] INFL.

(14)
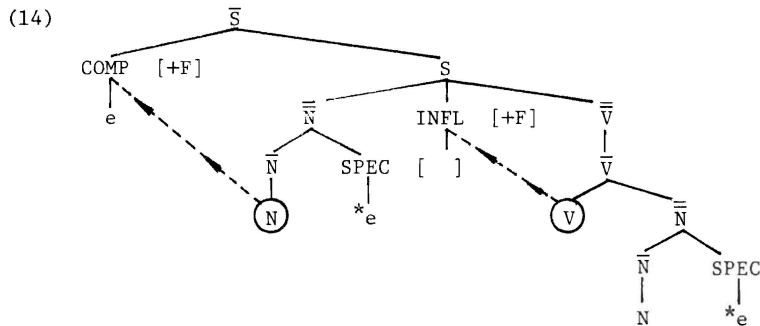
   With such potential lexical heads attracted out of their respective phrases, we now can generalize on what was said concerning proper government and the eD: an eD will be well-formed if it is the endpoint of a chain of proper governors up to the S node. In (14), the subject eD is not properly governed because the head of this NP has been attracted to the [+F] COMP; similarly, the eD of the object is ungrammatical because, while properly governed by its N head, the NP itself is not properly governed by the V which has been attracted to the [+F] INFL. Thus, when the chain of proper governors is broken, eD is ungrammatical.

   Further evidence for this view is seen from (15), where it is observed that the two prepositions â 'to/for' and à 'with/and' are not proper governors.

(15) a. â bvʉ́ 'tɔ́   'to/for dogs'   b. à bvʉ́ 'tɔ́   'with dogs'

As a result *dogs e is ill-formed after both prepositions. (The third preposition in the language, locative án , has peculiar properties of its own and will not be discussed here.) Finally, note in (16) that while eD is well-formed in citation form NP's, it is ill-formed in corresponding vocatives:

(16) a. tɨ́-bvʉ́ e   'dogs'   b. bvʉ́ 'tɔ́   'dogs!'

I assume that (16a) is a defective S with a [-F] COMP, while (16b) is a defective S with a [+F] COMP, capturing the fact that vocatives are "out of focus"

like the backgrounded clauses I have identified as non-root.

REFERENCES

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.

Emonds, Joseph. 1976. *A Transformational Approach to English Syntax*. New York: Academic Press.

Hopper, Paul J. and Sandra A. Thompson. 1980. "Transitivity in grammar and discourse." *Language* 56:251-299.

Hyman, Larry M. 1979a. "Phonology and noun structure." In Hyman [1979b], esp. pp. 56-72.

Hyman, Larry M. (ed.). 1979b. *Aghem Grammatical Structure*. Southern California Occasional Papers in Linguistics, No. 7. Los Angeles: University of Southern California.

Hyman, Larry M. and John R. Watters. 1984. "Auxiliary focus." *Studies in African Linguistics* 15:233-273.

Watters, John R. 1979. "Focus in Aghem: a study of its formal correlates and typology." In Hyman (1979b), pp. 137-197.

RAISING IN FUR

Janice L. Jake
University of Illinois

1. Introduction and Discussion of the Problem

In this paper I examine the syntax of sentences like those in (1) in Fur.
The data are from the Zalingi dialect, from the speech of Al Amedin Abdel
Moniem. I show that the underlined nominals in (1b) bear the Subject, 1, and
Indirect Object, 3, relations in the matrix clause, although in (1a) they are
constituents of the subordinate clause. The synonymy of the sentences in (1)
means that, at some syntactic level, the underlined nominals in (1b) bear gram-
matical relations in the lower clause. (In the examples below I have not
marked tone, as it is irrelevant to this paper. Although Fur has borrowed ex-
tensively from Arabic, its syntax remains unaffected.)

(1) a. mumkin i   [alaŋ Eli dogola-si   kitaba inni]
         possible be/3SG [COMP Ali children-OBJ books give/3SG]

         'it is possible for Ali to give books to the children'

    b. Eli-si kitaba mumkin ge   [alaŋ dogola-si   inni]
        Ali-OBJ books possible be/3PL [COMP children-OBJ give/3SG]

        = (a)

The analysis of sentences like (1b) is a problem for Relational Grammar,
although there are a number of possible analyses in which more than one nominal
can bear a relation in a lower clause and, in a later stratum, a higher clause.
I show that a multiple ascension analysis of (1b) involves a violation of the
Host Limitation Law, the Noninitial Term Demotion Ban, and the Relational Suc-
cession Law (for clauses). On the other hand, a Clause Union analysis of (1b)
is empirically unjustifiable, as well as theoretically problematic.

In this paper I present evidence for the rules of Raising to 1 and Inver-
sion to 3 and argue that, of the analyses noted above, only the multi-ascension
analysis can be empirically motivated. This analysis, illustrated in (2), is
one in which a nominal ascends to 1 and, in a later stratum, inverts to 3, and
a second nominal ascends to 1. In stratum 4, a 1̂ serves as host for an ascen-
sion to 1, violating the Host Limitation Law, since the ascendee fails to as-
sume the relation of its host. Furthermore, a non-initial 1 inverts to 3 in
stratum 3, a violation of the Noninitial Term Demotion Ban [Perlmutter 1984].

(2) Partial representation of (1b):

Raising	
Inversion	
Raising	

Eli	kitabe	dogola	inni	mumkin	ge
Ali	books	children	give	possible	be
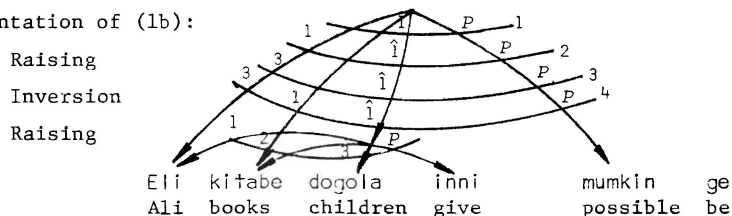
Although I present arguments for the analysis in (2), such an analysis en-
tails weakening the theory of Relational Grammar because it necessitates the
modification or loss of a number of relational laws. However, as noted above,
there appears to be more support for this analysis than others. I now present
evidence for (2) based on Raising and Inversion. Where relevant, I note how
other possible analyses fail to adequately account for the data.

2. Evidence for the Analysis in (2)

2.1. Evidence for sentential 1's. Sentential complements in Fur occur as
tensed clauses with overt complementizers, as in (1), and as nominalized
clauses. A nominalized sentential 2 can be optionally suffixed with -si in
normal pre-verbal position. This is parallel to the case marking of inanimate
non-sentential 2's. Compare (3), with a non-sentential 2, and (4), with a sen-
tential 2. An extraposed 2 is obligatorily suffixed with -si , as is illus-
trated in (5) and (6).

(3) ka kitab(-si) 'agil   (4) ka [Eli-ŋ   joo-(-si)]   wEEl
     I book(-OBJ) see/1SG   I [Ali-GEN going(-OBJ)] want/1SG

     'I see the book'   'I want Ali to go'

(5) ka 'agil kitab-si/*∅   (6) ka wEEl   [Eli-ŋ   joo-si/*∅]
     I see/1SG book-OBJ/*∅   I want/1SG [Ali-GEN going-OBJ/*∅]

     = (3)   = (4)

The examples in (3) through (6) show that sentential 2's are case marked
like other inanimate 2's, optionally suffixed with -si preverbally and oblig-
atorily when extraposed. The fact that nominalized sentential complements of
predicates analogous to A-Raising and Tough-Movement predicates in English can-
not be suffixed with -si provides evidence against their 2-hood. This is il-
lustrated by the examples in (7) and (8).

(7) [Fanne-ŋ   jam(*-si)]   daruugi   i
     [Fatma-GEN eating(*-OBJ)] necessary be/3SG

     'it is necessary for Fatma to eat'

(8) [Eli-ŋ   nuuŋ-iŋ jiro(*-si)]   muškila i
     [Ali-GEN food-GEN cooking(*-OBJ)] problem be/3SG

     'it is a problem for Ali to cook food'

The examples in (7) and (8) show that these sentential complements cannot
be suffixes with -si . In this respect they are like non-sentential 1's which
are not suffixed with -si , as is illustrated in (9) and (10).

(9) Fanne (*-si) nyaŋa   (10) k-illa toŋa(*-si)   apa ge
     Fatma (*-OBJ) come/3SG   PL-DEM houses(*-OBJ) big be/3PL

     'Fatma is coming'   'those houses are big'

To sum up, the facts about case marking of sèntential and non-sentential complements show that the sentential complements under investigation are 1's rather than 2's. Note that unaccusative advancement is obligatory for these predicates, if it is assumed that they occur with initial unaccusative strata.

2.2. <u>Evidence for Raising to 1</u>. I now show that predicates occurring with sentential 1's govern ascension of 1's, 2's, 3's, Instruments, and Locatives. The second in each pair of examples in (11) through (15) illustrates the ascension of a nominal bearing one of these relations. In the (a) sentences, main clause verb agreement is third person singular, or neutral. In the (b) sentences, the raised nominal controls main clause verb agreement and precedes the verb, in subject position.

(11) a. mumkin   i   [alaŋ dogola Eli-si kəgilEl]
         possible be/3SG [COMP <u>children</u> Ali-OBJ see/3PL]

         'it is possible for <u>the children</u> to see Ali'

     b. <u>dogola</u>   mumkin   ge   [alaŋ Eli-si kəgilEl]
         <u>children</u> possible be/3PL [COMP Ali-OBJ see/3PL]

         = (a)

(12) a. sayl i   [alaŋ Eli ustas-si   jəgil]
         easy be/3SG [COMP Ali <u>teacher-OBJ</u> see/3SG]

         'it is easy for Ali to see <u>the teacher</u>'

     b. <u>ustas</u>   sayl i   [alaŋ Eli jəgil]
         <u>teacher</u> easy be/3SG [COMP Ali see/3SG]

         = (a)

(13) a. terra i   [alaŋ Fanne Eli-si šay inni]
         tough be/3SG [COMP Fatma <u>Ali-OBJ</u> tea give/3SG]

         'it is difficult for Fatma to give tea to <u>Ali</u>'

     b. <u>Eli</u> terra i   [alaŋ-si Fanne šay inni]
         <u>Ali</u> tough be/3SG [COMP-<u>OBJ</u> Fatma tea give/3SG]

         = (a)

(14) a. sayl i   [alaŋ dogola   ki   murtaŋa kee]
         easy be/3SG [COMP children <u>INST horses</u> go/3PL]

         'it is easy for the children to go <u>by horse(s)</u>'

     b. <u>murtaŋa</u> sayl ge   [alaŋ dogola   kee kee]
         <u>horses</u> easy be/3PL [COMP children <u>INST</u> go/3PL]

         = (a)

(15) a. mumkin   i   [alaŋ Eli madrasa-le jee]
         possible be/3SG [COMP Ali school-LOC go/3SG]

         'it is possible for Ali to go to school'

   b. madrasa mumkin   i   [alao Eli dele jee]
       school possible be/3SG [COMP Ali LOC go/3SG]

       = (a)

   In (13a) a 3 is obligatorily suffixed with -si . Because -si is suf-
fixed to both 2's and 3's I refer to it as an objective case marker. There is,
however, a difference between 2's and 3's, even though both are suffixed with
-si . In a host out of which a 3 ascends, -si cliticizes to another constit-
uent of the host clause, usually the complementizer, as in (13b). Ascension of
a 3 without cliticization is ungrammatical. In contrast, ascension of a 2 with
-si cliticization is ungrammatical. The ascension of an Instrument or a Loca-
tive is similar to the ascension of a 3 in that there is cliticization, kee
for Instruments and dele for Locatives. The grammatical relation of an
ascendee is always recoverable because 3 of the relations leave clitics in the
host clause and 1 continues to control verb agreement in the host.

2.3. Evidence for inversion. The example in (16b) illustrates inversion with
a member of the class of cognitive predicates; the inverted nominal occurs in
objective case, obligatorily suffixed with -si . Verb agreement in the inver-
sion clause is neutral.

(16) a. ka 'alOŋ-si   [alaŋ Fanne jee]
         I think/1SG-SI [COMP Fatma go/3SG]

         'I think that Fatma is going'

   b. ka-si en-gi-s-lOŋ   [alaŋ Fanne jee]
       I-OBJ in-1/2O-SI-think/3SG [COMP Fatma go/3SG]

       = (a)

   The example in (16) shows that the cognitive predicate is also marked with
-si . A raising predicate governing Inversion optionally occurs with -si ,
but only if there is Inversion, as is shown in (17).

(17) a. dogola-si   mumkin(-si) i   [alaŋ Eli-si kagilEl]
         children-OBJ possible(-SI) be/3SG [COMP Ali-OBJ see/3PL]

         'it is possible for the children to see Ali'

   b. dogola-si   terra(-s) i   [alaŋ ustas   jagil]
       children-OBJ tough(-SI) be/3SG [COMP teacher see/3SG]

       'it is possible for the teacher to see the children'

The clitic which occurs on predicates governing Inversion has an optional phono-
logical alternate, -s , after vowel final morphemes. It can be distinguished

from the objective case marker on these and other grounds. However, the fact
that a raising predicate exhibits a clitic similar to that of other predicates
governing Inversion suggests that the -si suffixed nominals in (1b) and (17)
are 3's. This, together with the fact that any relation which can occur as an
ascended 1 can also occur as a 3, provides evidence for an Inversion analysis.
Empirical evidence for the 3-hood of these nominals is that a -si cliticizes
in a host out of which they ascend, as is illustrated in (18).

(18) kwa mumkin ge   [alaŋ-si sayl(-si) i   [alaŋ Eli jəgil]]
      men possible be/3PL [COMP-OBJ easy(-SI) be/3SG [COMP Ali see/3SG]]

      'it can be easy for Ali to see the men'

3. Arguments Against other Analyses

    The data presented thus far provides evidence against a clause union analy-
sis because both a 1 and a 3 need not occur in clauses with *tough* and *possible*
predicates and because it is not predictable which relation in the lower clause
will bear the 1 or 3 relation after clause union. That is, a lower 1 could be-
come a matrix 1 or 3, a lower 2 could become a matrix 1 or 3, a lower 3 could
become a matrix 1 or 3, etc. A clause union analysis consistent with these
facts would be unlike any other clause union in two ways: there would be no
predictable relation borne by a nominal in the lower clause and its relation in
the matrix, and either of the two matrix relations can occur independently of
the other.

    Now I briefly outline why a different kind of multi-ascension analysis must
be rejected. The evidence is based on an animacy constraint on 3's. The ex-
amples in (19) illustrate that an inanimate nominal can ascend to 1 but it can-
not occur as a 3. This is in contrast to the examples in (1b) and (17) in
which an animate nominal occurs as a 3. Furthermore, there is no animacy con-
straint 2's, as is illustrated in (20).

(19) a. toŋ   terra i   [alaŋ ka dele 'əw]
         house tough be/3SG [COMP I LOC go/1SG]

         'the house is difficult for me to go to'

     b. *toŋ-si   terra i   [alaŋ ka dele 'əw]
         house-OBJ tough be/3SG [COMP I LOC go/1SG]

         = (a)

(20) ka toŋ-si   wEEl   [alaŋ apa i]
      I house-OBJ want/1SG [COMP big be/3SG]

      'I want the house to be big'

The facts illustrated in (19) and (20) mean that, if it is assumed that the
sentential complement of predicates like *tough* are 2's and a nominal can ascend
to 2 and retreat to 3, then an ad hoc filter must disallow all sentences with
inanimate 3's resulting from 2 to 3 retreat. Note that this retreat is obliga-
tory, since *tough* and *possible* predicates do not occur with 3's and that this

rule is otherwise unmotivated. Moreover, this analysis would also violate the Chômeur Advancement Law because the sentential $\hat{2}$ can advance to 1 and act as host for a second ascension to 1.

   In conclusion, I have shown that a multi-ascension analysis involving a violation of the Host Limitation Law and the Noninitial Term Demotion Ban is the analysis of sentences like (1b) for which there is the most evidence. I have also shown that such an analysis is theoretically problematic for Relational Grammar. Perhaps another, less problematic, analysis of these sentences will become apparent upon further examination.

<div align="center">REFERENCE</div>

Perlmutter, David. 1984. "The Noninitial Demotion Ban and the Class of
     Careers." Paper read at the Symposium on Grammatical Relations at SUNY
     at Buffalo, April, 1984.

o EPENTHESIS: A POSITIONAL TREATMENT OF
SWAHILI PRONOMINAL CLITICS

Camillia N. Keach
Temple University

1. Introduction

In this paper, I will present an analysis which accounts for the phonetic distinction between two sets of pronouns in Swahili. The discussion is carried out in a framework which characterizes sentence grammar as a set of subcomponents: a base, a syntax, a phonology, and a semantics.

Swahili exemplifies a rich network of agreement morphemes whereby a pronominal clitic (PRO) associated with a particular noun class agrees with some NP position in the clause. The subject agreement morpheme (hereafter, SA) generally occurs verb initially. In the amba relative clauses in (1), there are two PROs: the SA agrees with the relativized subject, and the relative pronoun, suffixed to amba , agrees with the head of the relative.

(1) a. kisu amba + cho ki + ta + faa   'the knife which will do'
        knife   REL SA   FUT   suffice

    b. yai ambalo litafaa   'the egg which will do'

The SAs and their corresponding relative pronominal forms are given in (2).

(2)   SA   RELS

    a. u   o
    b. i   yo
    c. zi   zo
    d. ki   cho
    e. vi   vyo
    f. li   lo
    g. ya   yo
    h. pa   po
    i. ku   ko
    j. mu   mo

Here I propose that there's a rule, o Epenthesis, which systematically relates the SA and REL forms in (2) by attaching /o/ to any word which ends with a PRO.

(3) o EPENTHESIS

    $\emptyset \rightarrow o \; / \; [X \; [PRO] \; \_\_\_]_X$

Assuming that X is a variable ranging over preterminal nodes, and, for simplicity, that amba is a complementizer, (4) will apply to a form like (4a), yielding (4b).

(4) a.   COMP   (4) b.   COMP

       COMP   PRO   COMP   PRO

       amba   ya   amba   ya + o

2. The Case for o Epenthesis.

In this section I show five cases of PRO final words. For an extensive discussion of the range of meanings associated with each form, I refer the reader to the references.

2.1. kwa . The preposition kwa may be followed by a lexical NP. When no lexical NP follows, a PRO is suffixed to kwa , an /o/ final PRO.

(5) a.   kata nyama kwa kisu   'cut the meat with a knife'

    b.   kata nyama kwacho   'cut the meat with it'

    c.   *kata nyama kwaki

2.2. na . In its various semantic roles, the preposition na may be syntactically followed by a lexical NP. When no such NP follows, an /o/ final PRO is attached to na .

(6) a.   karatasi zile, angalia ufike   nazo
         papers   those take care that you arrive with them

         'see that you arrive with those papers'

    b.   *karatasi zile, angalia ufike nazi

2.3. kuwa and locative noun phrases. An /o/ final PRO may be suffixed to the copula kuwa when a locative phrase is present or absent.

(7) a.   nitakuwa hapa   'I will be here'

    b.   nitakuwapo hapa   'I will be here'

    c.   *nitakuwapa hapa

2.4. -ingine- . The word -ingine- , translated as "some NP of the same kind", agrees pre- and post-stem with the noun it modifies. Its suffix is always an /o/ final PRO.

(3) a.   nione   watu   wengineo
         'let me see some people of the same sort'

    b.   *nione watu wenginewa

(9) Ah walimu   wa Nairobi   wa macho kwa jambo hili na jingelo.
        teachers of Nairobi   have eyes   for matter this and others of the
                                                                    same kind

     'Ah, the teachers of Nairobi are awake as regards this matter and any
        other like it.'

2.5. The general relative. In the general relative, there is no overt tense
marker. The relative pronoun, an /o/ final PRO, is suffixed directly onto
the verb stem.

(10) a.   kazi i + tu + faa   + yo   'work which suits us'
          work SA us   suffice REL

     b. *kazi itufaai

   We have seen five cases where an /o/ final PRO occurs word finally. Im-
portantly, it does not occur exclusively in relative constructions.

3. The Traditional Position: + [already mentioned]

   According to the traditionalists, the phonetic distinction between the two
PROs reflects a semantic feature, [+already mentioned] (hereafter, AM). Haddon
[1955] gives a succinct and fair summary of the position.

(11) "Referential Particle: This formative uses the O of reference completed
      with a pronominal concord to construct a particle, usually a suffix,
      which refers to something already mentioned or is understood." (p.9)

   Evidence that AM obfuscates Swahili sentence grammar comes from word order.
Because the subject NP normally precedes the verbal unit, it is, in fact, al-
ready mentioned. Yet the SA is never an /o/ final PRO.

(12)   kisu kitafaa   'the knife will do'

       *kisu chotafaa

Even though the subject precedes the SA that agrees with it and hence is posi-
tionally already mentioned, the SA is never an /o/ final PRO.

   It is not difficult to imagine what it means for a PRO to refer to some-
thing already mentioned or understood. But if AM is to have any content at all,
we would expect PROs   lacking the feature to be non-referential or to refer
to something not already mentioned or understood. Since statements like (13)
are completely acceptable in well formed Swahili discourse, PROs like SA would
seem to be referential in exactly the same way as /o/ final PROs.

(13) kilianguka   'it fell'

   The appeal of AM may derive from its handy description of the near demon-
stratives, cases where /o/ final and non-/o/ PROs occur side-by-side. The
forms in (14a) are the near speaker demonstratives and those in (14b) are the
near listener demonstratives.

(14) a. kitabu hiki   'this book (near me)'
         yai   hili   'this egg (near me)'

     b. kitabu hicho   'this book (near you)'
         yai   hilo   'this egg (near you)'

However, by making the following assumption about lexical entries, it is possible to account for the near demonstratives without the feature, AM.

(15) Two words are separate lexical entries just in case there is at least one feature not shared by both words.

The unshared feature in (14) is based on proximity, nearness to the speaker or listener (or as Leonard [1980] would have it, on "concentration of attention"). Hence in accordance with (15), both demonstratives are separate lexical entries, remaining unstructured at the level at which o Epenthesis applies and consequently inaccessible to the rule. Thus the demonstratives can be accounted for without AM.

In the light of this discussion, we can assume that both pronominal forms are referential, more appropriately a feature of discourse grammar. And we have seen that the appearance of /o/ final PROs is strictly a sentence grammar phenomenon.

4. Implications

o Epenthesis predicts the non-occurrence of word internal /o/ final PROs. But in tensed relatives such a PRO is cliticized onto one of four tense affixes: -li- 'past'; -taka- 'future'; -na- 'present'; or -si- 'past, present, or future negative'.

(16) a. kitabu   ki + na + cho + somwa   'the book which is (being) read'
         book   SA   PRES   REL   be read

     b. miti   u + taka + yo + faa   'trees which will be suitable'
         tree   SA   FUT   REL   suffice

     c. yai lili_loanguka   'eggs which fell'

Taking the o Epenthesis proposal seriously, the tensed relative is analyzed as two words: one formed around the verb stem, and the other around the tense morpheme where the relative pronoun ends a word. o Epenthesis applies to the word final PRO, suffixing /o/ , yielding the relative pronoun.

(17) a.   V   b.   V
              _____   _____
           TENSE   VERB STEM   TENSE   VERB STEM
        _____ | _____ |
     TENSE   PRO | TENSE   PRO |
       | | | | | |
      lili   li   anguka   lili   li   anguka
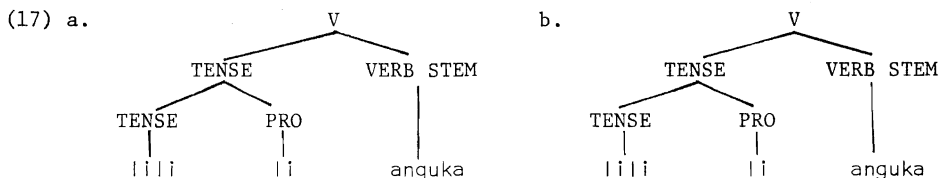
An important aspect of this analysis is that it imposes structure on the verb. Evidence for a structured verb comes from secondary stress, widely reported in traditional literature for relatives and non-relatives as well.

(18) kama   ni + ngàli + júa kusoma   ni + ngàli + nunúa   kitabu
      if   SA   COND   know to read SA   COND   buy   book

      'if I had known how to read, I would have bought a book'

These stress facts may be accounted for nicely if the primary stress rules apply to two words, Verb Stem and the material dominated by the Tense node.

(19)   V $V_{+[stress]}$ / ___(C) (C) V (C) #

After Tense Cliticization, a stress reduction rule follows yielding the well formed stress contours in (18) and (20).

(20) a. waĺiposimáma   'where they stood'

   b. vitabu aĺivyovitáka   'the book that he wanted'

In summary, the stress analysis supports a structured analysis of the verb, a conclusion also reached by Wald [1973, 1976] and Givon [1971a,b] based on historical evidence.

5. Conclusion

The distribution of pronominal clitics in Swahili can be accounted for positionally without invoking a meaning difference between the two forms. Such an analysis is available within a framework having a level of sentence grammar.

[I am grateful to Mark Baltin, Nick Clements, Jane Grimshaw and Ken Hale for their helpful comments, and to my primary informants: Sheikh Yahya Omar, Khalfan Kasu and Samira Fakih. All errors I acknowledge as my own.]

REFERENCES

Givon, T. 1971a. "On the verbal origin of the Bantu verb suffixes." *Studies in African Linguistics* 2:145-163.

Givon, T. 1971b. "Historical syntax and synchronic morphology: an archeologist's field trip," *Papers from the 7th Regional Meeting*. Chicago Linguistic Society.

Haddon, E. 1955. *Swahili Lessons*. Cambridge: Heffer and Sons, Ltd.

Leonard, R. 1980. "Testing the validity of competing semantic hypotheses." Paper presented at the 11th Annual Conference on African Linguistics, Boston University.

Wald, B. 1973. *Variation in the System of Tense Markers of Mombasa Swahili*. Unpublished doctoral dissertation, Columbia University, New York.

Wald, B. 1976. "Comparative Notes on Past Tenses in Kenyan, Northeast Bantu Languages." *Studies in African Linguistics*, Supplement 6:267-281.

ON CORE SYLLABLES IN MODERN ARABIC DIALECTS

Michael Kenstowicz
University of Illinois

The grammars of most Arabic dialects generate CVCC syllables in addition to the universal CV and CVC. The construction of CVCC syllables is constrained by the sonority properties of the individual consonants in familiar ways. In a study of the phenomenon for Lebanese Arabic Haddad [1984] shows that the first consonant must be more sonorous than the second in order for them to cluster together in the coda, as shown by the denominal verbs of (1).

(1) CVCVC   CVCC

     dáras   'he studied'   dárs   'a lesson'

     ḥílim   'he dreamed'   ḥílm   'a dream'

     ḥámal   'he carried'   ḥíml   'a load'

     dáfan   'he buried'   dáfin   'a burial'

     ramáy-na   'we threw'   rámi   'throwing'

When the first postvocalic consonant is more sonorous than the second the underlying CVCC shape may emerge phonetically, e.g. dárs , ḥílm . When the consonants do not exhibit a falling sonority profile a syllabic rime cannot be erected under them. Languages seem to differ in their response to such unincorporable consonants. Some grammars delete the extrasyllabic consonants while others such as Arabic take the tack of incorporating them into an anaptyctic syllable by either vocalizing the consonant, e.g. rámi , or epenthesizing a supporting vowel, e.g. dáfin , ḥíml . This paper considers exactly where and how the doubly closed CVCC syllables are formed in the grammar.

The first observation to be made is that the creation of the anaptyctic syllable must occur after the word stress has been assigned. Stress is assigned by the familiar principle that the rightmost heavy syllable is accented and otherwise the first syllable (with an antepenult limitation).

(2) ḥámal   'he carried'   ḥílm   'dream'   ḥíml   'load'

     ḥamál-na   'we carried'   ḥílm-na   'our dream'   ḥíml-na   'our load'

     ḥámal-u   'they carried'   ḥílm-ak   'your dream'   ḥíml-ak   'your load'

The nominal ḥíml-na appears to be an exception to the stress principle since the surface heavy penult has been skipped in favor of initial accent. Starting with Brame [1973] virtually all students of Levantine Arabic have interpreted these data as requiring an ordering of stress assignment before epenthesis (/ḥíml-na/ → /ḥíml-na/) . If we are to maintain this ordering of the rules along with the assumption that epenthesis is a phonological response to extrasyllabic consonants then it follows that the phonological representation cannot be parsed exhaustively into syllables at a single point in the derivation.

Rather syllabification must take place in stages with the intermediate applica-
tion of phonological rules. In particular, we must assume an initial parse in-
to onset and rime categories to provide the proper representations for the ap-
plication of stress assignment. Only after the stress has been assigned may
the unincorporated consonants be organized into an anaptyctic syllable.

In our analysis CV and CVC are core syllables constructed in the lexical
phonology by ordered rules assigning a vowel to a rime, a prevocalic consonant
to onset, and a single postvocalic consonant to rime. Postlexical phrasal
rules construct CVCC and anaptyctic syllables by assigning a string of extra-
syllabic consonants to alternating rime and onset positions starting from the
right. Adjacent rimes that exhibit a falling sonority pattern are collapsed to-
gether optionally; otherwise, vowelless rimes are supplied with a vowel through
vocalization or epenthesis.

(3)   Lexical

    hilm-na, himl-na → hilm-na, himl-na → hílm-na, híml-na →
                         IV II IV II   IV II IV II
                         OR OR OR OR   OR OR OR OR

    Postlexical

    hílm-na, híml-na → hílm-na, inappl. → inappl., hímil-na
    IVI II IVI II   IVy II   IIIV II
    OR R OR OR R OR   O R OR   ORO R OR

In the rest of the paper we try to justify some of the assumptions underly-
ing this analysis. First, it's clear that anaptyxis is postlexical since it op-
erates phrasally [Abu-Salim 1980]. In Levantine Arabic there are contrasts
such as verbal fíhim ilwálad 'he understood the boy' vs. nominal fíhm
ilwálad 'the understanding of the boy'. Nominal fíhim derives from CVCC (cf.
fíhim-na 'our understanding'). If anaptyxis is lexical, nominal /fíhm/ will
have merged with verbal /fíhim/ before they are embedded phrasally, preventing
us from explaining why the verb fails to lose its vowel. In fact, the i of
the definite prefix is epenthetic as well, as we can see by comparing fíhm
ilwálad 'understanding of the boy' with fihim limʕállim 'understanding of the
teacher'. These phrases receive the postlexical derivations of (4).

(4)   fihm l-walad, fihm l-mʕallim → fihm l-walad, fihm l-mʕallim →
      IV   II   IV   II   IVI I II   IVI I III
      O R   OR   O R   OR   O R O R OR O RR O ROR

    fihm il-walad, fihim limʕallim
    IVI V II   IIIV IVII
    O R O R OR   ORO R O R OR

The analysis sketched in (3) also claims that the m of hímil and
hímil-na is in the rime of the initial syllable lexically but in the onset of
the anaptyctic syllable postlexically. The first claim is forced by the exist-
ence of the syllable building rule assigning a postvocalic consonant to the
rime. This rule must apply lexically in order to create the branching rime
structure crucial to the correct application of the stress rule. The grammar
would have to be complicated considerably in order to prevent the application

of this syllable-building rule to the m of /ḥiml/ . Since this assumption
is strongly implicated by the overall analysis, one would want to confirm it by
looking at other lexical rules that are sensitive to the distinction of closed
versus open syllables. However, it turns out that all attempts to verify this
assumption for the Levantine dialect are thwarted by the lack of a crucial test
case. The stress rule is sensitive to heavy versus light syllables and our
analysis claims that the initial syllables of ḥími l and ḥími l-na are heavy
at the point where stress applies. The initial stress of these words is con-
sistent with our analysis but does not confirm it since the initial stress
might follow from a representation in which there is no heavy syllable and
hence is initial by default.

   One of the advantages of working on a language as dialectally diversified
as Arabic is that sometimes questions that can be posed but not answered for
one dialect can be answered by looking at another dialect. In the Bedouin dia-
lect of the Bani-Hassan of Jordan the definite prefix is al- . The vowel of
this prefix may receive the primary word stress, as seen by the data in (5).

(5) wálad   'boy'   bínt   'girl'

     ál-walad   'the boy'   al-bínt   'the girl'

Since the definite prefix counts for stress we can now test for the structure
of the initial syllable of ḥími l . If it is closed in the lexical phonology,
as our analysis predicts, then primary stress should not fall on the prefix.
Before revealing the answer, let's look at some additional data bearing on our
question. BHA possesses the common Bedouin rule raising short vowels in an
open syllable. This rule is inhibited by adjacent gutturals or a following den-
tal sonorant. We illustrate its effect on stems with the underlying shape
CaCaC . These data also evidence the Bedouin rule eliding short a from an
open syllable when followed by short a in an open syllable.

(6) ḥámal   'he carried'   ḥmál-u   'they carried'

     kítab   'he wrote'   ktúb-u   'they wrote'

     wálad   'boy'   wlíd-ak   'your boy'

     fáras   'mare'   frís-ak   'your mare'

   We now have two rules (stress and elision) sensitive to branching rime
structure that can be utilized to test for the underlying syllable structure of
CVCC nominals. Recall that our analysis claims that the initial syllable of
such nouns is closed in the lexical phonology. We thus predict that in the
Bani-Hassan dialect the initial syllable of the root will take primary stress
(instead of the prefix) and will fail to show vowel raising. The data in (7)
confirm both predictions.

(7) <u>CVCVC</u>   <u>CVCC</u>

     ḥílim   'he dreamed'   al-ḥílm   'the dream'

     ḥámal   'he carried'   al-ḥímil 'the load'

dífan   'he buried'   ad-dáfin   'the burial'

fúṭan   'he remembered'   al-fáṭin   'the intelligent one'

To illustrate, our analysis assigns the verb dífan and the noun ad-dáfin
the lexical syllable structure of (8).

(8)   dafan   al-dafn
      |||V   \ |V
      OROR   R OR

Primary stress is assigned to the root syllable of the noun instead of to the
prefix al- since, by hypothesis, it is heavy. The branching rime of the nom-
inal also blocks raising, which does apply to the nonbranching rime of the ini-
tial syllable of the verb. Postlexical anaptyxis derives the epenthetic vowel
of the noun, as in Levantine Arabic.

   Our analysis in (3) also claims that there is resyllabification to onset po-
sition in front of the epenthetic vowel. Once again BHA provides supporting ev-
idence. Like all Arabic dialects, BHA has resyllabification to onset across
word boundary: dárab álwalad is pronounced [dá.ra.b ál.wa.lad] . Now unlike
in LA, BHA has extended the syncope of high vowels in open syllables to the
phrasal level. While šírib il-máyya 'he drank the water' and šírb il-máyya
'drinking of the water' contrast in LA, they fall together in BHA as šírb
al-máyya . We thus assume the derivation of (9).

(9)   šírib al-máyya → šírib al-máyya → šírb al-máyya
       IV V ||| V   I V
       OR O   ORO R   O R

As in LA, epenthesis operates at the phrasal level in BHA. /katab ktaab/ 'he
wrote a book' is realized as [ka.ta.b ik.taab] by the postlexical rules as-
signing the initial consonant of /ktaab/ to rime position, followed by epen-
thesis, followed (by hypothesis) by resyllabification. We would have reason to
treat resyllabification in front of the epenthetic vowel as a phonological, as
opposed to mere phonetic, process if some phonological rule were sensitive to
the derived representation. The fact that BHA /fihim ktaabu/ 'he understood
his book' is realized as [fih.m ik.taa.bu] shows that the phrasal syncope rule
is sensitive to the open syllable created by resyllabification in front of the
epenthetic vowel. We assume the derivation in (10).

(10)   fihim ktaabu → fihim ktaabu → fihim iktaabu → fihim iktaabu →
       |||V IV|| |||V ||V|| |||V \IV|| ||||| \IV||
       OROR OR OR   OROR ROR OR   OROR ROR OR   ORORO ROR OR

       fihm iktaabu
       IV| \IV||
       OR O ROR OR

   The BHA phrasal syncope rule also permits us to show that CVCC syllables are
constructed postlexically. An underlying string of the form CVCCiC will resyl-
labify the final consonant before a vowel, opening the final syllable, leading
to the syncopation of the i , creating, we assume, an extrasyllabic consonant

out of the erstwhile onset. This consonant is treated in exactly the same fashion as the final consonant of a CVCC nominal, as the data in (11) show.

(11) yírsid   'he ambushes'

      yírsd álwalad   'he ambushes the boy'   (cf. /dars/ → dárs 'lesson')

      yílmis   'he touches'

      yílms álwalad   'he touches the boy'   (cf. /ḥilm/ → ḥílm 'dream')

      yímlis   'he smoothes'

      yímils álaraẓ   'he smoothes the land'   (cf. /ḥiml/ → ḥímil 'load')

      yífnid   'he confirms'

      yífind álxabar   'he confirms the news'   (cf. /dafn/ → dáfin 'burial')

                        REFERENCES

Abu-Salim, I. 1980. "Epenthesis and geminate consonants in Palestinian Arabic." *Studies in the Linguistic Sciences* 10,2:1-12.

Brame, M. 1973. "On stress assignment in two Arabic dialects." In S. Anderson and P. Kiparsky (eds.), *A Festschrift for Morris Halle*, pp. 14-25. New York: Holt, Rinehart and Winston.

Haddad, G. 1984. "Problems and issues in the phonology of Lebanese Arabic." Unpublished Ph.D. dissertation, University of Illinois.

MORPHEME ALTERNATION IN TANGALE:
A SYLLABLE STRUCTURE APPROACH

Mairo Kidda
University of Illinois, Urbana-Champaign

1. Introduction

One of the features of Tangale morphology is the suffixation of genitive pronominals to noun radicals on the one hand and objective pronominals and/or tense-aspect markers to verb radicals on the other hand. When a pronominal or tense-aspect marker is suffixed to a noun or verb radical ending in a vowel, that final vowel gets elided. Final vowel elision is also observed in a suffix that is followed by another suffix and in the first of two successive words, provided the words belong to the same phrasal category.

(1) yárá + nǫ́   →   yár-nǫ́   'my arm'

     wùdó + dó   →   wūd-dō   'her tooth'

     sèèrǫ̀ # Làkú   →   sēēr Lākū   'Laku's friend'

     ɗób + ži + gó   →   ɗóbú-ž-gó   'called you(f)'

     ɗóbú + Làkú   →   ɗōb Lákú   'call Laku!'

Final vowel elision plays an important role in Tangale phonology because it is associated with some phonological alternations, namely: vowel ∿ zero, consonant ∿ zero, vowel ∿ glide, and voiced ∿ voiceless obstruents (as well as some tonal alternations). In this paper, I attempt to formulate the rules underlying the alternations vowel ∿ zero, consonant ∿ zero, and vowel ∿ glide.

1.1. Theoretical framework. The theoretical framework assumed in this paper is that of generative phonology enriched with the autosegmental representations introduced in recent work by Halle and Vergnaud [1980]. Under this framework, phonological units are represented in terms of separate tiers and relations between the tiers are specified in terms of association lines by the Well-formedness Condition:

(a) associate a vocalic segment with a V-slot and a consonantal segment with a
     C-slot

(b) association lines may not cross.

In this paper, phonological units are represented in terms of at least two tiers: the melody and the skeleton. The melody tier consists of the segmental units; the skeleton consists of the elements C and V representing the overall syllabic profile of the segmental string. The skeleton serves as the terminal point for the organization of the segmental units into Onsets and Rimes, the immediate constituents of the syllable.

As for the feature specification for the segmental units, I propose the in-

corporation of the shared feature convention proposed in Steriade [1982]. Ac-
cording to this convention, the feature(s) shared by the segments are percolat-
ed on a separate tier, and the percolated feature(s) and segmental units are
linked by association lines. In this paper, the "Place Features" (PF) and the
"Manner Features" (MF) are represented on separate tiers. The feature tiers
and the segmental tier are linked to each other by association lines. The as-
sociation lines are also subject to the "no crossing of association lines" con-
straint. The proposed phonological representation is illustrated in (2a,b).

(2) a.   PF [+ant][+hi][+ant]   b.   PF [+ant][-hi]   [+ant]   [-hi]

         MF [-son][+rd][+nas]   MF [+son][-rd][+nas] [-nas][-rd]

              s   u   m   s   a   n   d   a

              C   V   C   C   V   C   C   V
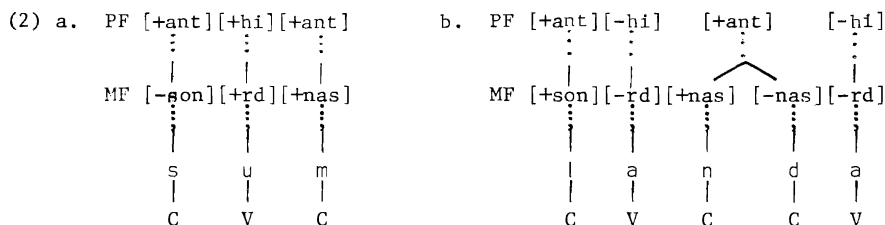
In (2b), the use of the convention allows segments that share the same PF to be
linked to the same feature matrix. The linking of the segments to the features
occurs in the lexicon. As will be seen, the convention plays a significant
role in the formulation of one of the rules.

1.2. The goals. My goals in writing this paper are three. One, it is to show
that the vowel ∿ zero, consonant ∿ zero, and vowel ∿ glide alternations are to
be accounted for by the rules of epenthesis, consonant elision, and vocaliza-
tion respectively. Secondly, and most importantly, I wish to show that the for-
mal statements of the rules in question are simplified and the motivations for
the rules become more transparent when the rules are viewed as operating on rep-
resentation in which segments have been organized into syllables. Thirdly, I
will show the utility of the shared feature convention in providing explanation
for the consonant elision rule.

2. Epenthesis

    Tangale allows the following syllable structures: V, VV, VC, VVC, CV, CVV,
CVC, and CVVC, e.g. ìdò 'eye', ūū 'run', ìk 'body', tòm 'blood', and
tòòm 'strong'. Tangale thus disallows initial and final clusters as well as
medial three consonant sequences. When violations of these phonotactic con-
straints arise as a result of the concatenation of morphemes in underlying
forms, an epenthetic u/ụ is inserted to break up the impermissible consonant
cluster.

(3) wòd-ž́-gó   →   wòdúžgó   'bit you (f)'

     wòd-g'làwò̖   →   wōdūg làwò̖   'bit a child'

     kò̖rn-gó́   →   kō̄rū̄ngō̄   'protected'

     kò̖rn-ń-gó́   →   kò̖rnú̖ngó́   'protected me'

kò̩rn làwò̩   →   kō̩rū̩n làwò̩   'protect a child'

kò̩rn-g'làwò̩ →   kō̩rnū̩g lawò̩   'protected a child'

tè̩ŋl-d-g-gó̩ →   tè̩ŋy̩ld̩úggó̩   'misled you (m) completely'

tàgz-wú̩   →   tāgū̩zwū̩   'their sorghum'

tàgz`ŋá̩ì   →   tāgū̩z ŋá̩ì   'Ngai's sorghum'

In (3) we observe that, for a CCC sequence, u/y̩ is inserted between the first and second consonants while for a CCCC sequence, the vowel appears between the second and third consonants. For a CCCC cluster, the vowels occur in two positions: between the first and second consonants and between the third and fourth. As for the word-final cluster, the vowel is inserted between the ultimate and penultimate consonants.

It is possible to formulate an epenthesis rule within the linear framework. Under this framework, two types of epenthesis rules, final and medial epenthesis, are required.

(4) FINAL EPENTHESIS

$$\emptyset \;\rightarrow\; \begin{array}{c} V \\ \left[\begin{array}{c} +\text{high} \\ +\text{back} \\ \alpha\text{ATR} \end{array}\right] \end{array} \;/\; \begin{array}{c} V \\ [\alpha\text{ATR}] \end{array} \underline{\hspace{1em}}$$

(5) MEDIAL EPENTHESIS

$$\emptyset \;\rightarrow\; \begin{array}{c} V \\ \left[\begin{array}{c} +\text{high} \\ +\text{back} \\ \alpha\text{ATR} \end{array}\right] \end{array} \;/\; \begin{array}{c} V \\ [\alpha\text{ATR}] \end{array} \; C \underline{\hspace{1em}} CC$$

Condition: Apply iteratively from right.

The two epenthesis rules are ordered in such a way that final epenthesis must precede medial epenthesis since the reverse order will generate *kò̩rу̩nу̩g for kò̩rnу̩g .

Let us now consider the syllable approach adopted in this paper. Under this approach, the epenthesis rule is viewed as a reflex of the general scheme for imposing syllable structure on a successive string of consonants. This scheme is achieved via the syllable building rules (SBR) which are ordered among themselves and among other phonological rules in the grammar.

The two universal SBRs that assign (i) a V-slot to a Rime (R) and (ii) a prevocalic C-slot to an Onset (O) apply in Tangale. In addition, Tangale has the following SBRs: (iii) assign a string of one or more unassigned C-slots to alternating R and O starting from the right end of the string; (iv) if R fails to dominate a V-slot, adjoin a V-slot as a left daughter to the R; (v) assign and link, to a V-slot that is unlinked to a segment and feature matrice, the feature [+rd] on the MF tier, and the features $\begin{bmatrix} +\text{hi} \\ +\text{bk} \end{bmatrix}$ on the PF tier; then spell

out these features as U on the segmental tier. (Vowel harmony rule converts
the U into u or ụ). These SBRs are followed by resyllabification. Using
the SBRs we derive tèŋụ̀ldụ́ggó as shown in (6).

(6)

```
      t e ŋ   l d g g o   SBRi,ii   t e ŋ   l d g g o   SBR iii   t e ŋ   l d g g o   SBR iv
      | | | | | | | |        →       | | | | | | | |       →       | | | | | | | |       →
      C V C C C C C V                C V C C C C C V                C V C C C C C V
                                         | |         | |           | | | | | | | |
                                         O R         O R           O R O R O R O R

                        PF        ⌈+hi⌉ ⌈+hi⌉
                                  ⌊+bk⌋ ⌊+bk⌋
                                    |     |
                        MF        [+rd] [+rd]
                                    |     |          Resyl-
      t e ŋ   l d g g o   SBR v    t e ŋ U l d U g g o   labifi-   t e ŋ U l d U g g o
      | | | | | | | |       →      | | | | | | | | | |   cation    | | | | | | | | | |
      C V CVC CVC C V              C V C V C C V C C V      →       C V C V C C V C C V
      | | |\| |\| | |              | | | \ | | \ | |                | | | \ | | \ | |
      O R O R O R O R              O R O   R O   R O R              O R O   R O   R O R
                                                                     \ /     \ /   \ /
                                                                      σ       σ     σ
                                                                  [tèŋụ̀ldụ́ggó]
```

  As seen in (6), the two epentehesis rules are simply reduced to SBRs. More-
over, and most importantly, the SBRs regulate the distribution of the epenthetic
vowel in forms such as kọ̄rụ̄ngọ̄ , kọ̀rnụ́ngó , and kọ̄rnụ̄g as illustrated in (7).

(7)

```
      k o r n g o              k o r n n g o              k o r n g
      | | | | | |              | | | | | | |              | | | | |
      C V C C C V              C V C C C C V              C V C C C
          ↓                         ↓                         ↓
      k o r U n g o            k o r n U n g o            k o r n U g
      | | | | | | |            | | | | | | | |            | | | | | |
      C V C V C C V            C V C C V C C V            C V C C V C
      | | | \ | |              | | | | \ | |              | | | | \
      O R O   R O R            O R R O   R O R            O R R O   R
       \ /     \ /              \ /   \ /   \ /            \ /   \ /
        σ       σ                σ     σ     σ              σ     σ

      [kọ̄rụ̄ngọ̄]               [kọ̀rnụ́ngó]                [kọ̄rnụ̄g]
```

SBRi-v

Resyllabification

  In (7), the distribution of the epenthetic vowel is easily explained in
terms of the SBRs and the crucial property of the Rime in Tangale, which is that
it dominate V-, VV-, VC-, or VVC-slots. When a Rime dominates only a C-slot, a
vocalic segment is inserted to provide a nucleus for the Rime and the syllable.
Thus, the reason for the epenthesis is simply to provide a nucleus for the syl-
lable.

3. Consonant Elision

A consonant elides if it is homorganic with a preceding consonant provided the two consonants are homomorphemic. The elision phenomenon is exemplified in (8).

(8) dìnd⁻ži   → dīnžī   'your(f) pot'

dìnd'màlàì   → dīn málàì   'Malai's pot'

kòld-mú   → kōlmū   'our sheep-pen'

sìmb-gó   → sīmgō   'met'

kwàll-gó   → kwālgō   'tied'

pón-n⁻gó   → pónúngó   'knew me'

pón-d⁻gó   → pōnūdgō   'knew thoroughly'

kèmd-gó   → kēmūdgō   'filled'

However, these consonants do not elide in the forms in (9).

(9) sìmb-ń-gó   → sìmbúngó   'met me'

sìmb-g'kàì   → sīmbūg káì   'met Kai'

mònd-m⁻gú   → mòndúmgú   'forget us'

kwàll-g'kòdòk → kwāllūg kódòk 'tied a rope'

In (9), consonant elision fails to apply where epenthesis has applied. We could formulate a consonant elision rule within the linear approach as in (10).

(10)
$$\begin{bmatrix} +cons \\ \alpha ant \\ \beta cor \end{bmatrix} \rightarrow \emptyset \ / \ + \ C \ \underline{\quad} \ C \ + \\ \qquad\qquad\qquad \begin{bmatrix} \alpha ant \\ \beta cor \end{bmatrix}$$

Considering the forms in (9), consonant elision must be ordered to apply after final epenthesis (4) and medial epenthesis (5).

Let us now consider consonant elision within the syllable approach adopted in this paper. Like epenthesis, consonant elision is viewed as another process by which syllable building in Tangale is achieved. At this point, the shared feature convention plays an important role in the syllable building in respect of the forms in (8). In (11a,b) we illustrate the significance of the effect of the shared feature convention (see example on following page).

In (11b), we successfully apply SBRs i-iv, but SBR v is blocked because linking the features $\begin{bmatrix} +hi \\ +bk \end{bmatrix}$ on the PF tier to the melody and the unlinked V-slot results in violation of the well-formedness condition, "no association lines may cross". In Tangale the ill-formed structure from SBRv can be repaired. The repair includes the erasure of the ill-formed association line, which in effect wipes out the unlinked V-slot. We are thus left with the struc-

ture we started with in (11a). Resyllabification applies leaving a consonant
unattached as shown in (11c).

(11) a. PF $\begin{bmatrix} +\text{ant} \\ +\text{cor} \end{bmatrix}$ b. PF   *$\begin{bmatrix} +\text{hi} \\ -\text{bk} \end{bmatrix}$ $\begin{bmatrix} +\text{ant} \\ +\text{cor} \end{bmatrix}$

                                 SBR

   MF [+nas] [−nas]   1-v   MF   [+nas] [+rd]   [−nas]

                      →

     ɗ i n   d ž i   ɗ i n   u   d ž i
     C V C   C C V   C V C   V   C C V

                          O R O   R O R

   c. PF $\begin{bmatrix} +\text{ant} \\ +\text{cor} \end{bmatrix}$

   MF [+nas] [−nas]

     ɗ i n   d ž i
     C V C   C C V
     O R R   R O R
       σ   ∅ σ

In conformity with the syllable structure in Tangale, the extrasyllabic conso-
nant elides.

    The use of the shared feature convention may appear cumbersome. However, it
has the following advantage: because the shared feature is assigned in the lex-
icon, it allows for the distinction between homomorphemic and heteromorphemic
homorganic consonants (cf. the difference between the homorganic consonants in
ɗīnžī and pōnūdgō). The distinction between these consonants made by the
shared feature eliminates the use of morpheme boundary in the statement of con-
sonant elision rule.

4. Vocalization

    In Tangale glides alternate with vowels in the forms in (12).

(12)   indefinite   definite   possessive 'my'

   àtáù   àtáw-í   àtáú-nó   'mat'

   pọ̀gọ̀ì   pọ̄gọ̄y-Ī   pọ̄gọ̄Ī-nọ̄   'dish'

   yāyā   yāy-Ī   yaĪ-nọ̄   'farm'

indefinite	definite	possessive 'my'	
làwɔ̀	làw-í	láú̧-nɔ̀	'child'
tàgyɔ̀	tāgy-í̄	tāgu̧i̧-no	'message'
kūrwā	kūrw-í̄	kūruu-no	'shadow'
yáú ì	yáú̧ l-í̧	yáwú̧ l-nɔ́	'firewood'
pāi̧dɔ̄	pāi̧d-í̄	pāyu̧d-nɔ̄	'blame, fault'

Using the linear approach, we could express vocalization as in (13).

(13)
$$\begin{bmatrix} -\text{cons} \\ -\text{syll} \\ \alpha\text{rd} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{syll} \\ \alpha\text{rd} \end{bmatrix} \Big/ \underline{\quad} \begin{Bmatrix} C \\ \# \end{Bmatrix}$$

Considering the forms such as yawu̧l-no and payu̧d-no , the vocalization rule must be ordered to apply after the final and medial epenthesis rules.

From the point of view of the syllable theory, the glide - vowel alternation in Tangale is simply a matter of the two distinct phonetic realizations of a non-syllabic and non-consonantal segment in Onset and Rime positions. In Onset position, this segment is realized as a glide; while in Rime position, it is realized as a vowel. Because the forms such as yáwú̧l-nɔ́ and pāyu̧d-nɔ̄ favor the analysis with glide in UR, the forms in (12) are accounted for by vocalization. This rule may be stated as in (14).

(14)
$$\begin{bmatrix} -\text{cons} \\ -\text{syll} \\ \alpha\text{rd} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{syll} \\ \alpha\text{rd} \end{bmatrix} \Big/ \underline{\qquad}$$

Utilizing the SBRs and vocalization rule, pògòì láúnò , kūruu-nō and yáwú̧l-nó receive the derivations in (15a-d), respectively.

(15) a.
```
p o g o y      b.  l a w n o     c.  k u r w n o       d.  y a w l n o
| | | | |          | | | | |         | | | | | |           | | | | | |
C V C V C          C V C C V         C V C C C V           C V C C C V

    ↓                  ↓                  ↓                    ↓      SBRs
                                                                     i-v

p o g o y          l a w n o         k u r U w n o         y a w U l n o
| | | | |          | | | | |         | | | | | | |         | | | | | | |
C V C V C          C V C C V         C V C V C C V         C V C V C C V
| | | | |          | | | | |         | | |  \  | |         | | |  \  | |
O R O R R          O R R O R         O R O    R O R        O R O    R O R
```

a.

Vocalization

Resyllabification cation

[pɔ̀gɔ̀]   [láunɔ̀]   [kūrūūnō]   [yáwṵlnɔ́]
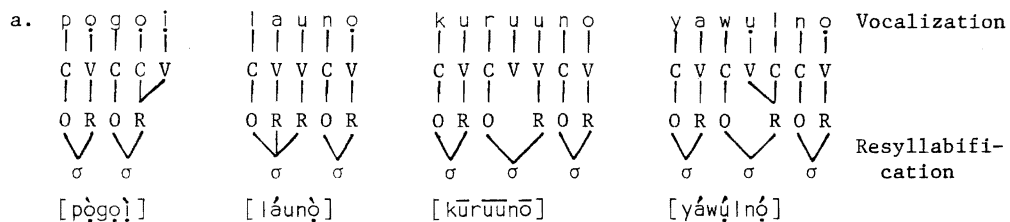
REFERENCES

Halle, M. and J.-R Vergnaud. 1980. "Three dimensional phonology." *Journal of Linguistic Research* 1,1:85-105.

Steriade, D. 1982. "Greek prosodies and the nature of syllabification." Ph.D. thesis, MIT.

DOUBLETS IN KINYARWANDA:
AN INQUIRY INTO THE PROCESS OF SIGN-PRODUCTION

Alexandre Kimenyi
California State University at Sacramento

There are words in Kinyarwanda such as kugabura 'to feed' and kujabura
'to feed uncooked food' which differ in only one sound, i.e. g and j in this
case. These pairs of words are also semantically related. The difference in
meaning is very slight. This slight semantic difference is caused by the minor
phonetic difference. This linguistic phenomenon is not to be confused with
"phonetic variation" whose function is only "emotive". These are "doublets".
The existence of doublets in language is a case of linguistic "iconicity". It
is an isomorphism: a one-to-one relationship between form and meaning. Thus
the more similarity there is between two referents, the more similarity on their
respective signs is found. The existence of doublets supports Peirce's theory
of semiotics which claims that signs are not arbitrary, but start as *icons* or
indices and later on become *symbols* because of semiosis. This paper is not only
interested in iconicity in language, but is also concerned with the process of
doublet formation and how one can tell its directionality. I argue that the
markedness theory has to be fully developed because in many cases whether it is
doublet formation obtained through borrowing or derivation, it seems to help a
lot.

1. Doublets in Kinyarwanda

Doublets in Kinyarwanda differ in only one sound. In the examples provided,
these sounds are underlined:

(1) kugabura   'to feed'   kujabura   'to feed uncooked food'

     kuzerera   'to wander'   kuyerera   'to wander aimlessly'

     gukona   'to castrate'   gukuna   'to elongate the vagina's lips'

     kuyoberwa   'not to know'   gushoberwa   'not to know what to do'

     gushiguka   'to stand up   gushibuka   'to release suddenly'
                    suddenly'   (intransitive)

     gukwegura   'to stretch result- gukwetura   'to stretch resulting in
                 ing in lengthening'   widening'

     gukamura   'to squeeze wet   gukanyura   'to squeeze firmly'
                 or juicy things'

     gukokora   'to prune a tree' gututotora   'to prune vegetables'

     gucyeha   'to level hori   gucyaha   'to level vertically'
                    zontally'

     gushinjagira 'to walk elegant-   kujinjagira 'to walk awkwardly'
                    ly with dignity'

kibu̱ta	'tall and strong'	kiba̱ta	'short and strong'
kuzu̱nguruka	'to go around'	kuze̱nguruka	'to circle'
kureka̱	'to spring' (water)	kureta̱	'to foam'
gukara̱ga	'to rotate something in the hands'	gukoro̱ga	'to stir milk with a stick'
gusenga̱	'to pray'	gusheng(er)a	'to court a powerful individual'
kuro̱ndora	'to tell in detail'	guto̱ndora	'to arrange side by side'
kuma̱nyura	'to break into pieces'	guta̱nyura	'to break off'
kuvi̱ka	'to put something in the water to prevent it from falling out'	kuzi̱ka	'to bury in the water'
umugaba̱	'military general'	umugabe̱	'monarch'
kunu̱nuza	'to drink dregs with a straw'	kunyu̱nyuza	'to suck/to exploit'
ubwenge	'knowledge'	ubuge̱nge	'tricks'
kwonka	'to suck'	guko̱nka	'to suck into juicy fruits'

Triplets and quadruplets are also found as the examples in (2) show:

(2) a. gufubi̱ka   'to cover in order to cause warmth'

  gufuni̱ka   'to put a lid'

  gupfuny̱ika   'to put in a bag'

  b. kunye̱ganyega   'to shake (big object)' (intransitive)

  kurega̱rega   'to shake from the handle'

  kujega̱jega   'to shake (small object)'

  kuyega̱yega   'to move very slowly'

Obviously, examples of doublets just given are not "phonetic veriations" of words. Each has its own independent referent. As Coupez [1975] has correctly observed about Bantu languages, "lexical variability" has an "expressive function" or to use Jakobson's [1971] terminology an "emotive function". Thus kugengesera, kubungesera, gusengesera in Kinyarwanda are individual phonetic variations of the same referent "to carry with great care". The referent "very small" has 40 phonetic variations [Coupez 1975] which don't in any way affect the meaning:

(3) kaniya, kanzinya, kaninya, kanzizinya, kanigiya, kanigiriya, kanzigirinya, kanyigi, kanyigiri, kanyigigiri, kanuya, kanzunya, kanyuya, kanuyu, kanzunyu, kanuru, kanunuya, kanyunyuya, kanunuyu, kanzuzunyu, kanunuru, kanyunyuyu, kanzuzurunya, kanzuzurunyu, kanuguya, kanzugunya, kanugunya,

kanuguyu, kanzugunyu, kanuguru, kanuguruya, kanzugurunya, kanugurunya, kanuguruyu, kanzugurunyu, kanyugurunyu.

The phonetic variation doesn't change meaning but gives information on the psychological state of the "interpretant": happy mood, anger, intimacy, formality, dialect, social class, gender, etc. At the formal level, phonetic variation and doublets look alike since they don't differ greatly from the basic word. The difference is that doublets refer to distinct objects and thus obey the "one meaning one form" principle of semiotics whereas in the case of phonetic variation, it is "one meaning with different forms" although each form carries its own "emotive" connotation.

2. Doublet Formation

Doublet formation resembles other types of sign-production: regular morphological derivation (prefixation, infixation, suffixation, zero-derivation), compound-word formation, blending (smog, brunch, motel), and tropicality (metaphors and metonymies). They can be coined consciously by language professionals as the French examples in (4) indicate where words have been taken from Latin to express concepts closely related to the ones conveyed by older words of Latin origin also:

(4) nager   'swim'   naviguer   'sail'

     écouter   'listen'   ausculter 'sound with a stethoscope'

     mâcher   'chew'   mastiquer 'masticate'

     frêle   'frail'   fragile   'weak/fragile'

     âcre   'sour'   aigre   'tart'

Regular doublet formation starts like phonetic variation, but because of the "one meaning one form" principle of semiotics, the emotive connotation becomes "referential". This referentiality is also *tropical*. There is an association between the initial referent and the derived referent. More precisely it is a similarity. This similarity is not *metaphoric* but *diagrammatic*. In many cases referents of metaphors have other signs. In the case of doublets, the new referent and its sign don't have an independent existence. Both the *signans* (signifier, form) and the *signatum* (signified, content) of the new sign develop from the signans and the signatum of another sign. Thus in Kinyarwanda, the referents 'to prune a plant' and 'to drink dregs with a straw' created the referents 'to prune vegetables' and 'to suck blood' respectively. Signs which refer to the new concepts were also created from the signs of the initial referents. Doublet formation took place as schematized in (5).

(5) gukokora   x   ==>   gukokora   gutotora
    'to prune ↔ 'to prune   'to prune ↔ 'to prune
    plants'   vegetables'   plants'   vegetables'

    kununuza   x   ==>   kununuza   kunyunyuza
    'to drink ↔ 'to suck   'to drink ↔ 'to suck
    dregs'   blood'   dregs'   blood'

When a sign starts acquiring two signata which are semantically related, a
new signans is created for it which is phonetically related to the signans of
the initial referent. A lot of doublets are also obtained through borrowing
from cognates of sister languages as English words *shirt/skirt* or Kinyarwanda
impeta 'ring/traditional military decoration'/ ipeta 'military medal' (from
Swahili) show. The language can also borrow from itself (archaic language, jar-
gons, poetic language, ritualistic language, slang, etc.) or from its different
dialects.

3. Directionality of Doublet Formation

    The task of historical linguistics and semiolinguistics in general since it
is concerned with sign production, creativity, and dynamism is to establish cri-
teria that help to tell which sign is the original one and which one is derived.
The "markedness" theory greatly helps. The sign which is marked in usage, in
meaning or on form or on both levels is usually the derived one.

2.1. Markedness on the form. Words which have extra markers (segments, sylla-
bles, or tones) are newer. Thus in Kinyarwanda kwonka 'to suck' and ubwenge
'knowledge' might be older than their respective counterparts gukonka 'to suck
in skins of juicy fruits' and ubugenge 'tricks' because the latter have extra
consonants k and g . In English *history* must be newer than *story*, although
both of them come from Latin. The former is marked by *hi-*. It is the same
thing with *charm* and *charisma*. The latter is more marked on the form. In some
cases, the derived doublets carry suprasegmentals that the initial words don't
have. In Kinyarwanda, when doublets are equally marked (same number of conso-
nants and vowels), the new word carries a high tone in addition:

(6)   kuyoberwa   [kuyobergwa]   'not to know'

      gushoberwa   [gúšôbergwa]   'not to know what to do'

      kurondora   [kuroondoora]   'to tell in detail'

      gutondora   [gútóondoora]   'to arrange side by side'

3.2. Markedness on the content. When doublets don't have any distinguishing
markers on the form, the meanings can help tell which one is older and which one
is derived. The word which has a more general meaning is usually older. In oth-
er words, the derived sign has a specialized meaning and can therefore be de-
fined by the former. For instance, both gukokora 'to prune a plant' and
gutotora 'to prune vegetables' are equally marked, but gukokora must be older
than gutotora because the latter can be defined by gukokora , which has a
more general meaning. Kujabura is 'kugabura uncooked food', *history* is 'a doc-
umented or written story', etc.

3.3. Markedness in usage or frequency. Words which have a higher frequency or
are used more often are usually older and those which have a specialized meaning
or low frequency are newer. Since *warranty* is only used in legal terms, it is
newer than *guaranty*; *turtle* is newer than *tortoise* since it refers to a specific
type of tortoise. Words which have marked sounds are also newer. Since the pal-

atal nasal ny is more marked than the bilabial nasal m , one can tell that
kunyunyuza 'to suck blood' derives from kununuza 'to drink dregs' and
gukanyura 'to squeeze firmly' from gukamura 'to squeeze wet or juicy things'.
j is more marked than g and y more marked than z . Therefore, kujabura
'to feed uncooked food' and kuyerera 'to wander aimlessly' are newer than
kugabura 'to feed' and kuzerera 'to wander' respectively.

    There are doublets which are equally marked on the form, meaning, and usage
for which the markedness theory fails to give the right solution, however. Con-
sider the following examples:

(7) gushiguka 'to stand up suddenly' gushibuka 'to release suddenly'

     gukwegura 'to stretch resulting   gukwetura 'to stretch resulting in
                in lengthening'   widening'

     gucyeha   'to level vertically'   gucyaha   'to level horizontally'

There are cases of "markedness reversal" also in which the form, the meaning, or
the usage of the new sign has become more generalized than that of the initial
sign. Sometimes, doublet formation can result by accident. For instance the
Kinyarwanda doublets gucukura 'to dig' and gufukura 'to dig a well' were ob-
tained by accident. Gufukura is a denominal verb from the word ifuku 'mole-
skin'. A moleskin digs holes in which it hides its food and things it has stol-
en. The verb gufukura has thus been derived metonymically. "To dig" is to
behave like a moleskin. In English also, *ridiculous* and *ludicrous* are consid-
ered as doublets, but they have a different historical origin. The former comes
from Latin *ridiculus* 'laughable' and the latter from *ludus* 'game'. Without the
knowledge of the history of the sign or the language, the markedness theory may
fail to predict the directionality of derivation. But its failure might be due
to the fact that it is not fully developed.

                              REFERENCES

Antilla, R. 1971. *An Introduction to Historical and Comparative Linguistics*.
    New York: MacMillan.

Coupez, A. 1975. "La variabilité lexicale en bantou." *African Languages
    (Langues africaines)* 1:164-203.

Jakobson, R. 1971. *Selected Writings*, I-II. The Hague: Mouton.

Kimenyi, A. to appear. *Aspects of Semiolinguistics*.

Peirce, C. 1931-1959. *Collected Papers*. Cambridge: Harvard University Press.

THE ma- PREFIX IN AFROASIATIC

Karen Lahaie
Stanford University

Joseph Greenberg [1963:48] noted in *Languages of Africa* that "Hausa and certain other Chad languages have a m- prefix which forms nouns of place, instrument and agent. This prefix occurs very commonly in Semitic, Egyptian, Berber and Cushitic with the same general range of meaning." Since this m- prefix is found in all five sub-branches of Afroasiatic, we can assume its presence in Proto-Afroasiatic as well, just as similar case systems in various Indo-European languages indicate that Proto-Indo-European had cases. Whether or not some of the daughter languages have lost some or all of a construction present in the protolanguage is of little importance as long as the construction is found in a widely-distributed sample of daughter languages.

In the Berber branch of Afroasiatic, -ma- forms agents from verbs, for example a-ma-ssai 'porter' from asi 'carry' and a-ma-rir 'singer' from urar 'sing' (a- is the masculine singular pre-prefix). In Egyptian we have the instrument mh't 'scales' from h' 'measure', as well as possible agents and locatives in m- . In Coptic, locatives are quite productively formed with a ma- prefix. In the Cushitic branch of Afroasiatic, where the ma- prefix is rare, we do find it in Bedauye, for example, mignaf 'camping place' from ginif 'cause to barrack'. In Chadic, the ma- prefix is very productive in Hausa for agents, instruments, and locatives, with some evidence for it in other Chadic languages as well. In Semitic, we find locatives and instruments in ma- , and agents as active participles of derived verb forms in mu- have been reconstructed as Proto-Semitic [Moscati et al 1964].

Several theories have attempted to explain the ma- prefix. Semiticists such as Bravmann have theorized that it arose from a relative pronoun *maa (and there is a limited relative pronoun ma/maa in Semitic and Berber). Another theory is that *ma- originally meant 'place' (and we do find a word ma meaning 'place' in Coptic [Crum 1939] and a Chadic language, Tera [Newman 1970]). It has also been suggested that *ma was once a pronoun (and we do have a pronoun ma in two Chadic languages, Angas and Margi). The present theory can account for all three of the above theories, while differing from them in one important respect: it does not assign the agentive, instrumental, and locative meaning to the ma- at all, but rather to the changes in the stem and suffix of the ma word itself.

In all Afroasiatic languages that have a ma- prefix for agent, instrument, and locative, there is a distinction among them in their stem as well as their suffix. In Hausa, for example, a tone difference on the stem differentiates agents from instruments and locatives, while a suffix difference sets locatives aside from both agents and instruments [Kraft and Kirk-Greene 1973, Newman and Newman 1977, Cowan and Schuh 1976]:

agent   ma'àuníi   'one who sells grain by measure'

instrument   ma'auníi   'scales'

locative   ma'aunaa   'place where selling by measure is going on'

all from àunaa 'buy by measure'.

    This pattern has become completely regularized in Hausa and is very productive. Margi, another Chadic language, has a more productive way of forming agents, but still has relics (Hoffmann [1963] wasn't sure how productive) of this formation in métlàdlàɓì 'pupil' from tlàdlàɓù 'learn'. Note the -ì suffix and low tones on the stem (although a certain class of verb may take the opposite tones). Hoffmann also notes some locatives in Margi, such as màcíɓú 'corral, fence' from cíɓý 'to fence in', màntà 'crack' from ntà 'to crack', màndàlà 'escape hole' from ndàlà 'to ooze'. In these we see suffix vowels other than -ì . In other Chadic languages that have relics of agents, such as Angas (mwām 'caterpillar' from wăm 'to spoil' [Foulkes 1915]), the final vowels dropped from nouns in general, and not enough information is available to determine what might have once differentiated the instrument, agent, and locative. Presumably only one of the three meanings remained in many languages due to phonological changes that eliminated the distinctions between their forms.

    In Semitic, we find that Arabic [Wehr 1971, Abboud et al 1975] distinguishes instrument from locative much as Hausa does, replacing locative -a- with 'agentive' -i- : miṭbak 'cooking utensil' vs. maṭbak 'kitchen' from ṭabaka 'to cook'. Arabic active participles of the simple verb stem function as agents without the ma- prefix, but active participles of the derived verb forms (intensive, reflexive, causative, etc.) have a characteristic mu- prefix with -i- between the last two radicals, which goes back to Proto-Semitic [Moscati et al 1964]. This seems to correspond to the Chadic "agentive" -íi found in Hausa agents and instruments. In addition, the agent seems to be based on a u-stem in Arabic (although this is probably based on the imperfect in Semitic; the imperfect, in turn, was perhaps made up of a -u- element). While no one knows for certain, there is evidence for a *w or *u copula, which became a passive marker in some language groups (Chadic -u passive in Hausa, Berber -t-w-passive in which -t- seems cognate with the reflexive Semitic -t- , and Semitic -u- passive; the Cushitic wuu copula (Central Somali) and Egyptian copula ỉw [Gardiner 1951:461-463]). In any case, it seems that Hausa agents are also based on the -u stem, which has all low tones, but here the -u is replaced by the "agentive" -íi suffix.

    The instruments and locatives seem to share a stem type. In Arabic this is the causative (form IV) stem, which is usually in the perfect: ʔaṭbak for ṭabaka . ʔ- seems to be a reflex of Proto-Afroasiatic *s- causative [J. H. Greenberg, p.c.], as is the -r suffix in Hausa. In Arabic, ma- plus -i- (instruments) or -a- (infixed here?) for locatives replaces the causative marker ʔ- but uses the causative stem. Surprisingly enough, Hausa also uses the causative stem, i.e. all high tones, but the "agentive" suffix for instruments, or the -aa suffix for locatives replaces the causative marker -r . Use of the perfect stem in Semitic does not surprise us, since the Arabic perfect was once a nominal suffix conjugation used to record a state or condition [Moscati et al 1964:133]. Some instruments in Arabic are formed with the verbal noun stem of

the causative verb: ʔiftaaḥ from fataḥa 'open', miftaaḥ 'key'.

   If the root and suffix alone can determine whether a deverbal noun is an agent, instrument, or locative, we would expect to find these types of words without a ma- prefix as well. As a matter of fact, they are not hard to find. In Semitic, the active participles, i.e. agents, of the simple verb form do not have the ma- prefix, but rather a distinctive aa-i vocalization: kaatib 'writer' from kataba 'write' (Arabic). In Egyptian, which usually didn't express vowels, we do find an -i suffix which later became -y forming active participles which were either human or non-human agents: sdmi 'hearer, judge', later written sdmy 'one who listens'. In Berber, causative stems form instruments and locatives without a ma- prefix (the Berber s- causative prefix is used, another reflex of Proto-Afroasiatic *s-). According to Prasse [1973,IV: 68], the locatives are plural formations of the instruments.

   If ma- is unnecessary in these constructions, and does not carry the meaning as previously thought, what is its origin and function? It so happens that ma reflexes are prepositions throughout Afroasiatic. In Egyptian, a preposition expressed only by m meant 'into, in, from, on, at, with, out from, as, like, according to'. Prefixed to other particles, new prepositions were formed, such as m' (m + ayin , the sign for 'hand') 'by the hand of, by means of, because'. The prepositions in Semitic, such as Hebrew ʕim , Arabic maʕ , Ugaritic ʕm , seem cognate with this Egyptian compound form and mean 'with'. The simple *ma preposition seems to have been replaced by the h- and l- prepositions in Semitic, but some of its derivatives remain. In Berber ma means 'as for' [Basset 1948], which can be paraphrased by prepositions such as 'to' or 'about'. In Chadic, the Dghwede (Wandala group) suffix -ma means 'in, into'. Angas ma means 'of, into', and most Chadic languages have indirect object forms of the form *ma + dependent pronoun which have undergone vowel harmony and erosion: Angas mĩna 'of me', munū 'of us'; Hausa minì 'to/for me', manà 'to/for us'. While ma is still found as the preposition 'to' dialectally in Hausa, it is being replaced, particularly in the standard dialect, by wa before nouns. In fact, the possessive marker mài in Hausa, which means 'owner of' before nouns and is an agentive marker before verb phrases, was originally ma + yà , that is to say 'to/for him'. There is even some possible connection between the -ii agentive suffix and ya (the third person, masculine singular verb prefix). This verb marker is found throughout Afroasiatic (cf. Semitic y- , Berber i- , Hausa ya-). Further evidence of *ma as a preposition includes its ability to substitute for other prepositions, notably ke in Angas, kĕ and ma are both prepositions with overlapping meanings; kĕ 'of, with, by, from'; ma 'to, of'. Chadic languages often make use of prepositions as particles between the subject marker and the nominal form of the verb to show imperfective (cf. Hausa -nā and -kĕ , where na also means 'of'). In Angas, ma is the particle used with plural subject markers, while kĕ is used with singular subject markers. Since the third person subject markers may drop out before these particles, it is not surprising that kĕ has become re-interpreted as the third person singular subject marker in non-past tenses, while ma is the third person plural marker. This explains the development of ma as a pronoun in Chadic. Again, in Tera, another Chadic language, kə has become generalized as a subject marker, yet it is dropped when ma 'in order that' is used. Thus they occur in complementary distribution: ţem kə zur 'we (subject) fry'

becomes ma zur mi 'in-order-that fry we'.

Ma as a preposition would also explain the use of ma as a relative "pro-
noun" in some languages such as Berber. In Egyptian relative clauses were ex-
pressed by a preposition instead of a relative pronoun: sdmw-n-f meant 'the
voice heard by him' and thus 'the voice that he heard' secondarily. (cf. also
Gardiner [1957:196] non-verbal relative clauses with m-).

If ma developed from a preposition, we would expect to see infinitives
formed with ma- as well. In languages of the world infinitives are often
formed from a dative construction, as in English 'to do'. In Afroasiatic we
find the same structuring of infinitives. In Chadic, Mofu-Gudur has all infini-
tives formed with ma- , e.g. màtèkènèy 'to hide', màkèdèy 'to hit' (the y
is a Mofu-Gudur innovation according to Barreteau [1977]). In Mandara, another
Chadic language, am is a preposition meaning 'in, on, from, among'. When this
occurs before verbs it becomes an infinitive: ta vaha am palasa aa vacia 'they
spend-day in suffering of sun'; ta higa am shansa aa tare 'they are-pleased to
find them' [Fluckiger and Whaley 1981]. Bedauye, a Cushitic language, has "ac-
tion nouns" from verbs, such as màdar 'murder' from dir 'kill' [Roper 1928].
In Amharic, a Semitic language, all infinitives are formed with ma- [Wolde-
gabir 1972]. Arabic verbal nouns of some types of verbs are formed with m- ,
for example musaaʕ-ada(t) 'help(noun)' from saaʕada '(to) help'.

One reason that we don't find the ma- prefix to be very productive in Cu-
shitic may be due to the Cushitic SOV word order, which tends to have postposi-
tions rather than prepositions. The common ma negative in Cushitic may have
also discouraged use of a ma- prefix in the same contexts.

We have seen strikingly similar constructions in distantly-related languages,
and I think we can not only consider the ma- prefix as a Proto-Afroasiatic phe-
nomenon, but also the use of causative stems to form instruments and locatives:
*ma + causative nominal form of verb + i meaning 'by it causing to do' for in-
struments, and *ma + caus. nom. form + ə meaning (?) 'at the (instrument)',
for example 'at the stove' meaning 'kitchen'. The locative -ə here may be re-
lated to the Afroasiatic oblique (dative or accusative) case, and the adposi-
tions such as Chadic ə 'to' as well as the Berber distance demonstrative -a
suffixed to nouns. On the other hand, it may just be a feminine [Newman 1979]
or a plural marker [Prasse 1974]. We have also seen a u-stem for the agent
both in Chadic and in Semitic and, most importantly, an agentive -i that seems
well-established as Proto-Afroasiatic. *ma + u-stem + i could perhaps be
thought of as 'by him (ma ya) done' or 'owner of doing' (since we don't know
if the u-stem was passive or not).

From this discussion I think it becomes clear that we have to examine the
stems and suffixes of ma- words, rather than the ma- prefix alone, to deter-
mine the origins of these forms, and I hope this paper will stimulate further in-
vestigation of this construction.

REFERENCES

Abboud, P. et al. 1975. *Elementary Modern Standard Arabic*, 2 vols. Ann Arbor: University of Michigan Press.

Barreteau, D. 1977. "Le mofu-gudur, langue tchadique du Nord-Cameroun." *Africana Marburgensia* 10(1):3-33.

Cowan, J R. and R. G. Schuh. 1976. *Spoken Hausa*. Ithaca, N.Y.: Spoken Language Services, Inc.

Crum, W. E. 1939. *A Coptic Dictionary*. Oxford: Clarendon Press.

Fluckiger, C. and A. Whaley. 1981. "The uses of three prepositions in Mandara." *Africana Marburgensia*, Special Issue 5, pp. 4-16.

Foulkes, H. D. 1915. *Angass Manual*. London: Kegan Paul, Trench, Trubner & Co.

Gardiner, Sir A. 1957. *Egyptian Grammar*, 3rd edition. Oxford: Griffith Institute, Ashmolean Museum.

Hoffmann, C. 1963. *A Grammar of the Margi Language*. London: Oxford University Press.

Kraft, C. H. and A. H. M. Kirk-Greene. 1973. *Hausa*. Teach Yourself Books. New York: David McKay Co. Inc.

Moscati, S., A. Spitaler, E. Ullendorff and W. von Soden. 1964. *An Introduction to the Comparative Grammar of the Semitic Languages*. Wiesbaden: Otto Harrassowitz.

Newman, P. 1970. *A Grammar of Tera*. University of California Publications in Linguistics, 57. Berkeley: University of California Press.

Newman, P. 1979. "Explaining Hausa feminines." *Studies in African Linguistics* 10:197-226.

Newman, P. and R. M. Newman (eds.). 1977. *Modern Hausa-English Dictionary*. Ibadan: Oxford University Press.

Roper, E. M. 1928. *Tu Bedawie: an Elementary Handbook for the Use of Sudan Government Officials*. Hertford: Stephen Austin & Sons.

Wehr, H. 1971. *A Dictionary of Modern Written Arabic*, ed. by J M. Cowan. Ithaca, N.Y.: Spoken Language Services, Inc.

Woldegabir, S. 1972. *Amharic for Foreigners*. Addis Ababa.

INTONATION IN CHADIC LANGUAGES

William R. Leben
Stanford University

In this paper I describe certain aspects of intonation in three Chadic lan-
guages: Hausa, Tera, and Angas. For a starting point, I assume a model of in-
tonation based on some work done on Swedish at Lund (by Gosta Bruce and by Eva
Garding) and revamped along the lines of Pierrehumbert [1980].

The Lund model of Bruce [1977] factors a complex intonational gesture into
three separate components, the word accent, the sentence accent, and the termi-
nal juncture, all of which can be realized by varying the fundamental frequency,
as shown in (1):

(1) WORD   SENTENCE   TERMINAL
     ACCENT   ACCENT   JUNCTURE

     V C   'V C: V C
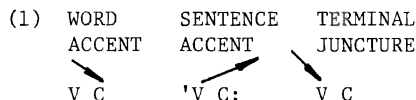
Pierrehumbert modifies this approach by resolving the dynamic tones repre-
sented by arrows in (1) into sequences of level tones. Pierrehumbert maintains
the separation of intonational gesture into three components, which she desig-
nates the pitch accent, the phrase accent, and the boundary tone. She uses
these different terms to distinguish, e.g. between the two utterances illustrat-
ed in (2):

(2) a.   bulldozer drivers union?

          L* [H-]   L%

    b.   bulldozer drivers union?

          L* [H-]   H%
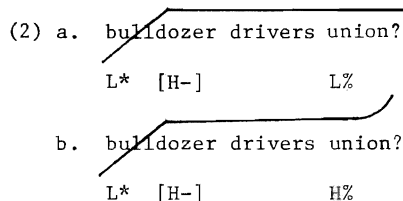
In both cases, the main stress of the phrase receives a pitch accent, which oth-
ers might have called a nuclear tone. In (2a), the pitch pattern is (ideally)
level after the rise of the pitch accent, while in the second example, there is
an additional rise at the end. The rise from a nuclear L is described in both
cases by positing a H phrase accent, indicated by H[-] in (2). The difference
between the final level pattern and the final rising pattern is captured by pos-
iting a low boundary tone (L%) at the end of (2a), which is interpreted as not
changing the value specified by the H[-] to its left, as compared with a high
boundary tone (H%) at the end of (2a), which is interpreted as creating a rise
from the value of H[-].

The question now arises as to whether we may also describe the behavior of
intonation in tone languages using this same sort of mechanism, even though it
was constructed for English, a stress language, and for Swedish, a pitch accent

language. I think that quite a number of different intonational effects in
Chadic languages can be described quite well in Pierrehumbert's framework.

1. Hausa

Newman and Newman [1981] mention three distinct prosodic gestures that can
be involved in Hausa questions: a Low tone, added to the rightmost High tone in
the utterance; length, added to the final syllable of the utterance if it is not
already long; and key raising, an upward shift in the pitch levels of H and L.
Note that these three gestures are quite distinct. For one thing, length is
added to the final *syllable*, while the Low tone is added to the final *high-
toned syllable*. More importantly, key raising can take place in questions that
don't receive a Low tone at all, as we will see directly.

In yes-no questions, the final H (and, sometimes, preceding H's) is raised,
and any following L is raised as well, including the interrogative L that is ob-
ligatory with yes-no questions. But in wh-questions, the interrogative L is
added only optionally. Furthermore, H raising applies only if interrogative L
has been added. Finally, this interrogative L or any other L is not subject to
raising by Newman and Newman's key raising rule. That is, only the types of in-
tonation illustrated in (3a,b) are found in wh-questions. The types illustrated
in (3c,d) are ill-formed:

(3) a. Wàa ya sàyi rìigaa?   b. Wàa ya sàyi rìigaa?

    c. *Wàa ya sàyi rìigaa?   d. *Wàa ya sàyi rìigaa?

(N.B. (3d) is acceptable as an echo question.)

By contrast, in yes-no questions only the intonation pattern parallel to (3d) is
well-formed, because these require an interrogative L, which must be raised.

The Newman and Newman analysis does not properly distinguish the behavior of
yes-no questions from wh-questions. And by tying the raising of H to the rais-
ing of L (through its notion of key raising), that analysis provides no way of
accounting for (3b), where the H but not the L has been raised.

To capture the facts just noted, we may redefine the interrogative L as a
phrase tone L[-] added after the rightmost H of an intonational phrase: this
tone is added optionally in wh-questions and obligatorily in yes-no questions.
H raising is conditioned by this interrogative L; thus, it fails to apply in wh-
questions like (3a), explaining the ill-formedness of (3c).

The raising of interrogative L must have a different source: let us attrib-
ute it to a H boundary tone added to the extreme right of the utterance. To ac-
count for the fact that this L raising effect appears only in yes-no questions,
we posit that this boundary tone is added only to these, not to wh-questions.

Thus, phrase tones and boundary tones both appear to function in Hausa intonation.

2. Tera

There is, to my knowledge, no literature on intonation in Tera. Newman's detailed study of the language does not offer any data on the subject. A study of Tera intonation might have some special interest, since Tera is a language with three phonemic tone levels, High, Mid, and Low. My elicitations from a single speaker in summer, 1983, give some initial idea of what Tera intonation is like. The overall picture is one of considerable variability in the intonational realization of tones. But this variability seems to correlate quite well with where the pauses are in an utterance. For example, compare what is encircled in the (a) and (b) tokens. (Mid tone is left unmarked. '/' marks pauses.)

(4)   bird   climbed   monkey yesterday

   ɗiː-ka wàː-lə -bi yiː-ɗi bi -ɗà   'the bird climbed the monkey
a. 295   x / x   220 |280/267| 267/300 x   yesterday'

b. 285   x / x   210 |260/270| 267/307 x

It seems in general that pauses set the boundaries at which many tonal processes take place. For example, downdrift in Tera does not seem to apply across pauses:

(5)   ɗiː -ka waː - tə- bi viː - ɗiː- bi - ɗa? 'did the bird climb the monkey
a. 170 175 /125   167 |175| x   x   x   x   yesterday?'

b. 167 170 160 145 |155| /165 165 / 180 120

The encircled numbers differ by 20 Hz, and the only relevant difference between them is the presence of a pause earlier in the string. (From this set of differences, we may derive the differences in the values of the L tones in the word wàːlə̀bi .)

Tera also provides motivation for another use of the boundary tone. Note that in the following utterances, the first of the two initial L tones in the sentence is considerably higher than the second:

(6) a.   elephant ate   greens   where?

   jù - wàn zəm lɔ̀ - ɣàː fi - nà?   'where did the elephant
   210   145/ 225/ 195 200/265 150   eat greens?'
   165   130/ x   130 130 175 130
                    -150
                                  in forest
b. jù - wàn wà zəm lɔ̀ - ɣɔ̀s sne ndɔ̀ - ɣu   'the elephant ate greens
   250   150 / 200 233 / 215 213 / 215 215   200   in the forest'
                    -150

This is perhaps a sign that utterances beginning with a sequence of L tones are assigned a H boundary tone, which would condition the raising of the first L.

3. Angas

In Angas, there is a rule which realizes a final L tone as rising. Burquest [1974] notes that this effect takes place at the end of the phonological sentence. An example from my data is:

(7) monkey   bit   nose   my   yesterday

    jó - lì   at   gə - zən   fə - na ndò - ndòn   'the monkey bit my nose
    180   130   /152   152 151   158 151   148   140   yesterday'
                                            -155

(8) I   beat hen   with stick

    ŋa   cək ki   shi   ndam   'I beat the hen with a stick'
    165 200/ 160 / 175   135
        -173   -165

Assuming that the use of boundary tones is reserved for syntactically defined clause boundaries, example (8) calls for an intonationally motivated nonlow tone other than a boundary tone. Thus, (8) provides prima facie evidence for the most innovative of Pierrehumbert's intonational features, the *phrase* tone, which would take the form of H[-] (or possible M[-]) in (8).

Similarly, an interposed phrase tone would explain the fact that in the following examples, where joli is followed by a brief pause, it ends with a higher pitch than when not followed by pause. The final syllable of joli is underlined in each case:

(9)   jó - lì at gə   zən fə - na ndò - ndòn 'the monkey bit my nose
   a. 190 154/165 165   165 165 158 159   148   yesterday'
               -130   -168
   b. 180 130 152 152   151 158 151 148   140
                                -155

(10)   shi kwàdàn do jó - lì at gə- zən fə- nɛ:?   'why did the monkey
   a. 176 165 163 176 190 160/167 176 173 175   185-   bite my nose?'
                 -180   150
   b. 166 158 159 171 185 150 165 158 167 168   177-
                                    142

4. Conclusion

I have shown that in a few examples from different Chadic languages, phrasal tones and boundary tones help to describe the facts. Also, even the limited data presented here illustrate a wider variety of intonational devices in tone languages than is normally recognized.

It might seem reasonable to think that if a tone language permitted too wide an array of intonational effects, this would interfere with the functional load to be maintained by the lexical tone system. But such a functionally based belief must be seriously defective, given that there are documented cases of neutralization of phonemic tone contrasts by intonational effects. A fitting exam-

ple is Newman and Newman's demonstration that the final lengthening in Hausa in-
terrogatives neutralizes the contrast between short and long vowels.

The present paper provides some evidence that tone languages permit intona-
tional modifications of pitch that are not dissimilar to those reported for non-
tonal languages.

REFERENCES

Bruce, G. 1977. *Swedish Word Accents in Sentence Perspective*. Travaux de
l'Institut de Linguistique de Lund. CWK Gleerup, Malmo.

Burquest, D. A. 1974. "Angas." In J. T. Bendor-Samuel (ed.), *Ten Nigerian
Tone Systems*, pp.   . Studies in Nigerian Languages, 4. Zaria:
Institute of Linguistics.

Newman, P., and R. M. Newman. 1981. "The question morpheme q in Hausa."
Afrika und Übersee, 64.

Pierrehumbert, J. B. 1980. "The Phonology and Phonetics of English Intonation."
Ph.D. dissertation, M.I.T.

RELATIVE CLAUSES IN AŊLƆ EWE

Marshall Lewis
Indiana University

1. Introduction

A detailed study of relative clause formation (RCF) in the Aŋlɔ dialect of Ewe yields results of both language-specific and typological interest. The investigation is pursued against a background of research in language universals as exemplified by Keenan and Comrie [1977] (henceforth, KC). The various NP positions defined by Ewe syntax are surveyed to determine what strategies (in the sense defined by KC) are utilized for relativizing NPs at each position. Among the conclusions which emerge are the following:

(a) The set of NP positions provided for in KC's universal inventory is insufficient. In particular, the facts of Ewe oblige us to recognize an additional position called "Concomitant Object" (CO), translatable as [with __]. CO is motivated as a distinct position in Ewe by various kinds of evidence, including behavior in RCF.

In addition, the position of Object of Comparison (OC) is justified as a distinct position, even though such an NP is the object of the (non-initial serial) verb wu 'exceed' (cf. KC's assertion that no separate OC position exists in Yoruba, but rather is just a sub-case of DO because the comparative construction is likewise serial verbal in nature).

(b) The inventory of RCF strategies provided for by KC (as well as that of Maxwell [1979] is too gross. The characterization of all markings of the RC-internal site associated with the head of the RC as "resumptive pronouns" is challenged. In Ewe, it is necessary to distinguish between truly pronominal marking, involving the third person singular and plural pronouns (3% and 3%%, respectively) agreeing with the head NP for number, and an invariant marker called "Relative /e/ " (R/E), having the form of 3% regardless of the number of the head NP.

(c) Some of the cross-linguistic generalizations based on KC's Noun Phrase Accessibility Hierarchy (NPAH) appear to be falsified by the Ewe RCF data. Claims about pronominal strategies in particular are called into question in the light of the two kinds of marking just mentioned, and the dubious pronominal status of the invariant one.

2. NP Positions in Ewe

Ewe is an SVO language with fixed constituent order, illustrated in (1):

(1) Kofi fia nu   ɖevi-a-wo   lɛ sukuu kplɛ dzídzɔ wu   Ama
    SU   DO IO   OP   CO   OC
    K.   show thing child-DEF-PL at school with joy   exceed A.

'Kofi taught the children at school more joyfully than Ama'

These positions are defined by the following diagnostic frames:

```
SU  [__ (AUX) VP]          OP  [P __]
DO  [V (HAB) __]           CO  [kplɛ __]
IO  [V (HAB) NP __]        OC  [VP [wu __]]
```

In addition there is the genitive position (GEN), with the frame [__ POSS NP], which has no fixed position in the sentence, as it may occur within any NP.

CO is the only one of the above positions not provided for in KC's universal inventory. (The position they call "Oblique Object" is an umbrella term which in Ewe amounts to the more specific Object of Preposition.) Furthermore, the word kplɛ which constitutes the defining environment for CO has been assigned by previous authors to the category Preposition (or "verbid"; see Ansre [1966a,b] and Clements [1973]). Evidence of various kinds, however, indicates that kplɛ should not be so analyzed, and that CO should be recognized as a distinct NP position.

The word kplɛ has two guises: (i) NP linker, as in avu kplɛ dadi 'dog and cat'. We shall not be concerned with this use. (ii) Introducer of what I will call "Concomitant Object" (CO), a clause-final NP which has affinities with the subject, in that the entity it denotes contributes to bringing about the action expressed by the verb. A human CO is interpreted as an ancillary agent; a concrete CO as an instrument; an abstract CO as an adverbial of manner. These possibilities are illustrated in (2):

(2) Kofi tu   xɔ-a   kplɛ Komla/ ba/ dzidzɔ
     K.   build house-DEF with K./   mud/ joy

     'Kofi built the house with Komal/ mud/ joy'

OPs never have affinities with subject, but rather express loci or goals of action. A syntactic correlate of this semantic difference involves an alternative construction for expressing such subject-affiliated NPs by means of a serial verb construction (SVC) wherein the object of one VP participates in the subjecthood of a following VP, as in (3):

(3) a. Kofi kplɔ Ama yi Togo (e)   'Kofi conducted Ama to Togo'
        K.   lead A.   go T.   S/E

    b. Aaron tsɔ sika wɔ   nyivi (e)   'Aaron used gold to make a calf'
        A.   take gold make calf S/E

    c. Moses do   dziku fo   kpɛ-a   (e) 'Moses angrily struck the rock'
        M.   kindle anger strike rock-DEF S/F

The final /e/ in (3a-c) is called "Serial /e/ " (S/E) by Lewis and Schwartz [1983], who investigate its syntax and semantics in detail. Just in case the DO of a VP in a SVC participates in the subjecthood of a following VP, the latter is (optionally) marked with S/E. (For a brief discussion of the relationship between CO and SVC, see Clements [1973:214-215].)

A number of arguments, some likewise based on S/E, also establish OC as an independent position, not a sub-case of DO, even though the comparative construction in Ewe is clearly a SVC, as illustrated in (4):

(4) Kofi a ɖu mɔlu (a) wu   Ama   'Kofi will eat more rice than Ama'
     K.   FUT eat rice FUT exceed A.

The diagnostic for verbhood is the ability to (optionally) take overt marking
for the tense/aspect shared by the VPs of a SVC, as pointed out in Ansre [1966a,
b].

     Some of the strongest evidence for CO and OC as distinct positions in Ewe is
provided by their behavior in RCF, to which we now turn.

3. RCF in Ewe

     In the terms of KC's taxonomy of RCF strategies, all Ewe RCs are postnomin-
al, i.e. the restricting clause follows the head. The canonical form is:

     [N   (ADJ)*(QNT) (SPEC)] si   ([(LNKR) NP])*   [S] (la)

     Head + Modifiers   REL NP(s) in apposi- Restricting
                                  tion with head   clause

All NPs can be relativized, with one exception: OCs compared to NPs other than
SU. The final /la/ occurs if the RC is non-final.

     KC also distinguish between so-called [+case] and [-case] strategies. The
former are characterized by the presence of some overt element which unambigu-
ously identifies the syntactic role of the head NP within the RC while the lat-
ter have no such marker. In Ewe, the primary RCF strategy (that used to rela-
tivize SU) as well as the dominant strategy (that used to relativize the most
positions) is [-case], as in (5):

(5) a.   amɛ   si [__ fiɛ agbalɛ̃-a]   'the person who bought the book'
         person REL   buy book-DEF

    b.   agbalɛ̃ si [Kofi fiɛ __]   'the book Kofi bought'
         book   REL K.   buy

    c.   amɛ   si [Kofi fiɛ agbalɛ̃-a na __] 'the person Kofi bought the book
         person REL K.   buy book-DEF for   for'

This is the orthodox strategy used to relativize SU, DO, and OP (5a, b, c respec-
tively); it is a possible strategy for every position except CO.

     As Dzameshie [1983] first observed, however, we sometimes find an RC-inter-
nal marker at the site corresponding to the head NP. He gives examples where a
morpheme having the form of 3% instantiates a [+case] strategy for relativiza-
tion of DO, OP, CO, and OC. He refers to this as "pronoun retention", but of-
fers no argument for a pronominal analysis and gives no conditions for this "re-
tention".

     An exploration of RCF at the various NP positions reveals that two different
phenomena need to be distinguished, but which were neutralized in Dzameshie's

small sample. Like virtually every other writer on RCF, Dzameshie fails to con-
sider the effect of varying the grammatical number of the head of the RC. When
we do so, we find that in some cases the RC-internal marker covaries for number
with the head, taking the form of 3% and 3%% accordingly; this is clearly pro-
nominalization. In other cases, however, the marker is invariant, always hav-
ing the form of 3%. I will refer to this invariant marker by the neutral term
"Relative /e/ " (R/E), deferring discussion of its categorial analysis.

Table I shows the possible RCF strategies available for the NP positions in
Ewe. Strategies of [+case] are either [+ #] (when the marker covaries for num-
ber with the head) or [- #] (when it is invariant). The entry +/- means that
both possibilities obtain.

	SU	DO	IO	IO$_1$	IO$_2$	OP	CO	OC
[case]	--	--	+/-	+/-	+/-	--	+	+/-
[#]			+/-(?)	--	+		--	--
Ex.	5a	5b	7c	7a	7b	5c	6a	6b

Table I. RCF strategies in Ewe, by NP position

R/E regularly occurs when RCF applies to CO and OC, obligatorily in the for-
mer case, optionally in the latter, as in (6a,b):

(6) a. amɛdzro si (wo) [Kofi yi Togo kpli -i/ *wo]
         stranger REL PL   K.   go T. with R/E 3%%

         'the stranger(s) Kofi went to Togo with'

    b. amɛdzro si (wo) [Kofi ɖu nu   wu   (-i/ *wo)]
                              eat thing exceed R/E 3%%

         'the stranger(s) Kofi ate more than'

(R/E, like 3%, is realized as [-i] after high vowels.) As Table I shows, CO
behaves uniquely in RCF and differently form OP in particular. Likewise, beha-
vior in RCF distinguishes OC from DO.

At all other positions except for IO, the [-case] strategy is used (5a-c).
The situation at IO is complex, depending on whether the IO is part of a SVC and,
if so, whether it belongs to the first or a subsequent VP. A [+case] strategy
is nearly always optional for RCF of IO. An IO from the first VP of a SVC will
be marked with R/E (see 7a); the IO site in a non-initial VP, on the other hand,
is marked with a pronoun (7b). In non-serial structures, there is considerable
inconsistency in the selection and evaluation of variable vs. invariant marker
(7c), but the pronoun seems basic.

(7) a. ŋutsu si (wo) [m-a   bia ga   (e/ *wo)][(a) fiɛ atikɛ]
         man   REL PL   1%-FUT ask money R/E 3%%   FUT buy medicine

         'the man/men I'll beg money from to buy medicine'

b. nubiala si wo [m-a   ɖo to fada] [(a) na   ga   (wo/ *e)]
    beggar REL PL 1%-FUT send ear priest FUT give money 3%% R/E

    'the beggars I'll obey the priest and give money to'

c. ŋutsu si wo [m-a na ga (?wo/?e)]

    'the men I'll give money to'

Thus, Dzameshie's examples of [+case] at CO and OC represent normal RCF strategy at those positions, while his [+case] DO and OP examples conflict with Table I. The occurrence of markers at these sites, however, is limited to cases where the relativized NP is possessor of another NP which precedes it in the RC, as in (8).

(8) a. amε   si [ε fε   avu ɖu-i]   'the person whose dog bit him'
        person REL 3% POSS dog eat-3%

    b. amε si wo [wo fε avu du wo/ *-i] 'the people whose dog bit them'
                PL 3%%   3%% R/E

As (8) shows, this marker covaries for number with its antecedent. This kind of pronominalization is independent of RCF and needn't be dealt with as a relativization strategy.

4. Status of R/E

The question remains whether R/E is to be analyzed as a pronoun. At stake is KC's treatment of all RC-internal [+case] markers as resumptive pronouns, as well as Dzameshie's language-specific analysis. The case for a pronominal status is three-pronged: (i) the marker has the form of 3%, including the same paradigm of alternations determined by the preceding vowel; (ii) it is found in a position normally occupied by an NP; (iii) it is interpretively associated with the head of the RC.

Against (i), it can be pointed out that there is at least one other morpheme homophonous with 3% which is clearly not a pronoun, viz. S/E. The force of (ii) and (iii) depends on what counts as defining properties of pronouns. The problem with a pronominal analysis is that in all other cases, Ewe pronouns agree in number with their antecedents. If R/E is not a pronoun, its invariance follows; if it is, however, the failure of some pronouns (but not others) to agree in number would be an apparently arbitrary fact in need of explanation.

Perhaps rather than choose categorically between a pronominal and non-pronominal analysis, it would be more profitable to regard R/E as a focus of linguistic change, i.e. a middle stage between a clear-cut resumptive pronoun and an invariant, clearly non-pronominal marker like S/E.

In any event, the typological implications are that KC's taxonomy of RCF strategies is too gross, blurring distinctions amongst [+case] strategies involving RC-internal markers. These might be expressed by a feature [±Pron] or, if markers like R/E are treated as pronouns, by a feature [± #]. The value of such features, of course, depends on the extent to which they afford a basis for further generalizations. As previous studies have almost uniformly neg-

lected to investigate plural heads of RC, the wider relevance of this aspect of the Ewe data remains to be assessed.

5. Hierarchy Constraints

KC's major generalization is the NPAH, SU > DO > IO > GEN > OBLO > OCOMP, which asserts a universal hierarchy of accessibility to RCF. On the basis of the NPAH, KC posit a number of additional "hierarchy constraints". Maxwell [1979] offers additional constraints of the same sort, based on an enriched taxonomy of RCF strategies (which does not, however, make provision for [±Pron] markers). The Ewe data as summarized in Table I appear to present counter-examples to one of KC's constraints and one of Maxwell's. According to KC, if a primary, i.e. subject-relativizing, strategy applies to a position on the NPAH, it applies to all higher positions. As the primary [-case] strategy applies to OC but not CO in Ewe, this claim is falsified. Maxwell states that if a pronoun strategy ([+case], RC-internal) applies to a position on the NPAH, it applies to all lower positions which are relativizable at all. As IO, CO, and OC use a pronoun strategy, but the intervening OP does not, Ewe fails to conform to this "universal". One way out of this is to treat OP as a sub-case of DO in Ewe, as suggested in Clements [1973](cf. Ansre [1966a,b]). In any case, Maxwell's claim is difficult to evaluate without knowing how the marker R/E should be regarded.

6. Conclusion

Previous typological work on RCF has proven very promising, but areas of serious neglect remain to be sedulously explored before we can feel quite comfortable in our generalizations. In particular, research needs to be pursued on (i) RCs with plural heads and possible effects on markers in [+case] strategies, (ii) RCF applied to verbal arguments in SVC, and (iii) behavior of the various NPs when subject to other kinds of extraction, e.g. focussing or WH-question formation.

REFERENCES

Ansre, G. 1966a. "The verbid: a caveat to 'serial verbs'." *Journal of West African Languages* 3(1):29-32.

Ansre, G. 1966b. "The grammatical units of Ewe." Unpublished PhD thesis, University of London.

Clements, G. N. 1973. "The verbal syntax of Ewe." Unpublished PhD thesis, University of London.

Dzameshie, A. 1983. "Relative clause formation in Ewe." Unpublished M.A. thesis, Indiana University.

Keenan, E. L. and B. L. Comrie. 1977. "Noun phrase accessibility and universal grammar." *Linguistic Inquiry* 8:63-99.

Lewis, M. and L. Schwartz. 1983. "Serial /e/ in Ewe." Paper presented at the 14th Conference on African Linguistics, Madison, Wisconsin, April 1983.

Maxwell, D. 1979. "Strategies of relativization and NP accessibility." *Language* 55:352-371.

ON CERTAIN NOMINAL PATTERNS IN TIGRINYA

Jean Lowenstamm
Université du Québec à Montréal

Jean-François Prunet
McGill University
and
Université du Québec à Montréal

1. Introduction

Major category items in Tigrinya are modelled according to morphological patterns specifying a given arrangement of vowels and consonants. We give below two examples, an adjectival pattern qʌtal and a nominal pattern qʌtalay .

(1) qʌtal: bʌraḥ   'bald'   qʌtalay: nʌgaday   'merchant'
            ṣʌmam   'deaf'   ?alamay   'weaver'

According to Leslau [1941], nouns fall into two categories, those that can be readily assigned to a pattern and a residual class, for which pattern membership is unclear. Interestingly, the items of the latter category are vowel-final. While it is conceivable that not every noun is an instantiation of a given pattern, we feel that the kind of exceptionality just mentioned is hardly accidental and can be reduced a great deal when the relevant phonological processes are identified and understood.

Having illustrated the workings of nominal patterns in Semitic, we can now address the main question of this paper, viz. does every noun belong to a given pattern? The evidence adduced to support a positive answer will have several theoretical consequences. First, it will illustrate the role of nominal patterns in Semitic morphology. Second, it will shed light on the nature of lexical representations. Third, it will uncover a phonological entity, viz. the light diphthong, the existence of which is predicted by the formal model adopted here.

2. The Theoretical Framework

This model of phonological representation assumes an autosegmental account of non-concatenative languages based on the one developed by McCarthy [1981]. Vocalic and consonantal segments are represented on separate, quasi-autonomous, tiers and are viewed as autosegments which link to positions on the skeletal tier. Our model departs from McCarthy's in that it does not make use of a CV tier. Rather, it relies on the existence of a skeletal tier consisting of skeletal points as in Kaye & Lowenstamm [in press] and, in a somewhat different sense, Hyman [1983].

With respect to the general organization of the phonological component we adopt a parametric approach. This approach relies on a few basic and unordered operations comparable to move-α in syntax. The characterization of phonological processes must, consequently, be derived from principles of Universal Grammar within which language-specific grammars may select parameters. It follows from this approach that (ordered) phonological rules must be absent from grammars.

Before proceeding with our proposal, it may be necessary to provide the reader with a few facts of Tigrinya regarding syllable structure and phonological processes.
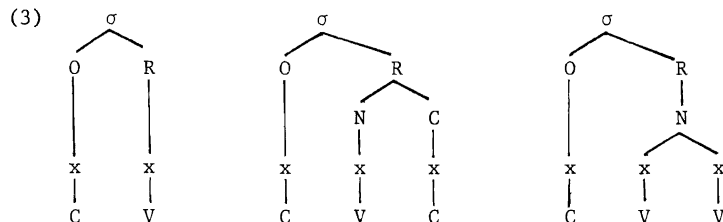
3. Background on Tigrinya

The syllable structure of Tigrinya is best described as falling under two distinct categories, word-internal structure and word-final structure. The analysis presented follows that of Charette [1985] for Wolof, a language which exhibits the same syllable structure.

The various types of word-internal syllables encountered are shown in (2a) whereas imaginable but non-occurring ones are given in (2b). They are given with the CV notation for the sake of clarity.

(2) a.   CV   b.   *CC...
         CVC   *CVCC
         CVV   *CVVC

From this distribution we may conclude that the possible word-internal structures are those of (3).

(3)

$$
\begin{array}{ccc}
\sigma & \sigma & \sigma \\
\end{array}
$$

```
      σ                    σ                      σ
     / \                  / \                    / \
    O   R                O   R                  O   R
    |   |                |   /\                 |   |
    |   |                |  N  C                |   N
    |   |                |  |  |                |  / \
    x   x                x  x  x                x  x  x
    |   |                |  |  |                |  |  |
    C   V                C  V  C                C  V  V
```

The impossible structures of (2b) are ruled out by the fact that Onsets and Codas may not branch and the Prosodic Government Principle mentioned in Lowenstamm and Kaye [in press].

Word-finally the types of sequences, exemplified in (4a), are slightly different. Non-occurring but imaginable sequences are given in (5b). (5c) will be explained later.

(4) a.   CV   b.   *CC...   c.   C $\left[\begin{array}{c} V \\ VV \\ VV \\ V \end{array}\right.$
         CVC   *CVCC   C
         CVV   C $\left. \begin{array}{c} \\ \\ C \\ C \end{array}\right] \rightarrow C\ [_N V(V)]\ (C)$
         CVVC   C
                                           N

Notice that (4a) exhibits a natural class, i.e. the presence of an optionally branching Nucleus. This generalization is only possible in a model recognizing syllable-internal constituents. We agree with Charette's interpretation of (4): (1) the optional, word-final consonant is dominated by the Appendix (a non-branching, word-final position), and (2) only open syllables appear

word-finally.

4. gʌza vs. fʌrʌs

4.1. Suffixation. Consider the following paradigms obtained by adding pronominal suffixes to two nouns, [gʌza] 'house' and [fʌrʌs] 'horse'.

(5) a. fʌrʌs   b. gʌza
       fʌrʌsu   gʌzʔu   *gʌzaʔu   'his...'
       fʌrʌsa   gʌzʔa   *gʌzaʔa   'her...'

The nature of the syncope observed in (5b) need not concern us here. For a discussion of this phenomenon, see Lowenstamm and Prunet [in preparation].

Let us see how such facts would be accounted for in a more traditional approach.

4.2. Derivations. In a SPE type framework, the most likely characterization of the facts of (5) would be a derivation using ordered rules as in (6):

(6)   Underlying representation   /gʌza + u/   /fʌrʌs + u/
       Hiatus Breaking   gʌzaʔu   -------
       Syncope   gʌzʔu   -------

       Output   [gʌzʔu]   [fʌrʌsu]

As we underlined in 2, our framework does not recognize the existence of phonological rules. It follows that, even if the "rules" of Syncope and Hiatus Breaking postulated for (6) could be derived from principles and parameters, our framework does not allow for the crucial ordering of (6). We are thus forced to look for an alternative.

4.3. An alternative account. Let us postulate that [gʌza] and [fʌrʌs] have segmentally parallel underlying representations. More specifically, let us assume that the vocalic patterns of the two words are underlyingly identical, viz. they both consist of a single vocalic autosegment /ʌ/ , and that the two words have triliteral roots as displayed in (7).
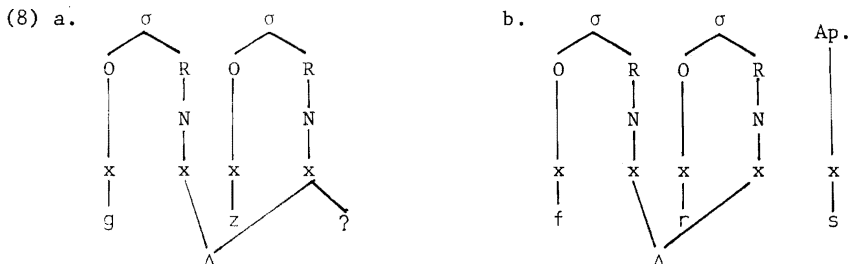
(7)   /gʌzʌʔ/   →   [gʌza]   root: √gzʔ

     /fʌrʌs/   →   [fʌrʌs]   root: √frs

Thus, the surface [a] of [gʌza] must be interpreted as resulting from an underlying sequence /ʌ+ʔ/ (A related, although distinct, process of vowel-lowering can be seen at work in the reverse sequence, viz. /ʔ +ʌ/ → [ʔa] as 'weaver' in (1).)

The question now arises whether the parallelism between /gʌzʌʔ/ , surface [gʌza] , and /fʌrʌs/ , surface [fʌrʌs] , extends beyond the fact that both roots are triliteral. It should be noted here that there is no logical necessity for such an extended parallelism to obtain. In fact, it is a characteristic of non-concatenative morphology that root similarity, or indeed identity,
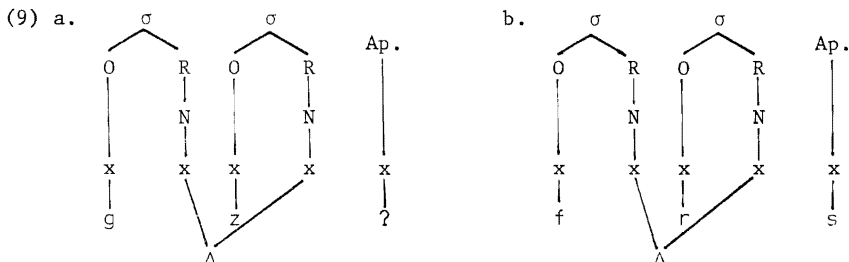
need not be matched by morphological pattern identity.

4.4. <u>Two logical possibilities</u>. Two logical possibilities suggest themselves:
[gʌza] and [fʌrʌs] are instantiations of the same nominal pattern or they
are not. Let us first consider the latter possibility, represented in (8) be-
low.

(8) a.

```
        σ              σ                        σ              σ
      /   \          /   \              b.    /   \          /   \            Ap.
     O     R        O     R                  O     R        O     R            |
     |     |        |     |                  |     |        |     |
     |     N        |     N                  |     N        |     N            |
     |     |        |     |                  |     |        |     |            |
     x     x        x     x                  x     x        x     x            x
     |      \      /       \                 |      \      /                   |
     g       \    z         ?                f       \    r                    s
              \  /                                    \  /
               ʌ                                       ʌ
```

Under the analysis of (8), [gʌza] and [fʌrʌs] are morphologically unrelated
and nothing more is to be said. However, such undue reverence for phonetic
dissimilarity entails the loss of an important generalization, as we will see.

    Under the alternative represented in (9), both roots are associated to the
same prosodic configuration, $_\sigma$[xx] $_\sigma$[xx] x, i.e. two open syllables fol-
lowed by an appendix.

(9) a.

```
        σ              σ                        σ              σ
      /   \          /   \         Ap.   b.   /   \          /   \         Ap.
     O     R        O     R         |        O     R        O     R         |
     |     |        |     |         |        |     |        |     |         |
     |     N        |     N         |        |     N        |     N         |
     |     |        |     |         |        |     |        |     |         |
     x     x        x     x         x        x     x        x     x         x
     |      \      /                |        |      \      /                |
     g       \    z                 ?        f       \    r                 s
              \  /                                    \  /
               ʌ                                       ʌ
```

4.5. <u>Linking</u>. When linking takes place, the final glottal stop of [gʌza]
will be re-associated as shown in (10a), resulting in the formation of a com-
plex segment (ʌ?), ultimately interpreted as ə (see example on next page).
A study of word final configurations reveals that glides do not appear in Ap-
pendix position. Other consonants are not subject to this distributional re-
striction. Accordingly, they appear after long *or* short vowels word-finally.
On the other hand, glides (and gutturals) do not appear after long vowels,
clearly showing that they are barred from the Appendix. This distributional
observation constitutes the first piece of evidence motivating the spreading
(cum delinking) of ? in (10a).

    In Tigrinya, ungeminated /b, k, q/ spirantize to become [b̲, k̲, q̲] in

(10) a.
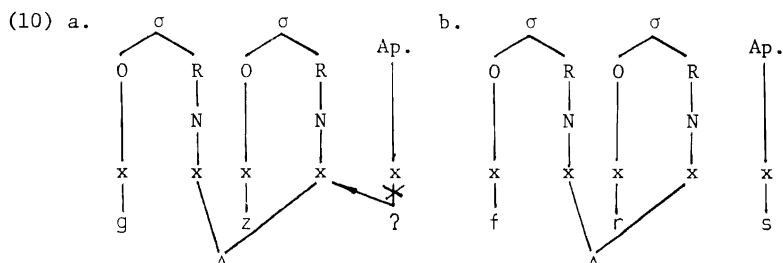
post nuclear position. Interestingly, spirantization is optional in the follow-
ing cases:

(11) bʌlaʕku   or   bʌlaʕku   'I ate'
      sʌraḫka   or   saraḫka   'you worked'
      nay bɪʕray k̲ɪsad   or   nay bɪʕray kɪsad   'the ox's neck'
      kɪdawntⁱ   kɪdawɪntⁱ   'clothes'

This optional character of spirantization is consistent with the ambiguous
status of glides (and gutturals) with respect to which constituent of the Rime
they link to. In the first set of cases, the glide (or guttural) is analyzed
as forming a diphthong with the preceding vowel, i.e. both are under N. (For
an important discussion of diphthongs, see Newman & Bello [1981]. Accordingly,
k finds itself in post nuclear position and spirantizes. Alternatively, when
the glide is analyzed as a coda, k no longer stands in post nuclear position
and fails to undergo spirantization.

    Additional evidence for this ambiguous analysis of glides can be gathered
from the systematic option in pronouncing sequences of three consonants when
the first is a glide. This option is illustrated in (12).

(12) kɪdawntⁱ   or   kɪdawɪntⁱ   'clothes'

In the first case, the glide is analyzed as forming part of a diphthong, while
in the second case, it is analyzed as a coda. A sequence of a coda followed
by two consonants is impermissible (see (2)), and an epenthetic vowel appears
between the first and the second member of the offending sequence.

    Of course, the possibility that a glide may appear in coda position is ir-
relevant in the case of the word-final glide of forms like [gʌza] , since all
words of Tigrinya end in open syllables (possibly followed by an appendix).
The important point for our argument is that they be legitimately analyzable
as nuclear elements.

5. Conclusion

    In conclusion, the arguments presented above allow us to achieve the fol-
lowing: if [gʌza] and [fʌrʌs] exemplified different noun patterns, say
gʌta and gʌtʌl , respectively, we could not explain (13).

(13) 1.   every instance of gʌta is demonstrably glide-final

     2.   no instance of gʌtʌl is glide-final.

On the other hand, we have shown that only one pattern, qʌtʌl is involved in
the cases discussed above and the facts of (13) are a mere consequence of our
analysis. If this analysis is correct, we predict that for any surface pattern
of type CʌCʌCʌC, there will be a corresponding surface pattern such as CʌCʌCa.
Indeed, upon suffixation, mʌlʌkʌt 'trumpet' and kʌtʌma 'city' behave like
fʌrʌs and gʌza , respectively:

(14)   mʌlʌk̲ʌt   kʌtʌma

       mʌlʌk̲ʌtu   kʌtʌmʔu   *kʌtʌmaʔu   'his...'
       mʌlʌk̲ʌta   kʌtʌmʔa   *kʌtʌmaʔa   'her...'

REFERENCES

Charette, M. 1985. "The appendix in Parametric Phonology." This volume, pp.
    49-53.

Hyman, L. M. 1983. "A theory of phonological weight." ms., University of
    Southern California.

Kaye, J. D. & J. Lowenstamm. in press. "De la syllabicité." In F. Dell, D.
    Hirst and J. &. Vergnaud (eds.), *Forme sonore du langage: structure des
    représentations en phonologie*. Paris: Hermann.

Kenstowicz, M. 1982. "Gemination and Spirantization in Tigrinya." *Studies
    in the Linguistic Sciences* 12:1.

Leslau, W. 1941. *Documents Tigrigna*. Paris: Klincksieck.

Lowenstamm, J. and J. D. Kaye. in press. "Compensatory lengthening in Tiber-
    ian Hebrew: theoretical consequences." In E. Sezer and L. Wetzels
    (eds.), *Studies in Compensatory Lengthening*. Dordrecht: Foris.

Lowenstamm, J. and J. F. Prunet. forthcoming. "On reducing exceptionality in
    Semitic morphology."

Lowenstamm, J. and J. F. Prunet. in preparation. " ʕasa , gʌza , gʷasa ,
    çɪrgiya : on projecting the phonology of a language from its vowel
    system."

McCarthy, J. 1981. "A prosodic theory of nonconcatenative morphology."
    Linguistic Inquiry 12:373-418.

Newman, P. and A-S Bello. 1981. "Hausa diphthongs." *Lingua* 55:101-121.

THE IDEOPHONE AS A SYNTACTIC CATEGORY
IN THE SOUTHERN BANTU LANGUAGES

C. T. D. Marivate
University of South Africa

0. Introduction

Doke [1935:118] defines the ideophone as follows: "The ideophone is in
Bantu a special part of speech, resembling to a certain extent in function the
adverb, together with which it is classified as a descriptive." The objective
in this paper is to demonstrate that the ideophone in Bantu is predicative in
function and should rather be classified with the verb as a non-verb verbal.
Tsonga, one of the languages of Doke's [1954:23] South-eastern Zone will be
used to demonstrate the syntactic predicative function of the ideophone.

1. The Syntax of the Ideophone as Compared with that of the Verb in the Deep Structure

Compare the following sentences (see end of paper for list of abbrevia-
tions):

(1)   homu / yi nghena / ematini   lit. the ox/it enters/in the water
      Subj / sc   v   / loc. n.
            /   VP   /   'the ox enters into the water'

(2)   homu (yi ri   PHOMU), ematini   lit. the ox (it "does" PLUNGE) in the water
      Subj (sc aux v.   id) loc. n.
           (IP   )   'the ox PLUNGES into the water'

Note that the verb /yi nghena/ and the Ideophonic phrase (yi ri PHOMU) per-
form one and the same function, namely, predication. Semantically, they also
convey the same idea, that of entering into the water. However, the ideophone
expresses a picturesque idea of entering into the water by carrying a plus-fac-
tor, namely, that of PLUNGING. Another semantic plus-factor carried by the id-
eophone is its suggestiveness of the sound one hears when the PLUNGING takes
place.

Both /yi nghena/ and (yi ri PHOMU) are syntactic categories belonging
to the same class in that they are interchangeable. Culicover [1976:13] de-
fines a syntactic category as "... a group of words or sequences of words in a
given language that can replace one another in any sentence of the language
whatsoever without affecting grammaticality." The Ideophonic Phrase does ex-
actly that in this instance.

Note that the constituent elements of the verb predicate in sentence (1)
above are /sc + v/, while those of the Ideophone predicate in sentence (2) are
(sc + v + id). I will use Culicover's theory again to explain this phenomenon.
Culicover [1976:13] says "... if a syntactic category contains single words on-
ly, it is a lexical category. When a syntactic category contains sequences of

words, it is a phrase category." Using Culicover's theory to interpret this phenomenon, the predicate in sentence (1) comprises a lexical category, namely, the verb /-ngena/ , while the predicate in sentence (2) comprises a phrase category namely (v + id), i.e. (-ri + PHOMU) .

It should be noted that the syntax of the ideophone is closely linked with the verb stem -ri (Tsonga/Venda), -re (Sotho), -thi (Nguni, i.e. Zulu, Xhosa, Swazi). The crux of the matter lies in defining the role of this verb stem in the context of the ideophone. Note that the verb stem -ri can occur as a *normal verb* as well as an *auxiliary verb*.

2. The Verb Stem -ri as Normal Verb and as Auxiliary Verb

Where the verb stem -ri is used semantically to mean 'say', it is a normal verb, as in the following example:

(3) Magezi u ri : 'tana!'   lit. Magezi he says: 'come!'
     Subj sc v   v
                                'Magezi says: "Come!"'

When it is used with ideophones, -ri is an auxiliary verb. In this context, it does not mean 'say' as is the case when used as a normal verb. In the context of the ideophone, it has an idiomatic meaning. It expresses 'to do', 'to act', signifying that the subject 'does' or 'acts' or 'is in a stative situation' implied by the ideophone.

3. The Concept of the Ideophonic Phrase

The verb stem -ri in the context of the ideophone in Bantu languages should be regarded as an auxiliary verb, and not as a normal verb. The auxiliary verb stem -ri plus the *ideophone* constitute a phrasal syntactic category capable of acting as a predicate, just like a normal verb, which is a lexical category. I have decided to call this syntactic construction the *Ideophonic Phrase*, abbreviated as IP. The IP is the underlying structure of the syntax of the ideophone.

4. The Internal Structure of the IP

The IP as a syntactic category consists of two constituents, namely, the *auxiliary* and the *ideophone*. Each of these constituents has its morphology and function in the IP.

4.1. The morphology and function of the auxiliary of the IP. The basic constituent of the auxiliary of the IP is the verb stem -ri with its semantic import 'do' or 'act' in the context of the IP. The basic function of the auxiliary is to put the IP in the different moods, tenses, and conjugations. Consequently, its morphology is grammatical.

Taking the main mood, viz. the Indicative Mood, as basis for illustrative purposes, the basic constituent morphemes of the auxiliary of the IP and their order is almost the same in all of the Bantu languages, namely sc + aux v. Hence

IP = (sc + aux v. + id)

Where the IP takes an object, the order of the constituent morphemes is
sc + oc + aux v., hence

$$IP = (sc + oc + aux\ v. + id)$$

For example:

(4)   nguni (zu) ínkômó (í - mú - thê BHUXE), ísísu, ngó - phôndo
              Subj   (sc - oc - aux v. ID), obj,   ínstr mo - NP

      lit. the ox (it him 'has done' BUMP), the stomach, with/by the horn

      'the ox BUMPED him on the stomach with the horn'

Note that the position of the oc is the same as in the case of the normal VP
which takes an object, namely /sc + oc + v/. Note the following Tsonga example:

(5)   gámá (rí ri   xí BVÚU), xikúkwáná
      Subj (sc aux v. oc id),   obj
           (IP   )

      lit. the eagle (it 'does' it SNATCH), the chicken

      'the eagle SNATCHES the chicken'

However, where Tsonga predicates with a VP which takes an object, the order of
morphemes is the same as the rest of the Bantu languages, namely, /sc + oc + v/.

4.2. The morphology and function of the ideophone in the IP. The ideophone
root in most Bantu languages is, to a large extent, indeclinable. In whatever
tense, mood or conjugation the IP may be, the ideophone generally retains its
basic morphological shape. It is only the auxiliary which changes and/or ac-
commodates other auxiliary morphemes in the process. The function of the ideo-
phone is to supply the IP with its semantic import. It is the ideophone which
determines the transitivity or otherwise of the IP. Some ideophones bear a
transitive feature, in which case the IP may take an object. Others bear the
intransitive feature and influence the IP accordingly. For example, in (5)
above, the ideophone BVUU! (of SNATCHING) has a transitive feature. On the other
hand, BULU! (of BURSTING open) is an example of an ideophone with an intran-
sitive feature as in the following example sentence:

(6)   tandzá (rí (ri)   BÚLU)   lit. the egg (it 'acts' BURST)
      Subj (sc aux v. id)
           (IP   )   'the egg BURSTS OPEN'

5. Deletion of the Auxiliary in Surface Realisations

    A very important and interesting factor about the auxiliary of the IP is
that the whole auxiliary, together with all its constituent parts may be delet-
ed in surface realisations, leaving the ideophone so to say to predicate alone
in such instances. Hence, example sentence (2) above with the auxiliary of the
IP deleted will take the following form:

(7) homu   (- PHÓMU), ematini   lit. the ox (- PLUNGE), into the water
     Subj   (-   id), loc. n.   'the ox PLUNGES into the water'

6. The IP in the Different Moods, Tense, etc.

Unfortunately the scope of this paper does not permit the demonstration of
the IP in the different moods, tenses, passive relationships, etc. Suffice it
to say that the IP is capable of performing all the predicative functions, just
like the verb.

7. IP and VP Governed by the Same Grammatical Subject

The IP and the verb may be used simultaneously, being syntactically govern-
ed by the same grammatical subject. In such instances the IP generally follows
the VP, but not necessarily so. Note the following examples:

(8)   1st Pred.   2nd Pred.
     mpfûndla / wâ tlúlá/, (wú ri   TLÚKWA) lit. the hare/it jumps/, (it
     Subj   / sc   v /, (sc aux v.   id)   'does' JUMP)
              / VP   /, (IP   )   'the hare JUMPS'

(9) mpfûndla (wû ló   (ri)   TLÚKWA), /wû tlúlá/
     Subj   (sc stv asp mo aux v.   id), /sc   v /
              (IP   ) / VP   /

     lit. the hare (it has simply 'done' JUMP) /it jump/

     'the hare simply JUMPED'

The first predicate in most cases is in the Indicative Mood, but it may al-
so be in the Potential Mood. The second predicate, i.e. the one following, may
either be in the Indicative or Dependent Mood, depending on the intention of
the speaker. This syntactic phenomenon is one of the grammatical characteris-
tics of Bantu languages. In such usages, the VP serves to state the action
while the IP serves to "exemplify" or "dramatise" the action suggested by the
VP. The simultaneous use of the VP and the IP lends emphasis to the utterance.
In such cases, the deletion of the auxiliary of the IP in surface realisations
leaves the two, namely the verb and the ideophone, to appear to occur in the
same clause. Hence sentence (8) may appear in the following form:

(10) mpfûndla /wâ tlúlá/, (- TLUKWA!)
              /sc   v / (id   )
              / VP   / (IP   )

Such surface realisations may have acted as the basis for regarding the id-
eophone as an adverb since with deletions, the ideophone normally occupies the
position occupied by the adverb. However, the deep structure syntax proves the
contrary.

8. <u>Conclusion</u>

   In the underlying structure, the ideophone is incorporated in the syntax of
the language by means of the IP whose basic function is predication. Conse-
quently, the ideophone whose sole function is to appear in the IP, should be
classified with the verb as a non-verb verbal.

Abbreviations

asp	:	aspect	obj	:	object
aux	:	auxiliary	oc	:	object concord
IP	:	Ideophonic Phrase	sc	:	subject concord
id	:	ideophone	stv	:	stative
instr	:	instrumental	Subj	:	subject
loc	:	locative	v	:	verb
mo	:	morpheme	VP	:	Verb Phrase
n	:	noun	Zu	:	Zulu
NP	:	Noun Phrase			

REFERENCES

Culicover, P. W. 1976. *Syntax*. New York: Academic Press.

Doke, C. M. 1935. *Bantu Linguistic Terminology*. London: Longmans, Green & Co.

Doke, C. M. 1954. *The Sountern Bantu Languages*. London: Oxford University
     Press.

VOWEL HARMONY IN KIPSIGIS

Bruce Martin
University of Illinois

In this paper, I will examine the vowel harmony of Kipsigis, or Kalenjin, a Nilotic language of western Kenya. All of the data presented in this paper is from the speech of Erastus K. Cheruiyot, from the vicinity of Kericho, Kenya.

Kipsigis has a 20 vowel system consisting of 5 tense and 5 lax vowels, any of which may be either long or short, just as described by Hall et al. in their discussion of African vowel harmony systems [1974]. For ease in typing, I will use lower-case letters for tense vowels, and upper-case for lax:

tense:	i	u	lax:	I	U
	e	o		E	O
		a			A

Although Kipsigis is tonal, I will not mark the tones, since they are irrelevant to the discussion.

Most of the examples to be given below contain mainly non-high vowels. This is not because of any skewing of the distribution of high and non-high vowels in Kipsigis, but because I found the tense/lax distinction far easier to hear for low vowels. Without going into a phonetic discussion of the distinction I have informally characterized above as tense/lax, I will refer to the relevant feature as ±ATR, after Hall et al. [1974] and others.

Most words in Kipsigis have either all tense or all lax vowels. None of the many verb or noun stems collected contained both tense and lax vowels. The suffixes collected fall into one of four groups. The first two are shown in (1a-b).

(1) a. pAAñ-AAn   'that walk'   b. sal-uut   'a paint job' (cf. sAI-O)
        tyaañ-aan   'that beast'   maas-uut   'a hitting spot'
        sAI-O   'painting'   sal-is-yo   'some act of painting'
        sab-o   'recovering'   am-is-yo   'some act of eating'
        pAAn-dA   'the trip'   maas-e   'he is hitting' (cf.   kA-mAAs
        kwan-da   'the woman'   'he hit')

                                        keer-e   'he is seeing'

The harmony exhibited by the suffixes in these two groups presents few problems for analysis. In (1a), the tenseness of the suffix vowel is determined by the tenseness of the stem. In (1b), the entire word is tense, whether or not the stem is underlyingly tense. There is no corresponding group of lax suffixes which cause the stems to become invariably lax. So this is what has been termed a "dominant-recessive" vowel harmony system, where the presence of a vowel with the dominant feature, here +ATR, or tense, causes other vowels in the word to assume that same dominant feature, here to become tense. The re-

cessive feature, -ATR or lax, surfaces only when no vowel in the word has the
dominant feature underlyingly.

In the lexical phonology framework, as proposed by Kiparsky, Mohanan, Pul-
leyblank, and others, this sort of vowel harmony system may be analysed by the
use of underspecification of certain features at certain lexical levels and de-
fault rules to fill in the unspecified features. The only feature which may be
specified underlyingly in Kipsigis for tongue root advancement is +ATR, or
tense. The vowels of the morphemes which show alternation in (1) are unspeci-
fied for tongue root advancement. The vowel harmony rule would then spread the
feature +ATR to the unspecified vowels in the word. A default rule would then
assign the feature -ATR to all vowels still unspecified for tongue root ad-
vancement after the application of vowel harmony.

For example, the two vowels in sAI-O 'painting' in (1a) would be unspeci-
fied as to tongue root advancement until they were specified as -ATR by the de-
fault rule. The suffix -uu† of saI-uu† 'a paint job' in (1b) would be
specified lexically as +ATR. Vowel harmony (spread +ATR) would then spread the
+ATR specification to the rest of the word, yielding saI-uu† . The default
rule would of course not apply.

This analysis using underspecification has the advantage over a fully spec-
ified autosegmental analysis of not requiring a rule deleting the feature -ATR
in the presence of a +ATR vowel in the same word, and the advantage over a met-
rical analysis a la Halle and Vergnaud of not requiring multiple specification
of the same feature.

The data from the prefixes found in Kipsigis may be accounted for in the
same fashion. All prefixes, with one exception to be noted below, harmonize
with the rest of the word. Whether the stem is invariably tense or tense be-
cause of a tense suffix, the prefix will be tense. Elsewhere, the prefix will
be lax.

(2)   kEE-mAs   'to hit'   kIp-sIr-I† 'the writing utensil'
      kee-geer   'to see'   kib-am-i†   'the eating utensil'
      kEE-gEr   'to shut'   am-muga   'which lid?'
      a-geer-e   'I'm seeing'   Aŋ-gOk   'which chicken?'
      o-geer-e   'you (pl.) are seeing'   a-ger-e   'I'm shutting'
      o-ger-e   'you (pl.) are shutting'

All of the prefixes in (2) may then be analysed as unspecified for tongue
root advancement. For example, the first person prefix A in kA-A-gEr 'I
just shut' would be unspecified for tongue root advancement, as would the re-
cent past prefix kA- and the stem gEr 'shut' since this verb surfaces with
lax vowels as would be specified by the default rule. All of the vowels in
a-ger-e 'I am shutting' are tense because the continuous suffix -e is under-
lyingly tense, and vowel harmony will spread this specification to the rest of
the word.

The other suffixes alluded to above require further analysis. In these two
groups of suffixes, the tense-vowelled suffixes do *not* cause the lax-vowelled
stems to become tense, and the lax-vowelled suffixes do not become tense after

tense stems. These are the suffixes underlined in (3) I will refer to these underlined suffixes as stratum 2 suffixes and to the suffixes as seen in (1) as stratum 1 suffixes. As far as I know, the suffixes underlined in (3) are the only stratum 2 suffixes in Kipsigis.

(3) ŋAl-Ej-aan   'those words'   tyaan-if-aan   'those beasts'
     kwEEs-lj-aan   'those goats'   kwEEs-tA-ñUn   'my goat'
     kwEEs-tA-ŋuŋ   'your goat'   kwEEs-tA-ŋwaŋ   'you (pl.) goat'
     kwEEs-tA-ñaan   'our goat'   kwEEs-tA-ñIn   'his goat'
     kwEEs-tA-ñIwAAn 'their goat'   kaawe-ñUn   'my bone'
     kaawe-ŋuŋ   'your bone'   kaawe-ñIn   'his bone'
     kaawe-ñaan   'our bone'   kaawe-ŋwaŋ   'your (pl.) bone'
     kaawe-ñIwAAn   'their bone'   sota-ni   'this calabash'
     sota-ni-gAAn   'this calabash of today'
     sota-ni-gOOñE   'this calabash of yesterday'
     sota-ni-glIñE   'this calabash of previously'

Stratum 2 suffixes never cause a change in tongue root advancement of any stratum 1 suffixes in addition to not affecting the tongue root advancement of stem vowels. This can be seen in (4). Stratum 2 suffixes are underlined throughout.

(4) kwEEs-AAñ-aan   'that goat of ours'   sAl-O-ñaan   'our painting'

     tyaan-aañ-lwAAn   'that their beast'   sab-o-ñlwAAn   'their recovery'

As indicated by my reference to these apparently exceptional suffixes as stratum 2 suffixes, I will analyze these examples by making use of the stratification of morphological operations and rules of lexical phonology. The basic idea is that different morphological operations are assigned to different strata, and the phonological rules are marked as applying to the output of morphological operations in different strata or sets of strata. So in Kipsigis, those suffixes I have referred to as stratum 1 suffixes will be assigned to stratum 1, and the vowel harmony rule will apply in stratum 1. The stratum 2 suffixes will be assigned in stratum 2, where the vowel harmony rule will not apply. The fact that stratum 1 suffixes never occur after stratum 2 suffixes is also consistent with this analysis.

The prefix ma- , meaning 'bad' or 'too many' when prefixed to a noun, is almost invariably tense-vowelled, yet the vowels of the nouns to which it is prefixed may be either tense or lax.

(5) matAAbA   'bad dish'   tAAbA   'dish'

     makwaanin 'too many women' kwaanin   'women'

This apparently exceptional behavior is also easily explained by the assignment of this prefix to stratum 2, to which vowel harmony is not applicable. The prefixes in (2) above, which undergo vowel harmony, would then be assigned to stratum 1, where vowel harmony could apply.

If a stratum 2 suffix is followed by another stratum 2 suffix and is the
penultimate suffix, it will assume the category of the following (ultimate) suf-
fix. If a stratum 2 suffix is followed by two other stratum 2 suffixes, it
will be unaffected. Examples can be seen in (6).

(6)   so†a-ni-<u>gAAñ-lwAAn</u>   'their calabash of today'

      so†a-ni-<u>gaañ-aan</u>   'our calabash of today'

      rOOb-l-<u>gAAñ-lwAAn</u>   'their rain of today'

      rOOb-l-<u>gaañ-aan</u>   'our rain of today'

      OOrtlnw-Ej-<u>aan-gAA-jlwAAk</u>   'those their roads of today'

      OOrtlnw-Ej-<u>aan-gaa-jaak</u>   'those our roads of today'

So here we have a second vowel harmony process which differs from the first
in three significant ways. First, it applies only to vowels in stratum 2 suf-
fixes followed by stratum 2 suffixes. Second, it is not a dominant-recessive
vowel harmony, but spreads both tenseness and laxness to the affected vowel.
Third, this kind of harmony does not operate bidirectionally, but leftward on-
ly. Given just the first two differences, the two harmony processes could eas-
ily be collapsed by positing the harmony as spreading of αATR, and adding a
rule delinking the correct vowels from their ATR specification, allowing the
feature to be spread by harmony. However, since I am not prepared here to ar-
gue for a general principle which would predict the difference in directional-
ity of the application of the two harmony rules, the collapse of the two rules
would have to be at too great a cost in other complications. For this reason,
I am proposing an analysis with two separate harmony rules. I will refer to
the vowel harmony seen in (1) as stratum 1 harmony and this other vowel harmony
process as stratum 2 vowel harmony. For stratum 2 harmony, a possible rule
would be as in (7).

(7)   ±ATR   ±ATR
                         | |
                         †- - - - - - - -|
                         V   ][V]#

This rule would delink a vowel in the penultimate stratum 2 suffix and assign
it the specification of the vowel in the following suffix. Note that this rule
assumes the full specification of the vowels for tongue root advancement at the
point at which it applies, and note also that this rule must crucially refer to
stratum 2 boundaries in order to prevent it from affecting stratum 1 suffix
vowels or stem vowels. Thus, the default rule which assigns -ATR to unspeci-
fied vowels must apply before stratum 2 vowel harmony in stratum 2 or after
stratum 1 harmony in stratum 1.

One other problem concerning the level of rule application concerns the na-
ture of the instances of stratum 2 vowel harmony. The output of this rule is
gradient and variable. That is, not only do the effects of stratum 2 vowel
harmony sometimes disappear in slow, careful speech, but also the affected vow-
els are often not entirely tense or entirely lax, but somewhere in between.
This gradient, variable manner of application has been proposed by Kiparsky

[1983] to be a general property of the application of certain post-lexical rules. The problem with this in the case of Kipsigis stratum 2 vowel harmony is that, since this harmony process does not affect vowels in stratum 1 suffixes, and does not apply across word boundaries, the harmony rule must refer to stratum 2 boundaries, which are not available for reference at the postlexical level.

So gradience and variability as a property of rule application may not be claimed even to be a property only of a certain set of postlexical rules, since it may characterize at least one lexical rule as well, namely stratum 2 vowel harmony in Kipsigis. One property which these gradient rules do share, as far as I know, is that they all apply to features which were either unspecified or lexically marked as other than the output of the rule at an earlier level. I will not propose a characterization of which rules will have this gradient character, since I don't know one, but I simply want to point out that these rules may not be assumed to be a subset of postlexical rules.

REFERENCES

Kiparsky, P. 1983. "Some consequences of lexical phonology." Ms.

Hall, B. et al. 1974. "African vowel harmony systems from the vantage point of Kalenjin." *Afrika und Übersee* 57:241-267.

SOME ASPECTS OF CONSONANTAL SOUND CHANGE IN KIKAMBA

P. Mumo Maundu
Nairobi University

1. Introduction

This paper will discuss the following points:

(a) The loss of voiced velar fricative /ɣ/ and the lateral /l/ in Kikamba;

(b) The deletion of the alveolar consonant in the first syllable, if two or more syllables consisting of alveolar sounds follow one another (a case of dissimilation);

(c) Some analogical creations in Kikamba:

    (i)   generalization of /mb-/ as the concordial classmarker for classes 10 and 9 and

    (ii)   analogical extension of class 9/10 as adjective with /vv/ stems.

For the purpose of the paper Kikamba dialects will be taken to be as follows (minor variations will be ignored):

(1) Kitui North Dialect: It is spoken with slight variations in the northern part of Kitui District of Kenya.

(2) Kitui Central Dialect: It is spoken in the rest of the district with numerous variations increasing and becoming more marked eastwards.

(3) Kilungu Dialect: It is spoken with slight variations in the western Division of Machakos District.

(4) The 'Standard' and written dialect: It is spoken in other parts of Machakos but with greatest variation in the south almost resembling Kitui Central dialect.

Data used in this paper will strictly be based on the said dialects with only very occasional reference to Gikuyu to strengthen some of the claims the paper makes.

1. The Loss of the Voiced Velar Fricative /ɣ/ and the Lateral /l/

The loss of the two consonants is almost complete in most of the dialects except the Kitui dialects. The fricative is more prominently retained in the northern dialects while the lateral is retained in all the dialects but for various reasons. In most of Kitui dialects it is retained in the demonstrative "that" while in the Machakos dialect it has become a glide like in the following cases:

(1) Kitui Dialect   Machakos Dialect

    /vando vala/   /vando vaya/   'that place'
    /kindo keila/   /kendo ke:ya/   'that thing'

    The other case of the appearance of /l/ in Kikamba is in cases where homophony would result if the lateral was lost.

(2) Words with /l/   Words without lateral

    [ketɔli] 'grasshopper'   [ketɔi] 'that which emits'

    [leu] 'food'   [eu] 'knee'

    [ŋgili] 'a thousand'   [ŋgii] 'seed'

    [ŋgole] 'monkey'   [ŋgoe] 'joke'

The other case where /l/ seems to be present is in class 12/13:

(3) | Pre-form | Basic forms | Class 12/13 | Gikuyu | Gloss |
| --- | --- | --- | --- | --- |
| *kelema | [keema] | [ka-lema] | [kerema] | 'hill' |
| *mboli | [mboi] | [ka-βoli] | [mbori] | 'goat' |
| *mbale | [mbae] | [kaβale] | [mbare] | 'clan' |
| *maɣolo | [maaio] | [tololo] | [maɣoro] | 'foot' |
| *eɣɛɔ | [eɛɔ] | [ka-lɛlɔ] | [eɣɛɣɔ] | 'tooth' |

    The appearance of /l/ in this class is not a case where /l/ has been retained in class 12/13. In such a case we can write a rule:

(4) $\begin{bmatrix} + \text{ consonant} \\ + \text{ lateral} \end{bmatrix}$ >   Ø / V__V
                                   __Class 12/13

    It is a case of an analogical extension in class 12/13 where /l/ has been inserted between vowels regardless of the consonant that was lost. For instance Kitui north dialect has the following but all have /l/ in class 12/13:

(5) | Kitui north | other dialects | class 12/13 | gloss |
| --- | --- | --- | --- |
| [eɣɛɔ] | [eɛɔ] | [ka-lɛlɔ] | 'tooth' |
| [maɣoo] | [maao] | [tu-lolo] | 'feet' |
| [eɣɛmbɛ] | [eembɛ] | [k-lɛmbɛ] | 'hoe' |

3. The Case of Dissimilation at the Alveolar Region

    In one dialect of Kikamba, Kikilungu, it seems no allowance is made for alveolar segments to follow one another in more than two or three syllables.

(6) a.   Other dialects   Kikilungu

      [sisya]   [itʃa]   'look'

      [tinda]   [unda]   'remain'

      [kanimi]   [kaini]   'small'

   b. [nɛnɛ]   [nɛnɛ]   'big'

      [motɔndɔ]   [motɔndɔ]   'mud'

      [tanda]   [tanda]   'spread'

A comparison between (6a) and (6b) will show that it is only (6a) that un-
dergoes this change. The only motivation visible is that of making the first
sound unlike the following ones but instead of the whole syllable getting lost,
only one consonant is lost. We therefore want to propose that this is a case
of dissimilation. Lehmann [1962:169] suggests that haplology sometimes can be
regarded as a case of dissimilation if the loss makes two consecutive similar
sounds more unlike one another. Rule 7 below forms part of the grammar of the
speakers of Kilungu dialect:

$$
(7) \quad
\begin{bmatrix} C \\ + \text{anterior} \\ + \text{coronal} \end{bmatrix}
\rightarrow \emptyset \quad \$ \quad
\begin{bmatrix} - V \\ \alpha \text{ ant} \\ \alpha \text{ cor} \end{bmatrix}
\quad \$ \quad
\begin{bmatrix} \text{ant} \\ \text{cor} \end{bmatrix}
$$

We also want to claim that this rule is also diachronic in that wherever
other dialects have the consecutive syllables with all the sounds present, Ki-
lungu speakers delete the first sound.

4.   The Generalization of mb- as the Concordial Class Marker for Classes 9 and 10

The two classes have one thing in common: the class markers for 9 and 10
are both represented as /N-/ , but class 10 marks plural. There are classes
other than 9 which take class 10 as their plural. Derived lexical items
changed to nouns are placed in class 9/10 example, e.g. oka 'be bad or ugly'
changes to noka 'an ugly person'. Class (9/10) has another semantic connota-
tion: it implies maturity or a state of being grown-up, especially for ani-
mals, e.g.

(8)   12/13   9/10

    [ka-tolomɛ] 'a small ram'   [ndo:mɛ] 'a ram'

    [ka-salo]   'a young or small bull' [nzao]   'a mature bull'

    [ka-samba]   'a small cock'   [nzamba] 'a mature big cock'

/nd-/ or /nz-/ in the above cases appear as if they are the class 9/10 mak-
ers instead of /N-/. In Bantu, class markers are copied onto the adjectives
that qualify them, and therefore the assumption above will be strengthened by
the data below.

(9)   Noun   Adjective

    /mbɔsɔ   N-iŋge/   [...mbiŋge]   'a lot of bean'

    /mboi   N-ao/   [...nzao]   'a white goat'

    /mbua   N-iŋge/   [...mbiŋge]   'a lot of rain'

    /mbe   N-iŋge/   [...mbiŋge]   'many goats'

So we can see that /mb-/ as a plural marker or concordial agreement is copied onto those stems with /VCV/ stems and /nz-/ to those with /V-V/ stems or roots, suggesting the following rule, where the rules refer to the noun prefix as a concordial marker for class 9/10 (it is also true for plural formation with singular words with the same structure):

(10) a.   Ø → /-b-/ /N__VCV

    b.   Ø → /-z-/ /N__VV

8. Conclusions

Rules (7a,b) are historical rules which created the present (synchronic) forms of this class of adjectives. The rules offer the explanations regarding the lack of phonetic motivation for the surfacing of consonants (N + N = mb or nz).

The consonants which were lost in the environment before adjective stem vowels were not necessarily the ones surfacing synchronically. Mutahi [1977] showed that some dialects southern Mount Kenya have [βiro] as adjective for 'black' and [ɲιεro] for 'white'. We have shown that Kikamba has /nzio/ and /nzao/ respectively for the same adjectives. It is clear, therefore, /-z/ and /-b-/ were not the original consonants in these lexical items. The evidence we have gathered from Kitamba, strengthened by Gikuyu, weakens the claim made by Hinnebusch [1974] regarding the resurfacing of /-b-/ and /-z-/ .

It is therefore clear that restructuring most of the class 9/10 lexical forms are due to the analogical reinterpretation of the prefix in the cases of /VCV/ and /VV/ word stems. The new forms were taken as basic, and speakers are unaware of what were historical forms. The surfacing of the new consonants is a proof of it. The wide spread or occurrences of these new forms are due to analogical extension to forms which had other forms historically.

REFERENCES

Hinnebusch, T. J. 1974. "Rule inversion and restructuring in Kikamba." In W. R. Leben (ed.), *Papers from the Fifth Annual Conference on African Linguistics*, pp. 149-167. Studies in African Linguistics, Supplement 5.

Lehmann, W. P. 1962. *Historical Linguistics: an Introduction*. New York: Holt, Rinehart and Winston.

Mutahi, Karega. 1977. "Sound change and classification of the dialects of Southern Mount Kenya." PhD dissertation, University of Nairobi.

SOME PHONOLOGICAL PROBLEMS THAT FACE ARAB LEARNERS
OF ENGLISH

Girgis Z. Messiha
Ain Shams University

For a learner of a foreign language the interference of the vernacular should never be overlooked. He unconsciously uses the deep-rooted patterns of his mother tongue which contradict those of the target language. That is quite apparent when Arab speakers try to learn English as a foreign language. The interference is encountered on different levels, phonologically, morphologically, and syntactically. Here we are concerned with some phonological problems that face the Arab learner of English.

One of the most important principles contributed by present day linguistics to the teaching of foreign languages is that the language to be learned must be presented in terms of an activity which depends on productive as well as receptive levels and that the language is, after all, a vivid activity which should be practised, as in real life, through speaking.

The most problematic hindrance for learning a foreign language is that the learner does not have the chance of using this foreign language as a vivid activity, by using it for communication and self-expression. In most cases the target language is introduced as written material. The native speaker is rarely found and the technical aids, if available, can never substitute for a teacher with whom there is occasion for lively conversation.

Some people have maintained that the written language is a visual representation of the spoken language. If that were true then learning to read would not involve learning a new communication system, but merely transferring a language skill already acquired from one medium which is the medium of speech to another medium which is the medium of writing, namely from sounds to visual symbols. Writing is not merely speech written down, it is in fact a separate activity, another channel for acquiring the target language. Naturally, speaking should come first and by speaking we do not mean reading aloud, but conversing or using the language as an everyday activity and not as it is preserved in books. I want to come quickly to the conclusion that the idea that the written language is a representation of the spoken and that it is quite sufficient to learn the foreign language by reading it as long as the chance of learning it through speaking is not easily available, is completely wrong. It is evident that reading aloud as a means of learning pronunciation has disastrous effects for it makes the learner speak as if he were writing, and it also hinders the main target of reading which is comprehension.

Needless to say that English spelling does not always accurately represent the sound of spoken words. English orthography does tally with English pronunciation. In addition to the chronological priority of spoken language linguists have put forward strong reasons for stating that speech has primacy over writing and the more frequent use of speech than writing. To cut this argument short and go back to our main line I quote Bloomfield [1933:21], who says,

"Writing is not language, but merely a way of recording language by means of visible marks."

That leads us to the conclusion that when we teach the foreign language through the written representation, we are doing it the wrong way. Suffice it to say that we have hundreds and hundreds of languages, all over the world, with no writing systems but not vice versa, any language that is not used as a spoken medium is a dead language such as Latin, old Egyptian, and Greek.

So, in our community, as well as in countries of the Third World where learning English has become a necessity, to be acquainted with progress in advanced countries, we are facing the lack of chances for our students to practise the language as spoken activity, and as learners are not given that chance of achieving fluency of pronunciation of the target language, there is an opportunity for the well established linguistic spoken habits of the vernacular to interfere and retard the process of learning. Even scientists and technologists who learn a foreign language solely for technical purposes find it necessary to speak the foreign language for they find themselves always in need of contacting foreign experts and scholars in the field of their specialisation.

There are many features of spoken language such as rhythm, tempo, intonation, voice quality, and so on, for which there are simply no corresponding writing conventions. The same is true of all the features of spoken conversational language which are interactional and concern verbal and non-verbal feedback between speaker and listener and therefore have no direct counterpart in written language, which is essentially one-directional.

When we make a comparison and contrast of the sound structures of English and Arabic we can go on from the analysis of English phonemes to the analysis of Arabic phonemes and find that certain phonemes of the English system do not occur in the Arabic system and vice versa. It is an elementary linguistic fact that the English segmental phonemes that do not occur in the Arabic sounds create a prospective phonetic difficulty for Arab learners of English. The bilabial voiceless stop /p/ , the interdental voiceless spirant /θ/ , the interdental voiced spirant /ð/ , and the labiodental voiced spirant /v/ are good examples of sounds that are usually mispronounced by Arab learners and are changed into /b/ , /s/ , /s/ , and /f/ . Two things should be noticed in that respect: (a) Although /θ/ and /ð/ are found in classical written Arabic, they are not used in spoken Arabic. Therefore they create a pronunciation difficulty in spoken English and even in reading written English or Arabic. (b) This difficulty faces the Egyptian Arab speakers, but it is not problematic for some other Arab speakers such as the Iraqis because they are common in their vernacular. There are other minor changes such as the English alveolars /t/ , /d/ , /s/ , /z/ , /n/ , /l/ , /r/ which are pronounced by Arab speakers as dentals. The velar /ŋ/ is pronounced dental /n/ because Arabic has no phoneme corresponding to it.

Consonant combinations predict, as Hamlet says, "a sea of troubles" for Arabic learners of English. Speakers who are used to a language in which no more than two consonants are permitted in a cluster are going to face a complicated problem with a language which has four consonants without juncture /+/ , e.g. /ekstrə/ as in 'extra', and seven consonants with juncture, as in 'he glimpsed

streams of water' /glimpst + striymz/ . The most conspicuous mispronunciation, to an English ear, of a consonant cluster occurs with the past tense. The past form -ed represents a full syllable only after /t/ and /d/ . For the Arabic speaker any cluster of three or four consonants has to be broken by a "cluster breaker", a weak vowel that separates the consonants.

When two consonants end the simple form of the verb, as in 'ask' /ask/ , then the Arabic speaker adds a vowel before the next consonant of the past tense ending, i.e. /askt/ is pronounced /askid/ . For English verbs which occur after a verb-final consonant or consonant cluster, as in 'kept' /kept/ and 'begged' /begd/ , when the following word begins with a consonant, the /t/ or /d/ is regularly dropped in normal speech due to elision as in 'kept quiet' /kepkwaiat/ , 'begged me' /begmi/ . While the native speaker omits the /t/ and /d/ unconsciously and the meaning is not changed, the Arabic learner insists on pronouncing them because of their grammatical role and orthographic shape. The poor production of consonant clusters would often impair the meaning or impede the comprehension of the listener.

The simple vowels of both languages have in common the characteristics of being relatively short and lax but a thorough study of the vowel charts of both languages indicates the great contrast between the structuring of these vowels. An Arabic vowel allophone may belong to a quite different phoneme in English. Arabic /i/ as an example covers such a wide range that Arabic speakers may use for this phoneme sounds which an English ear hears as belonging to either /i/ or /e/ . This is the result of the fact that Arabic has only the three simple vowels /i/ , /u/ , /a/ while English has nine.

With respect to the complex vowels the contrast is strong. Arabic has five complex vowels which are long and tense. Phonemically these long vowels can be treated as a doubling of a simple vowel /ii/ , /uu/ , etc. and sometimes, for convenience, the sign of length /:/ is used to designate the complex sound. The corresponding English diphthongs are /iy/ , /ey/ , /ay/ , /ɔy/ , /aw/ , /ow/ , and /uw/ . The wide gap between the two vowel systems is quite clear and the prospective difficulties need not be mentioned. A contrastive study of the two segmental systems illustrate the expected range of erroneous pronunciation.

Many theoretical contrastive phonological studies of English and Arabic have been mainly concerned with the problems involved in the teaching of English segmentals to native speakers of Arabic, but few studies have been basically devoted to the suprasegmental or prosodic features and the problems involved in practising them. Failure in the handling of some prosodic features such as pause, tone group and tonic may account for the fact that the English spoken by Arabic speakers is rather difficult for English native speakers to follow with ease.

Studies show that the high frequency of occurrence of pauses made by Arabic native speakers and their wrong distribution result in short incoherent information units, and together with a high frequency of occurrence of tonics and their wrong placing, may lead to difficulty in understanding the message or to confusion. By pause we mean silence intervals of varying lengths, overlapping rhythmicality, and intonation contours. It is a suprasegmental feature which can never be detected if learning the foreign language is attained by written

material. I remember when someone described the spoken language of a teacher by saying that he spoke as if he were reading a book. The intonation of a certain language is of the utmost importance in conveying the meaning. Difference of intonation might change the statement into a question or an exclamation and might alter the whole meaning as in the question, "Is your husband here?", with a change in the intonation of the utterance. In the hierarchical system, the tone group, which is the unit of intonation, consists of one or more rhythmic groups in the same way that the rhythmic group consists of one or more syllables.

As Halliday says, "It marks a unit of information in the message that the speaker is trying to convey." There is always a point within the tone group (one or more syllables) where the defining pitch (movement of the tone) occurs; this point is called the tonic. It is important to state that the place of the tonic in an English utterance is variable and that the variation is meaningful, creating an independant set of choices. The tonic syllable starts on a stressed syllable which is usually more prominent than the other stressed syllables in the tone group, because it carries, as Halliday says, the main burden of the pitch movement in the tone group.

To conclude, learning a foreign language should be mainly through the spoken medium. According to Allen [1959] the teacher of English should be a good model for his students by mastering English pronunciation and acquiring a good knowledge of the sounds of English so as to be able to help his students in their learning process. O'Connor [1976] mentions that listening carefully to a good model is the most important thing for ear training. He also stresses the point that learners can reach the stage of perfection in pronunciation through careful repetition.

When we bring the case to verdict all accusations point at the written form of the language which prevents the learner from following the natural channel of learning the language, namely, acquiring linguistic habits through hearing and imitating the model of pronunciation.

STYLISTIC RULES IN CLASSICAL ARABIC AND
THE LEVELS OF GRAMMAR

M. A. Mohammad
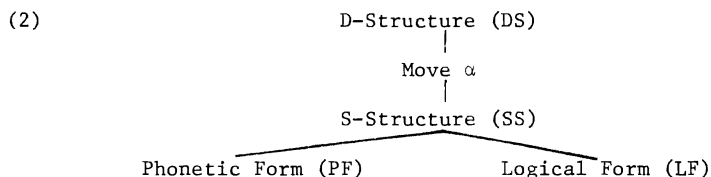University of Southern California

The issue of word order in Classical Arabic (henceforth Arabic) has been
the subject of an as yet unresolved controversy. Some linguists contend that
Arabic is underlyingly VSO; while others argue that Arabic is an SVO language
(underlyingly). Both camps seem to agree that the other available word orders
are derived by some kind of stylistic rules. My purpose in this paper is not
to discuss the nature of these rules, rather it is an attempt to locate these
rules in the grammar of Arabic.

Arabic allows a high level of word order variation in simple declarative
clauses. Consider:

(1) a. kataba   ?aḥmad-un   kitaab-an   'Ahmed wrote a book'
        wrote 3sg Past Ahmed-NOM book-ACC

    b. kataba   kitaaban   ?aḥmadun
    c. ?aḥmadun   kataba   kitaaban
    d. ?aḥmadun   kitaaban   kataba
    e. kitaaban   kataba   ?aḥmadun
    f. kitaaban   ?aḥmadun   kataba

Most Arabists agree that all the above sentences are grammatical and roughly
synonymous. The choice of one order over another is largely dictated by prag-
matic and functional factors such as topic and comment, old vs new information,
etc.

The theoretical framework presupposed in this paper is the theory of govern-
ment and binding as developed by N. Chomsky [1981, 1982] and his associates.
According to this theory the organization of the grammar is as in (2):

(2)   D-Structure (DS)
                                 |
                              Move α
                                 |
                           S-Structure (SS)
                _____
       Phonetic Form (PF)   Logical Form (LF)

Crucial to this paper is the assumption that there is no interaction between
the PF and LF sides of the grammar. Furthermore, my understanding of the cur-
rent literature is that the so-called stylistic rules apply in the PF. The cen-
tral claim of this paper is that this is incorrect, in so far as Arabic is con-
cerned. I will argue that given the organization of the grammar in (2), and
given certain phenomena to be discussed below, these rules must apply at SS at
the latest. The evidence will derive from restrictions imposed on word order

when the interpretation of the possessive pronoun is involved.

For the purposes of this paper I will introduce the following definitions:

(i)   when the possessive pronoun is interpreted as coreferential with the subject NP, I will call this the i-reading;

(ii)   when the possessive pronoun is interpreted as coreferential with the object NP, I will call this reading the j-reading; and

(iii)   when the possessive pronoun is interpreted as free in reference, I will call this the k-reading.

To exemplify, consider:

(3)   wadaʕa   ?aḥmad-un   ?al-kitaaba   fi   ṣunduuq-i-hi
        put 3sg Past   Ahmed-NOM   the-book-ACC   in   box-GEN-his

    a. 'Ahmed$_i$ put the book$_j$ in his$_i$ box'   = i-reading
    b. 'Ahmed$_i$ put the book$_j$ in its$_j$ box'   = j-reading
    c. 'Ahmed$_i$ put the book$_j$ in his$_k$/its$_k$ box'   = k-reading

When the possessive pronoun is given either the i- or the k-reading word order is irrelevant. That is to say, both readings are obtainable no matter which surface order is chosen. Consider:

(4) a. ramaa   ?aḥmad-un   kurat-a-hu   'Ahmed$_i$ threw his$_{i,k}$ ball'
        threw 3sg Past Ahmed-NOM   ball-ACC-his

    b. ramaa kurata-hu$_{i,k}$?aḥmadun$_i$

    c. ?aḥmadun$_i$ ramaa kurata-hu$_{i,k}$

    d. ?aḥmadun$_i$ kurata-hu$_{i,k}$ ramaa

    e. kurata-hu$_{i,k}$?aḥmadun$_i$ ramaa

    f. kurata-hu$_{i,k}$ ramaa ?aḥmadun$_i$

All the sentences in (4) are grammatical under either the i- or the k-reading.

The interpretation of the possessive pronoun under the j-reading is heavily restricted in terms of word order. Consider:

(5) a. *daraba   ṣadiiq-u-hu   ?aḥmad-an   'his$_j$ friend hit Ahmed$_j$'
        hit 3sg Past   friend-NOM-his$_j$ Ahmed$_j$-ACC

    b. daraba   ?aḥmadan$_j$ ṣadiiqu-hu$_j$

    c. *ṣadiiqu-hu$_j$ daraba   ?aḥmadan$_j$

    d. *ṣadiiqu-hu$_j$?aḥmadan$_j$ daraba

    e. ?aḥmadan$_j$ daraba   ṣadiiqu-hu$_j$

    f. ?aḥmadun$_j$ ṣadiiqu-hu$_j$ daraba

The sentences (5a-f) demonstrate that the j-reading can only be obtained if the antecedent precedes the possessive pronoun. Thus, the admissible surface word orders under the j-reading are VOS, OVS, and OSV. The remaining three orders are ungrammatical.

This restriction on word order with regard to the j-reading is neither restricted to matrix clauses, nor is it restricted to objects of verbs. Consider:

(6) daxala   fi ?al-daar-i   ṣaḥib-u-haa
     entered 3sg Past in the-house-GEN owner-NOM-her

     'into the house$_j$ entered its$_j$ owner'

In (6) the antecedent is an object of a preposition. Again the only permissible word orders are [V PP S], [PP V S], and [PP S V] (S = Subject).

As for embedded clauses, consider:

(7) qarrarat   ?al-ḥukuumat-u   ?an yastarjiʕa
     decided 3sg Past the-government-NOM that recover subjunctive

     ?al-?arḍ-a   zaariʕ-u-haa
     the-land-ACC cultivator-ACC-her

     'the government decided that the land$_j$ be recovered by its$_j$ cultivator'

(7) is a very interesting sentence. The complementizer ?an requires as part of its subcategorization for a verb to follow it immediately. This requirement, coupled with the restrictions on the j-reading, makes VOS the only permissible word order in this and similar sentences.

Given the above evidence, in particular the j-reading, it follows that if the surface word orders are to be derived in the PF by stylistic rules, it seems that there is no straightforward way to account for these facts. I will not discuss whether there are stylistic rules applying at SS or whether these word orders are derived by the general rule Move α. Rather, I will turn my attention in the paragraphs to follow to providing a constraint which will make the correct predictions.

In order to do this the notion of c-command will be crucially needed. More specifically the subject NP and the object NP must be somehow rendered as structurally unequivalent. Since the notion of c-command makes crucial reference to configurational structures, it is necessary to establish some kind of a constituent structure where the subject will be structurally in a position to c-command the object but not vice versa.

Several alternatives come to mind. Among them are the following: (i) Assume, following J. Aoun's proposal, that the verb is coindexed with those constituents it subcategorizes for. This coindexing mechanism can be built into our definition of c-command, thus giving us the required results. (ii) Assume, following Zubizarreta and Vergnaud [1981] concerning Japanese, that Arabic has virtual categories. More precisely, the only virtual category in Arabic is the VP. This virtual VP will serve as the barrier preventing the object NP from c-

commanding the subject NP. (iii) Assume, following Emonds [1980], that Arabic is underlyingly an SVO language. This will give the familiar tree, thus making the subject in a position to c-command the object NP but not vice versa.

The choice of any of these alternatives over the others goes beyond the scope of this paper. Insofar as I am able to determine, the conclusion to be arrived at here is compatible with any of these alternatives.

We are now in a position to provide an account for our problem. Let us assume that the notion of c-command is defined as in (8):

(8)   x c-commands y if the first maximal projection dominating x also
      dominates y

Now, in all the sentences involving the i-reading the possessive pronoun is cliticized to an NP that the subject c-commands. Thus, the subject is in a position to c-command the possessive pronoun. This state of affairs does not obtain in the case of the j-reading, as the possessive pronoun is cliticized to the subject. That is to say the object NP is not in a structural position to c-command the possessive pronoun. I therefore propose that the following constraint be considered as part of the grammar of Arabic:

(9)   (Informally) If an NP and a possessive pronoun are to bear the same index,
      and that NP does NOT c-command this pronominal, then the NP must (linear-
      ly) precede.

(9) will now account for all the restrictions (or the absence of restrictions) imposed on word order in sentences involving the possessive pronoun. But there remain the problems posed by verbs of the "put" and "give" types. Consider:

(10)   waḍaʕa   ʔaḥmd-un kitaaba-hu   fi ṣunduuq-i-hi
        put 3sg Past Ahmed-NOM book-ACC-his in box-GEN-his

   a. 'Ahmed$_i$ put his$_i$ book$_j$ in his$_i$ box'

   b. 'Ahmed$_i$ put his$_{i,k}$ book$_j$ in his$_j$ (its) box'

The k-reading is irrelevant. The i-reading is always possible since the subject will always be in a position to c-command both possessive pronouns in (10). To obtain the j-reading in (10b) the object NP kitaabahu 'his book' must precede the possessive pronoun with which it is coindexed. For (9) to apply here it therefore follows that the object NP must not be in a structural position to c-command the possessive pronoun.

As for the "give" type sentences, consider:

(11)   ʔaʕṭaa   ʔaḥmad-un xaliil-an kitaab-a-hu
        gave 3sg Past Ahmed-NOM Khalil-ACC book-ACC-his

   a. 'Ahmed$_i$ gave Khalil$_j$ his$_i$ book'

   b. 'Ahmed$_i$ gave Khalil$_j$ his$_j$ book'

Again the i-reading is always possible for the same reasons given above. And
the same restriction still applies to the j-reading. This suggests that if (9)
is correct the constituent structure of the VPs in (10) and (11) must be (12):

(12)   (irrelevant details omitted)
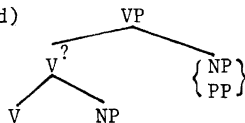
Now a new question poses itself: what is the nature of $V^?$ in (12)? If it is
going to block the lower NP from c-commanding the higher NP or PP, this $V^?$ must
be a maximal projection, i.e. VP. (Recall the definition given in (8)). Wheth-
er to take this option or revise the definition in (8) in such a way as not to
refer to maximal projections but to the first branching nodes I leave as an
open question.

     I hope that I have shown, given the phenomena discussed above, that
stylistic rules in Arabic, if they exist at all, must take place in the syntax.

REFERENCES

Chomsky, N. 1981. *Lectures on Government and Binding*, Dordrecht: Foris.

Chomsky, N. 1982. *Some Concepts and Consequences of the Theory of Government
     and Binding*. Cambridge, Mass.: MIT Press.

Emonds, J. 1980. "Word order in generative grammar." *Journal of Linguistic
     Research* 1:33-54.

Zubizarreta, M.-L. and J.-R. Vergnaud. 1981. "On virtual categories." In T.
     Stowell and A. Marantz (eds.), *MIT Working Papers in Linguistics*, Vol. 4.
     Cambridge, MA: MIT.

TONE SPLITTING AND GWANDARA ETHNOHISTORY

Paul Newman
Indiana University

Gwandara, spoken by some 50,000 people in the Middle Belt of Nigeria, is the Chadic language most closely related to Hausa. It is geographically totally separated from Hausa (and other Chadic languages), being surrounded by speakers of Kwa and Plateau languages. Gwandara and Hausa are not mutually intellibible, though many Gwandaras speak Hausa as a second language. The extent of difference between the two languages, as well as the degree of similarity, can be seen in the following examples. (All Gwandara data in the paper are drawn from Matsushita [1972, 1973, 1974]).

(1) H. náa tsáyàa 'à kân ƙáfàa ɗáyá   'I stood on one foot'

    G. ń cècē à kyíyá kápā dā

(2) H. wúƙánnàn bâa tá dà káifíi   'this knife isn't sharp'

    G. Tnkāmú í mā ǹ kāpT bá

(3) H. bài zóo bá tùkùná   'he hasn't come yet'

    G. í tùkù jó wō bá

(4) H. kùnáamàa táa hàɽbée nì   'a scorpion stung me'

    G. kùnámā ríbT nT

This paper addresses the following linguistic/ethnohistorical question: Is Gwandara an independent millennium-old sister language of Hausa, as implied by most Chadic language classifications, or is it, as suggested by oral history, a relatively recent offshoot of Hausa that has undergone massive, contact-induced change? In other words, is the relationship of Gwandara to Hausa comparable to that of Frisian and English or to that of Krio and English? A key to the solution of the problem lies in the comparative analysis of the tonal systems of the two languages.

Unlike Hausa, which has two distinctive tones inherited from Proto-West-Chadic, Gwandara has three tone levels: Hi á , Lo à , and Mid ā . The tonal correspondences are set out in the following examples, Hausa on the left, Gwandara on the right. (Long vowels in Hausa are indicated by double letters; Gwandara does not have distinctive vowel length.)

(5) H L   > H M   (6) L H   > L M

   ƙáfàa   kápā   'foot'   kàhóo   kòhō   'horn'

   wáaƙàa   wónkā   'song'   yàashíi   yànshT   'sand'

   dúutsèe   dúncT   'stone'   kwàadóo   kwàrō   'frog'

   gásàa   gáshā   'roast'   ƙàarú   kàrū   'increase'

(7) L H L   >   L H M   (8) H L H   >   H L M

     hànkáakàa   ànkákā   'crow'   mútàanée   ńtànⲦ   'people'

     ɓàráawòo   bòrówā   'thief'   gírgìzáa   gígìjā   'shake'

(9) L   >   L   (10) L L   >   L L

     mèe   mì   'what?'   àbù   m̀bò   'thing'

     wàa   wà   'who?'   màcè   màcè   'woman'

(11) H   >   H   (12) H H   >   M M

     dúu   dú   'all'   húdú   hūrū   'four'

     tá   té   'via'   ráanáa   nānā   'sun'

     sháa   shá   'drink'   dáacíi   rācⲦ   'bitter'

     cí   cí   'eat'   gáníi   gēnⲦ   'see'

The above examples illustrate differences between Gwandara and Hausa, but
do not explain the development of the additional tone level. Here are some of
the sources for the three-way tonal contrast in Gwandara. First, there is trun-
cation of disyllabic H H words resulting in a distinctive Mid tone on monosyl-
labic words.

(13) Loss of syllable: H H > M M > M

     dáyá   dā   'one'   tsáwóo   cō   'length'

     bíyú   bⲦ   'two'   túwoó   twō   'staple food'

Second, there is the effect of final vowel length. The H L > H M change
presented in (5) actually only applies to words with an original long final vow-
el. Where the original final vowel was short, H L is realized as H L. Since
Gwandara has lost distinctive vowel length, the former contrast between long
and short final vowels has emerged as a tonal contrast between H M as opposed
to H L.

(14) Effect of short final vowel: H L (short) > H L

     'úkù   úkù   'three'   mútù   mútù   'die'

     jíyà   jíyà   'yesterday'   ɓátà   bétà   'get lost'

     (ná)míjì   míjì   'male'   námù/támù   -ámù   'our'

     (cf. H. míjìi   G. míjⲦ   'husband')

Third, within Gwandara itself, a contrast between Hi and Mid has surfaced
due to the suffixation of a floating Hi tone genitive/associative marker. Note
the following examples within Gwandara of M M vs. M H, H M vs. H H, and L M vs.
L H.

(15)   Suffixation of genitive/associative marker ′ .

    nānā   'sun/day'   nāná bìjē   'market day'

    āskyē   'light'   āskyé nānā 'sunlight'

    (cf. Hausa háskée , háskén ráanáa)

    rám⊤   'hole'   rámí kún⊤   'ear hole'

    wóntā   'month'   wóntá jíyà   'last month'

    òbā   'father'   òbá míj⊤   'husband's father'

    kèsh⊤   'bone'   kèshí báȳ   'backbone'

    The mechanism by which Gwandara has increased its number of tones does not match the generally known processes of tone splitting [Maddieson 1974]. Rather, the Gwandara tonal system seems to have resulted from the reinterpretation of Hausa surface tones in terms of the tone spacing grid of a language or languages already having three tones. Note the similarity between the treatment of Hausa loanwords in Gwari and Nupe [Maddieson 1977], two Kwa languages with three tones, with the tonal correspondences between Hausa and Gwandara. The proposed explanation for the tone splitting in Gwandara is thus substratum, i.e. Gwandara arose from Hausa as pronounced by people whose first language had three tones like neighboring Kwa and Plateau languages. The substratum explanation fits in well with other major changes in Gwandara: loss of grammatical gender, loss of distinctive vowel length, and loss of glottalized consonants. These are all common features of non-native Hausa [Feyer 1947, Hodge 1960]. By contrast, glottalization is an extremely stable feature of Chadic languages [Wolff 1959], being resistant to loss even under extreme areal and contact pressures [Wolff and Gerhardt 1977].

    This is not to say that Gwandara should be viewed simply as a deviant, pidginized dialect of modern Hausa [Gouffé 1973]. Since Gwandara exhibits older features of Hausa as well as certain Kano Hausa innovations, it cannot be identified with any present-day dialect. Rather, Gwandara has to be associated with a variant of Kano Hausa as it existed at a somewhat earlier period of time. Consider the following:

(16)   Sokoto H.   Kano H.   Gwandara

   ɗìyáa ɗìyáa   'yáa 'yáa'yáa   yà⁻ yāyā 'daughter/children'

If Gwandara had taken its singular form from the Sokoto dialect (which preserves the original shape of the word) it would appear as dìyā or rìyā ; if it had taken it from present day Kano Hausa it would appear as yá with Hi tone. The Gwandara form relates instead to a hypothetical Old Kano form *'yàá that existed after the *ɗiy- to 'y innovation, but before the subsequent L̂ H to H contour tone simplification rule characteristic of modern Hausa [Parsons 1955, Leben 1971].

    According to oral tradition [Hassan and Na'ibi 1962, Isichei 1982, Temple and Temple 1922], the Gwandara were Hausa people who fled from Kano rather than accept Islam. Unomah [1982] has proposed that the exodus most likely took place

during the reign of Yaji, 11th Emir of Kano (1349-1385), or Muhammad Rumfa, 20th Emir of Kano (1463-1499), while Adamu [1978] has pointed to the reign of Muhammadu Kutumbi, 29th Emir of Kano (1623-1648). The latter date, particularly, has been felt to be incompatible with the considerable linguistic differences between Gwandara and Hausa. However a time depth of as little as 300 years presents no problem once one recognizes that Gwandara is not an isolated sister language of Hausa that has diverged gradually through time, but rather is a sort of creolized Hausa that has undergone rapid change due to substratum influence. Linguistic, historical, and geographical factors suggest that there was never a mass migration of Gwandaras from Hausaland. Rather, a small group or groups of pagan Hausa found a refuge in the Middle Belt region where they became the nucleus for multi-tribal settlements containing various Kwa and Plateau speakers. Eventually the non-native Hausa of the majority of the community developed into the language that is now known as Gwandara.

<div align="center">REFERENCES</div>

Adamu, Mahdi. 1978. *The Hausa Factor in West Africa*. Zaria & Ibadan: Ahmadu Bello University Press.

Feyer, Ursula. 1947. "Haussa als Verkehrssprache." *Zeitschrift für Phonetik* 1:108-129.

Gouffé, Claude. 1973. "Review of Matsushita [1972]." *Bulletin de la Société de Linguistique de Paris* 68(2):474-479.

Hassan, Alhaji and Shu'aibu Na'ibi. 1962. *A Chronicle of Abuja*, trans. by F. Heath. Lagos.

Hodge, Carleton. 1960. "Non-native Hausa." In W. M. Austin (ed.), *Report of the Ninth Annual Round Table Meeting on Linguistics and Language Studies*, pp. 57-64. Georgetown: Georgetown University Press.

Isichei, Elizabeth (ed.). 1982. *Studies in the History of Plateau State, Nigeria*. London: Macmillan.

Leben, William R. 1971. "The morphophonemics of tone in Hausa." In C.-W. Kim and H. Stahlke (eds.), *Papers in African Linguistics*, pp. 201-218. Edmonton: Linguistic Research, Inc.

Maddieson, Ian. 1974. "A possible new cause of tone-splitting." *Studies in African Linguistics*, Supplement 5, pp. 205-221.

Maddieson, Ian. 1977. "Tone loans: a question concerning tone spacing and a method of answering it." In *Studies on Tone*, pp. 49-83. UCLA Working Papers in Phonetics, 36. Los Angeles: UCLA Department of Linguistics.

Matsushita, Shuji. 1972. *An Outline of Gwandara Phonemics and Gwandara-English Vocabulary*. Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.

Matsushita, Shuji. 1973. "English-Gwandara vocabulary." *Journal of Asian and African Studies* 6:105-150.

Matsushita, Shuji. 1974. "Text of Gwandara (Karshi dialect) in Northern Nigeria." *Journal of Asian and African Studies* 7:101-119.

Parsons, F. W. 1955. "Abstract nouns of sensory quality and their derivatives in Hausa." In J. Lukas (ed.), *Afrikanistische Studien*, pp. 373-404. Berlin: Akademie-Verlag.

Temple, O. and C. L. Temple. 1922. *Notes of the Tribes, Provinces, Emirates and States of the Northern Provinces of Nigeria*, 2nd ed. Lagos: C.M.S. Bookshops.

Unomah, A. Chukwudi. 1982. "The Gwandara settlements of Lafia to 1900." In Isichei [1982], pp. 123-135.

Wolff, Ekkehard and Ludwig Gerhardt. 1977. "Interferenzen zwischen Benue-Kongo- und Tschad-Sprachen." *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, Supplement 3, pp. 1518-1543.

Wolff, Hans. 1959. "Subsystem typologies and area linguistics." *Anthropological Linguistics* 1(7):1-88.

ACOUSTIC ANALYSIS OF VOWELS AND DIPHTHONGS
IN CAIRO ARABIC

Kjell Norlin
Lund University, Sweden

1. Introduction

    This paper reports an investigation on acoustic properties of vowels and
diphthongs in Cairo Arabic. The two classes of plain and pharyngalized conso-
nants in Cairo Arabic are also discussed, using the alveolar fricatives /s/
and /ṣ/ as an illustration [Norlin 1983]. The effects on vowels in the envi-
ronment of these consonant classes are demonstrated.

    Cairo Arabic has five contrasting long vowels /ii, ee, aa, oo, uu/ and
three short vowels /i, a, u/ . The long mid vowels are derived from the diph-
thongs /ai/ and /au/ . In Cairo Arabic the long mid vowels /ee/ and /oo/
are shortened under certain morphological conditions and merge with short /i/
and /u/ phonetically. In addition, Cairo Arabic does have three phonetic
diphthongs [iu, au, ai] in a subset of the vocabulary. These are usually an-
alyzed as /iw, aw, ay/ [Harrell 1957]. The following syllables occur: CV,
CVC, CVV, CVVC, CVCC. The last two syllables can only occur in word final posi-
tion and, of course, form monosyllabic words.

2. Procedure

    Most of the data illustrating vowels are taken from real monosyllabic words
of the types CVVC and CVCC, set in a sentence frame. All contrasting vowel pho-
nemes and the three diphthongs occur in this position. To get examples of short
[e] and [o] , some disyllabic words were included, since they cannot occur in
monosyllables. Long /ii, aa, uu/ between pharyngalized consonants also occur
in a stressed syllable on disyllabic words, since these consonants do not form
monosyllables.

    Six speakers of Cairo Arabic recorded the sentences. Mean formant values
representing each vowel of each speaker were calculated. Using a lab computer
the formant values in Hz were converted to mel and plotted on an acoustic chart
with F_1 against F_2 in the usual way.

3. Results

3.1. Vowel duration. Vowel durations were first considered separately in plain
and pharyngalized environment. The results show that vowel duration is not sig-
nificantly different between plain and pharyngalized long vowels, nor between
plain and pharyngalized short vowels in these environments. Therefore plain and
pharyngalized vowels are considered together. The difference in length between
long and short vowels is rather large. Short vowels are about half the duration
of long ones.

3.2. Vowel quality. Figure 1 is a formant chart of plain, long vowels. Plain,
long vowels are well separated with no overlapping, except for long /ee/ and
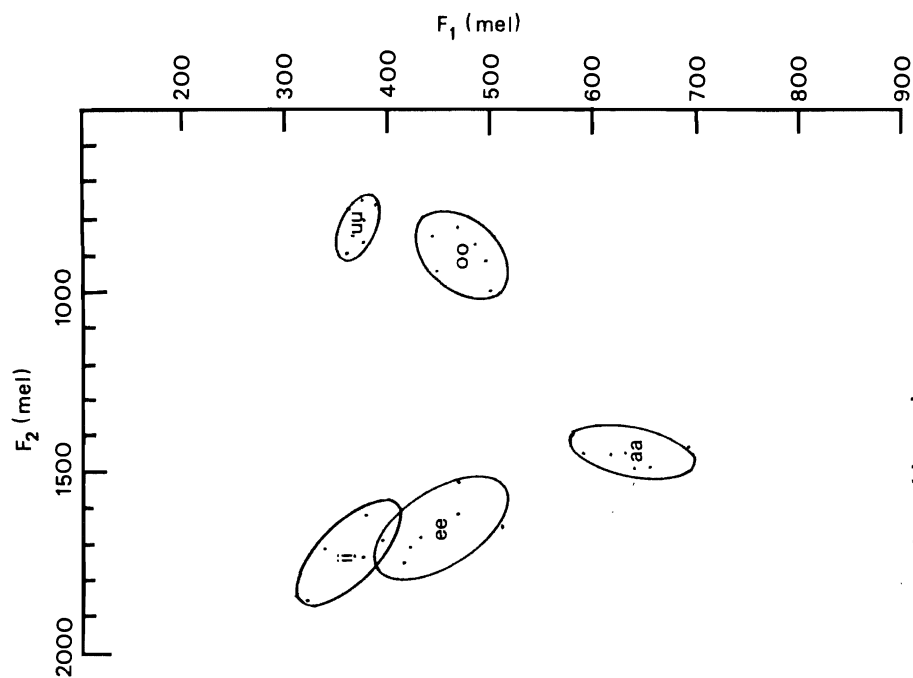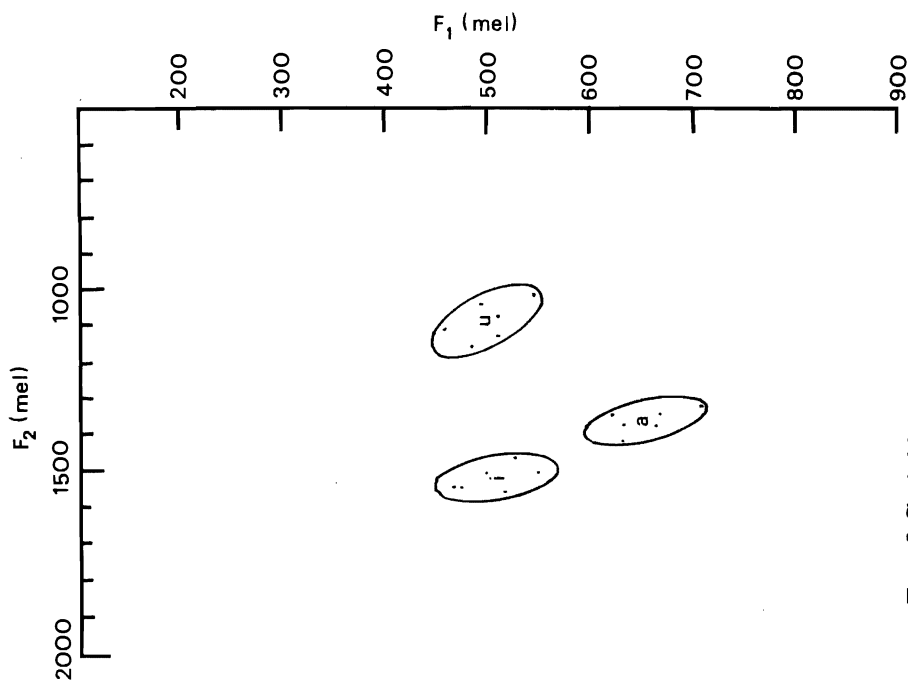
Figure 1 Long plain vowels
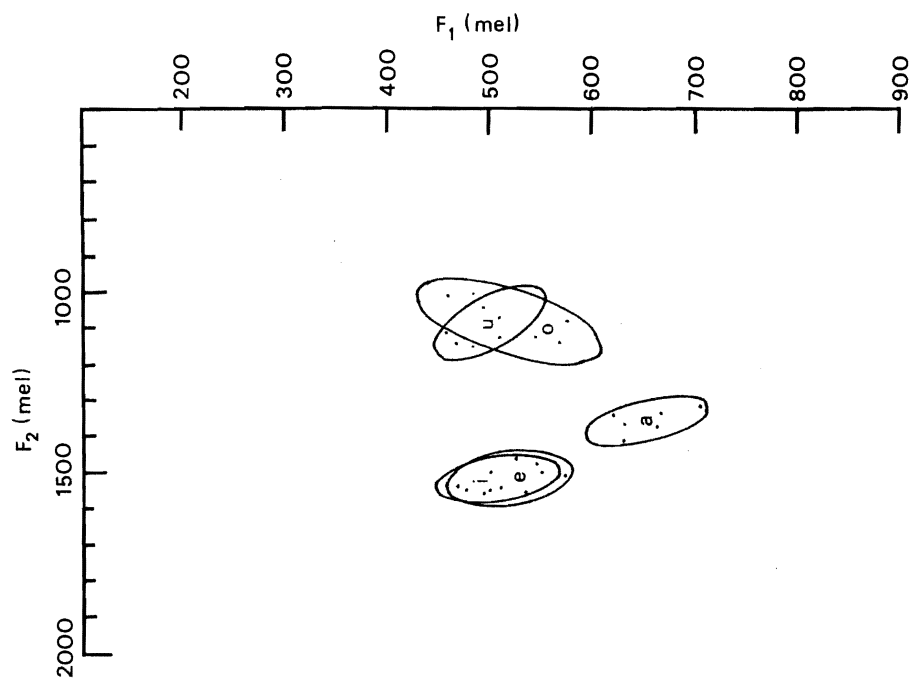

Figure 2 Short plain vowels

Figure 3 Short plain vowels
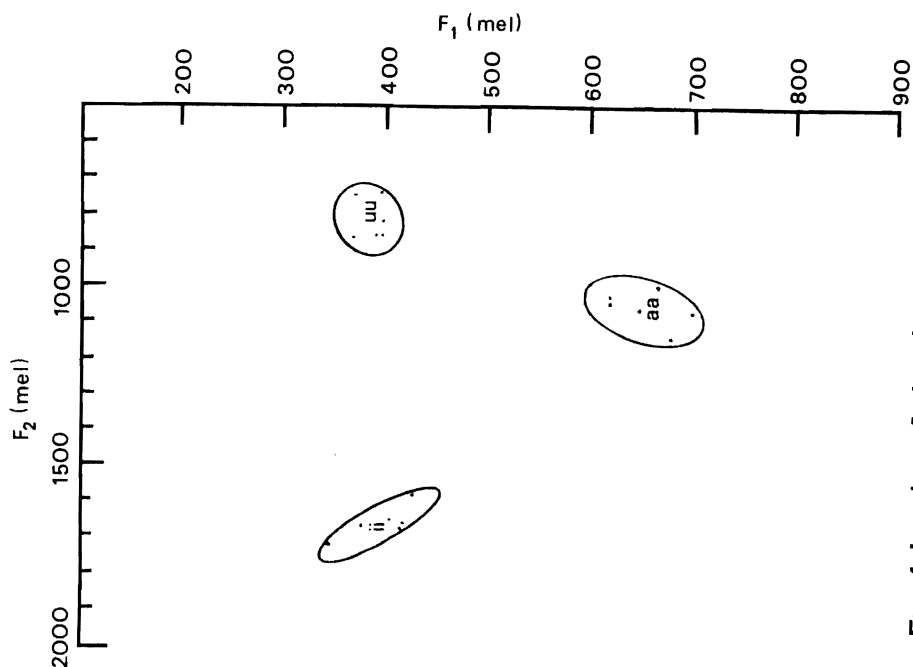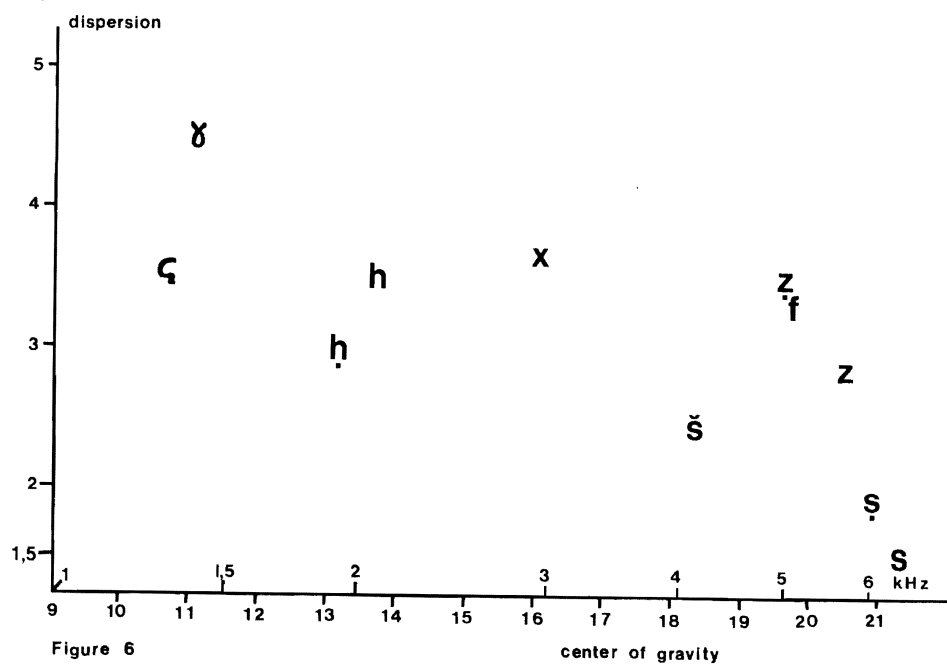

Figure 4 Long pharyngalized vowels

Figure 5 Short pharyngalized vowels

Figure 6

/oo/ touching each other. Figure 2 shows a formant chart of the three plain, short vowels. These vowels are also well separated clusters. Figure 3 also shows plain, short vowels, but it includes the non-phonemic [e] and [o]. Here short [e] and [o] show nearly complete overlapping with short /i/ and /u/. Their non-phonemic status is stated in literature, but phonetic data supporting the linguistic analysis is generally not presented. In some textbooks there is even a claim that there is a phonetic difference between [i] and [e] on the one hand and [o] and [u] on the other [Abdel-Massih 1975]. Figures 4 and 5 show formant charts of the pharyngalized long and short vowels.

4. Discussion

4.1. Vowel length and vowel quality. Differences in vowel length influence vowel quality. For both plain and pharyngalized environments the long vowels are more peripheral, whereas the short vowels are inside the space of the long vowels, with the exception of long /aa/ and short /a/ where the quality difference is small. Both plain and pharyngalized long /ii/ differ significantly (p<0.001) from short /i/ along both F_1 and F_2. The short /i/ vowels are lower and further back than the long /ii/ vowels. Short /u/ vowels are lower and more front than long /uu/ vowels. Both sets of long /aa/ differ to some extent from their short counterparts along F_2. The short vowels tend to be further back. The differences along F_1 between long and short /a/ vowels are non-significant; long and short vowels have the same vowel height. It seems as if vowels in Cairo Arabic are anchored on the low vowels and the short vowels /i/ and /u/ do not reach the vowel quality of the long ones.

4.2. Vowel quality in plain and pharyngalized environment. An earlier study [Norlin 1983] analyzed all the fricatives in Cairo Arabic. These include the pharyngalized fricatives /ṣ/ and /ẓ/. In this study FFT spectra of fricatives were converted to critical band spectra. The center of gravity of the critical band spectra was plotted against dispersion, Figure 6. The results from this earlier study showed that the plain and pharyngalized consonants are different, even if the difference is small. Considering the effects of plain and pharyngalized environments on vowel quality, a comparison between long vowels shows that there is complete overlapping for both sets of long /uu/. Pharyngalized long /ii/ shows a small difference from its plain counterpart in that it is slightly lower and further back. Pharyngalized long /aa/, however, is greatly affected, showing a considerable difference in the F_2 dimension from its plain counterpart. The pharyngalized /aa/ is much further back than the plain /aa/ (see Figures 1 and 4).

In conclusion, it is evident that the pharyngalization process affects the whole syllable. On the one hand, plain and pharyngalized consonants differ consistently. On the other hand, vowels in plain and pharyngalized environment differ in more complex ways. Plain and pharyngalized low vowels always show a considerable difference in the F_2 dimension, regardless of length, the pharyngalized vowels being more back. High, long vowels show small or no difference, whereas short high vowels always are further back than plain ones.
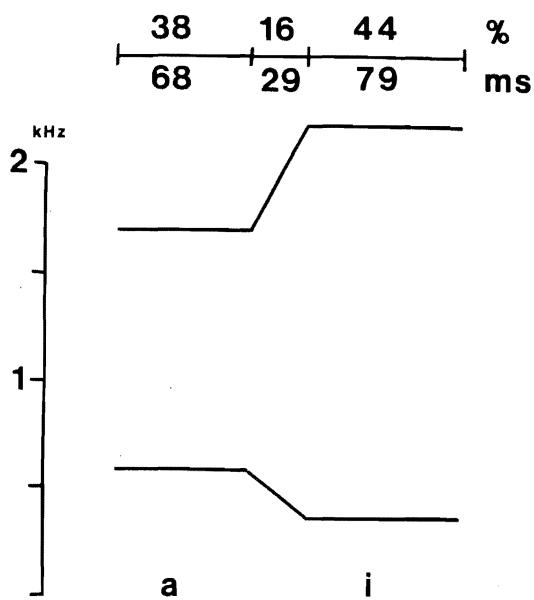
Figure 7
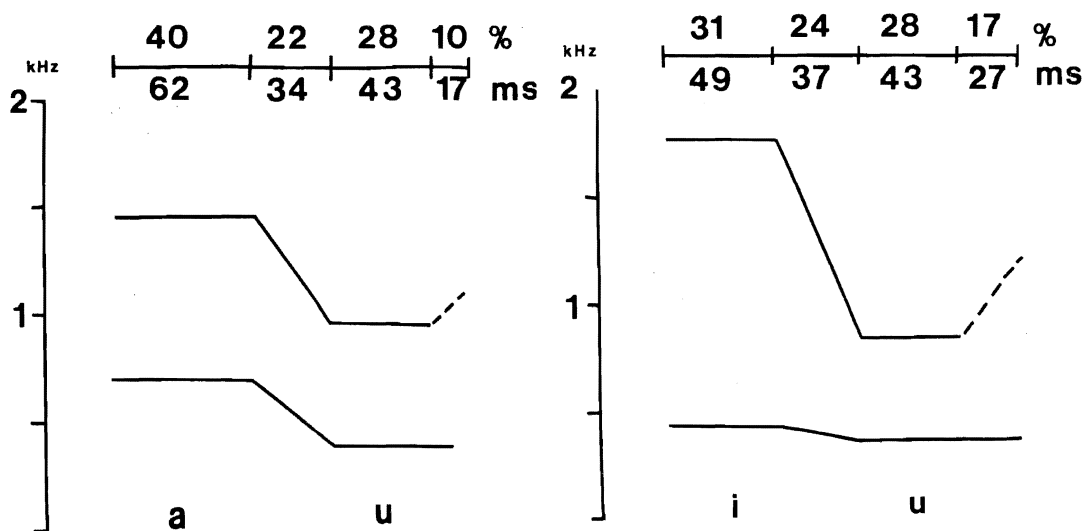
Figure 8

Figure 9

5. Diphthongs

Standard Arabic diphthongs /ai/ and /au/ have in Cairo Arabic developed
into long /ee/ and /oo/ . They also exist in Cairo Arabic, however, in a
number of purely dialectal words and some Standard Arabic words commonly used
in daily speech. In addition, there exists a third diphthong [iu] due to
morphophonematic rules in verb conjugation. A comparison between the short
vowels and the corresponding segments in the diphthongs shows some difference
in vowel quality. In the diphthongs, F_1 frequencies are always identical with
F_1 in short vowels, but F_2 is always lower, making diphthongs segments more
back.

The rate of transition between the two components in diphthongs is fast,
around 30-35 ms in all the diphthongs. It seems as if the diphthongs in Cairo
Arabic are made by stringing the short vowels together with a fast transition
(see Figures 7, 8, 9).

REFERENCES

Abdel-Massih, E. 1975. *An Introduction to Egyptian Arabic*. Ann Arbor: the
    University of Michigan.

Harrell, R. S. 1957. *The Phonology of Colloquial Egyptian Arabic*. New York:
    American Council of Learned Societies.

Norlin, K. 1983. "Acoustic analysis of fricatives in Cairo Arabic." Working
    Papers 25:113-137, Phonetics laboratory, Lund University.

THE "INDIGENOUS VERSUS FOREIGN" CONTROVERSY ABOUT
THE SOURCES OF SWAHILI VOCABULARY

Derek Nurse
University of British Columbia

Two different kinds of claims are often made about the historical sources of Swahili lexis: (1) Those based on Guthrie's claim that 44% of his PB lexical reconstructions are retained in Swahili today. This has sometimes been reversed to suggest that 44% of today's Swahili vocabulary is of PB origin. (2) Those proposing a heavy foreign, mainly Arabic, component for Swahili. Thus Krumm [1940:2] suggests that 20% of the items used in spoken Swahili are of foreign origin, 30% in written Swahili, and up to 50% in older poetry. Such proposals often imply such levels of loan material are out of line with other languages.

These claims raise several questions. One concerns Guthrie's corpus which contains slightly over 2,000 words, compared with over 400,000 words in the O.E.D., and the estimate of a passive vocabulary of 20,000 items for the average English speaker. Assuming the average Swahili speaker's vocabulary is similar in size to that of the average English speaker, then any estimate based on Guthrie's figures will assess only a small part of that vocabulary. A second concerns the basis of Krumm's methodology, which is unstated. The roundness of his figures indicates they may be rough estimates. A third is the lack of outside control. Even given a standard list of items for comparison, how would Swahili figures stand up against those for other languages, African or non-African? Until we have some idea about that, we cannot know about the degree of their "normality". Finally, the two claims above do not allow for the very real possibility that items may be neither of PB nor foreign origin. We now think that Swahili has existed as a discrete language on the coast for some 1200 years. Before that stretched at least another 2,000 years back to PB. During both periods Swahili must have absorbed material from other languages, Bantu and non-Bantu, yet presently available etymological dictionaries (except Sacleux) do not mention this possibility.

These claims about Swahili may usefully be compared with the types of statement current about English. Williams [1975:67], for example, distinguishes different kinds of vocabulary based on frequency of use (first 1,000 most frequently used words, second thousand, up to 10,000). Major etymological dictionaries differentiate inherited, loan, and other, vocabulary. Their main distinction is between inherited and borrowed elements, taken mainly from French, to a lesser extent from Danish, classical, and other languages. Among the most used English vocabulary is a high percentage of inherited items and a low proportion of loans. Moving into the lexis of lesser frequency, the level of loans from French and classical languages, not Danish, rises dramatically, to the point where after 4,000 words, inherited items form only a quarter of the total, while French and Latin provide 60%. The ratio of inherited to loan items varies along well-recognised parameters such as style, register, topic of discourse, educational level of speaker, etc.

Most of these loanwords can be ascribed to known major facts of the history of English, most obviously 300 years of its history, A.D. 1100-1400, when the ruling classes and their satellites spoke French almost exclusively while the rest of the population spoke English. There is also a long tradition of drawing on Latin and Greek for certain kinds of specialised lexis.

It seemed desirable to break Swahili down along the same general lines just sketched for English, but practical problems necessitated modification. To my knowledge there is no large frequency-based ranking of Swahili vocabulary. We know less of the external history of Swahili than of English. We have scanty knowledge of lexical change and innovation between PB and contemporary Swahili. Little has been done on differentiating foreign loans according to period and dialect of origin. Virtually nothing has been done on local African loans in Swahili. Finally, we do not know the degree of typicalness of Unguja in the overall historical process along the the Swahili dialect spectrum, so we need to compare it to other Swahili dialects, but we have even less data for them than for Unguja/Standard Swahili.

Given these obstacles, I adopted a modified approach and would stress that it represents only a beginning: (a) A slightly modified version of Swadesh's 100-word list was initially applied to 16 coastal Swahili dialects, from north to south: Mwiini, Bajuni, Siu, Pate, Amu, Jomvu, Mvita, Chifunzi, Vumba, Mtang'ata, N. and S. Pemba, Tumbatu, Hadimu-Makunduchi, Unguja, and Mwani. As a form of control, 11 other East African coastal languages (4 Comorian dialects, 4 Mijikenda, 2 Pokomo, plus Elwana) and English were also considered. (b) Each word on each list was carefully scrutinised, and the same basic distinctions drawn as are made for English: (i) Inherited (corresponding to PIE and Germanic), we distinguished PB, Eastern Bantu, North East Coastal Bantu, and PSabaki. Although the number of distinctions made is different, they correspond to all the pre-English, and pre-Swahili, stages respectively. (ii) Loans, divided into foreign (Arabic, Indian, Persian), local (Bantu and Cushitic), and material from other Swahili dialects, relevant when considering the southern Swahili dialects. (iii) Other, a minor category, comprising Swahili-specific items and those of unknown origin.

The results are set out in Table 1 (see p. 248), figures of 0.5 being the result of the presence of two words for some items. These results suggest the following tentative conclusions: (c) Percentages for inherited items for individual Swahili dialects range from just over 70% to 90%, average 80%. Thus, at this level, the bulk of Swahili basic vocabulary is inherited. The figures for the 11 control languages and for English also fall within this range.

(d) The second largest overall source of vocabulary is a loan set from other East African languages, mainly Bantu and Cushitic. The range is from 5% to 15%, average just over 8%. The (mainly Southern) Cushitic set is smaller and stable (older), the Bantu set more variable in size (i.e. more recent), ranging from zero to 10%. With one exception (Elwana), the East African control languages also fell within these limits.

(e) The third largest source is foreign loans, ranging from 2% to 8%, average just under 5%. The only relevant control languages, the Comorian dialects, have a comparable level of outside loans.

(f) With the exception of Mwiini, historical loans from other Swahili dialects are limited to dialects from Mombasa south, ranging from zero in the north to 10% in Unguja, average 3%. Two control languages also have high levels of Swahili loans.

(g) Total figures for loans (d-f above) range from 6% to 23%, average 16%. This compares to 12% for English and the other control languages. The latter figure would almost certainly be raised slightly if some of the "unknown" category were diagnosed.

(h) The remaining items are of uncertain/unknown origin or Swahili-specific (under 5%). The comparable figures for English (4%) and the other East African languages (8%) are similar or a little higher, the latter again reflecting our level of ignorance of these languages.

(i) The Swahili dialects of northern Kenya and Somalia, with the partial exception of Mwiini, have the highest level of inherited items (nearly 90%) and a correspondingly low level of loans from neighboring African languages. The dialects of Tanzania, particularly of Pemba and Zanzibar, have a significantly lower proportion of inherited items explained by their higher level of loans from other Swahili dialects and/or neighboring Bantu languages. The inter-dialect loans in the southern dialects, especially Unguja, derive from the northern dialects. Elsewhere [Nurse 1982:191] I have suggested they have a specific Amu/Pate/Siu shape. Loans from neighboring Bantu languages are most evident in the rural dialects of Zanzibar. The general level of penetration of the dialects south of Mombasa by loans from neighboring languages is almost identical to that of the mainland languages of the control group.

(j) The same northern dialects are also more internally consistent than those further south. This, and (i), apparently reflect the respective geographical position of the two groups: the northern communities are closely adjacent and relatively isolated, whereas the southern dialects cover a longer stretch of coast and islands and are more open to neighboring language communities.

The logical next step would be to apply a longer list, say of 1,000 items, to a selection of the foregoing dialects. Again, this ideal procedure was modified by the lack of available accurate data for many of the dialects for the 1,000 items, and four dialects were selected for which adequate data were available. The figures on the right are taken from Williams [1975] for a 1000-word list for English, but it should be emphasised that the lists used are different and thus not really comparable. William's list is frequency-based, whereas the list used on the four dialects was the more arbitrary one used in the Language Survey of Tanzania. (See Table 2 on page 250).

From Table 2 certain things are obvious. The proportion of inherited items drops, dramatically in the northern dialects, less so for the southern ones. The percentage of foreign loans rises, again dramatically for the northern dialects, less steep for the southern. Comparison with William's figures suggests that this tendency would be magnified if larger samples were taken. Such sampling would, however, encounter major problems in Swahili with many items of unidentified origin.

Other things in Table 2 are less clear, because the level of our ignorance

Table 1a: Sources of lexis for 100-word (Swahili dialects)

	Mwi	Baj	Siu	Pat	Amu	Jom	Mvi	Chi	Vum	Mta	NP	SP	Tum	Had	Ung	Mwa
PBantu	44.5	44.0	42.5	44.5	44.5	39.5	39.0	42.0	38.5	38.5	34.0	36.0	34.0	33.5	36.0	40.5
EBantu	32.5	39.5	39.5	38.5	37.5	36.5	36.0	34.0	33.5	33.5	34.0	31.0	31.0	33.5	31.0	28.0
NECBantu	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
PSabaki	5.0	5.0	6.0	6.0	6.0	5.0	5.0	5.5	5.5	5.0	6.0	5.0	5.0	4.0	5.0	6.0
total inherited	83.0	89.5	89.0	90.0	89.0	82.0	81.0	82.5	78.5	78.0	75.0	73.0	71.0	72.0	73.0	75.5
ECushitic	4.0	1.5	1.5	1.5	1.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	-
SCushitic	1.0	2.0	2.0	1.5	2.0	2.0	2.0	2.0	3.0	2.0	1.5	2.0	3.0	4.0	3.0	1.0
other Sw.	4.0	-	.5	-	-	4.0	3.0	1.0	2.5	2.0	3.0	5.5	5.5	4.0	10.5	2.0
Bantu	-	1.0	1.0	1.0	1.0	2.0	3.0	6.0	7.0	8.5	9.0	7.5	9.0	10.0	3.5	11.0
total local loans	9.0	4.5	5.0	4.0	4.5	8.5	8.5	9.5	13.0	13.0	14.0	15.5	18.0	18.5	17.5	14.0
Arabic	4.0	2.0	2.0	2.0	2.0	4.0	5.0	2.5	3.5	3.5	4.0	5.0	4.0	2.0	4.0	3.0
India	-	-	-	-	-	1.0	1.0	1.0	1.0	1.0	2.0	2.0	1.0	-	1.0	-
unclear	-	-	1.0	1.0	1.5	1.0	1.0	1.0	1.0	1.0	.5	1.0	.5	1.0	1.0	-
total foreign loans	4.0	2.0	3.0	3.0	3.5	6.0	7.0	4.5	5.5	5.5	6.5	8.0	5.5	3.0	6.0	3.0
Swahili-specific	1.0	1.0	1.0	1.0	1.0	-	-	-	-	-	-	-	-	-	-	1.0
?	3.0	3.0	2.0	2.0	2.0	3.5	3.5	3.5	3.0	3.5	4.5	3.5	5.5	6.5	3.5	6.5

Table 1b: Sources of lexis for 100-word list (Sabaki languages and English)

| | Comorian | | | | Mijikenda | | | Pokomo | | | |
	Ngaz	Mwal	Ndzw	Maor	Giry	Chon	Duru	Digo	Upok	LPok	Elwana	English
PBantu	43.5	41.5	43.0	42.5	40.0	39.0	39.0	36.0	41.5	41.0	37.0	
EBantu	36.5	35.5	35.0	34.5	38.5	38.5	37.0	33.0	34.5	30.5	30.0	
NECB	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	
PSabaki	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.5	
inherited	84.0	81.5	83.5	82.0	84.5	83.5	81.5	74.0	82.0	77.0	73.0	84.0
ECushitic	–	–	–	–	–	–	–	–	4.0	1.0	9.5	
SCushitic	1.0	1.0	1.0	1.0	1.5	2.0	2.0	4.5	3.0	4.5	1.0	
Cushitic	–	–	–	–	–	–	–	1.0	–	–	.5	
Thagicu	–	–	–	–	1.0	1.0	3.5	2.0	1.5	2.0	6.0	
Swahili	1.5	1.5	2.5	1.5	–	1.0	–	9.5	2.0	9.0	–	
Bantu	2.5	1.5	1.5	2.0	4.0	4.0	3.0	3.0	2.5	2.0	–	
Maasai	–	–	–	–	–	–	1.0	1.0	–	–	–	
local loans	5.0	4.0	5.0	4.5	6.5	8.0	9.5	21.0	13.0	18.0	17.0	1.0
Arabic	2.5	2.5	2.5	3.0	–	–	–	–	–	–	–	
unclear	1.0	2.0	2.0	3.0	–	–	–	–	–	–	–	
French	–	1.0	1.0	1.0	–	–	–	–	–	–	–	
foreign loans	3.5	5.5	5.5	7.0	–	–	–	–	–	–	–	11.0
?	7.5	9.0	6.0	6.5	9.0	8.5	9.5	5.0	5.0	4.0	9.5	3.0
											dialect	1.0

Table 2: Sources of lexis for 1000-word list (4 Swahili dialects)

	Bajuni	Pate	N. Pemba	Unguja	(English)
inherited	68.0	69.0	66.0	65.5	(83.0)
African loans	9.0	9.0	8.0 ?	7.5 ?	
Swahili dialect loans	–	0.5	2.0 ?	4.5 ?	
foreign loans	7.5	7.5	10.0	10.0	
total loans	16.5	17.0	20.0 ?	22.0 ?	(15.0)
Swahili-specific	2.0	2.0	1.5	2.0	
unknown	13.5	12.0	12.5	10.5	(2.0)

rises. The proportion of items of unknown origin triples, making the figures for all local loans combined, and thus the total loans, less reliable. Since it is likely most of the unknown items are of local provenance, the figures for loans from local languages and other Swahili dialects would probably also rise if we could diagnose the unknown set.

The general conclusion from this limited investigation is that the proportion of inherited to loan material in Swahili is not significantly different statistically from that in English or the other East African control languages.

REFERENCES

Krumm, B. 1940. *Words of Oriental Origin in Swahili*. London.

Nurse, D. 1982. "A tentative classification of the primary dialects of Swahili." *Sprache und Geschichte in Afrika* 4:165-206.

Williams, M. J. 1975. *Origins of the English Language*. New York: The Free Press.

A NEW ANALYSIS OF THE KRIO CLEFT PREDICATE

Dudley K. Nylander
University of Manitoba

The cleft predicate is a construction found in a number of African and creole languages. In this paper, I propose a new (transformational) analysis of the cleft predicate, using data from Krio (an English-based creole language spoken in Sierra Leone and elsewhere in West Africa). The basic characteristic of the cleft predicate is that the cleft element is a copy of the matrix verb, as shown in (1). The cleft element must be identical to the matrix verb, as shown by the contrast between (1) and (2). The matrix verb cannot be cleft, as shown by the contrast between (1) and (3).

(1) $[_{S''}$ nà brúk$_i$ $[_{S'}$ $[_S$ mì pàdí dè brúk$_i$ ìn bùbá]]]
    it is-wash-   my-friend-PROG-wash-her-dress (PROG=progressive
                                           aspect)

    'what my friend is doing is washing her dress'
    (lit. it is wash that my friend is washing her dress)

(2) *$[_{S''}$ nà brúk$_i$ $[_{S'}$ $[_S$ mì pàdí dè klín$_j$ ìn bùbá]]]
    it is-wash-   my friend-PROG-clean-her-dress

(3) *$[_{S''}$ nà brúk$_i$ $[_{S'}$ $[_S$ mì pàdí dè e$_i$ ìn bùbá]]]

The ungrammaticality of (3) can be attributed to the fact that the trace of the cleft verb is not properly governed. This implies that the auxiliary element dè is not a governor. Nor is ìn bùbá , since it is an NP, i.e. a maximal projection. Two other features of the cleft predicate are (i) the cleft element is incompatible with an auxiliary element, as shown by the contrast between (4) and (1); (ii) the cleft element is incompatible with a direct object, as shown by the contrast between (5) and (1).

(4) *$[_{S''}$ nà dè$_i$ brúk$_j$ $[_{S'}$ $[_S$ mì pàdí dè$_i$ brúk$_j$ ìn bùbá]]]

(5) *$[_{S''}$ nà brúk$_i$ $[_{NP}$ ìn bùbá]$_j$ $[_{S'}$ $[_S$ mì pàdí dè brúk$_i$ $[_{NP}$ ìn bùbá]$_j$]]]

The phenomena illustrated in (4) and (5) have led a number of linguists (including Valdman [1978:46]) to resort to the notion of "deverbal", to account for the fact that the cleft element has undoubtedly lost its verbal status. However, the notion of "deverbal" raises more questions than it answers. In particular, how would a "deverbal" be represented in the lexicon? More precisely, if we adopt the notion, we would be forced to list the cleft brúk in (1) as a "deverbal" and the matrix brúk as a verb in the lexicon. Now, if a verb can be functionally defined as an element that can combine with auxiliary markers, e.g. dè , no such definition is available for a "deverbal". Furthermore, as shown by the contrast between (1) and (3), there can be no "deverbal" without the presence of the corresponding matrix verb.

In this paper, I would like to propose a new analysis of the cleft predi-
cate. The analysis is based on the observation that Krio has a base rule which
allows reduplication. The rule is given in (6) and its use is illustrated in
(7). Krio also has the S" expansion rule given in (8). The rule is independ-
ently required to account for the clefting of NPs, PPs, and APs.

(6)   VP → V_i V_i (NP)

(7)   mì pàdí dè brúk$_i$ brúk$_i$ ìn bùbá   'my friend is constantly washing
      my-friend-PROG-wash-wash-her-dress   her dress'

(8)   S" → TOP α S'

Suppose, now, we adopt the essentials of Chomsky's [1977] analysis of cleft
sentences, i.e. (i) the cleft element is directly generated under S" and (ii) a
copy of the cleft element is generated in S and then moved into COMP and there
deleted. Then, combining (7), (8) and the transformational rule "Move α ", we
have four independent possibilities, illustrated in (9). (9a) and (9b) have
the same meaning as (1).

(9) a. $[_{S''}$ $[_{TOP}$ nà] $[_V$ brúk]$_i$ $[_{S'}$ $[_S$ mì pàdí dè brúk e$_i$ ìn bùbá]]]

    b. $[_{S''}$ $[_{TOP}$ nà] $[_V$ brúk]$_i$ $[_{S'}$ $[_S$ mì pàdí dè e$_i$ brúk ìn bùbá]]]

    c. $[_{S''}$ $[_{TOP}$ nà] $[_{NP}$ ìn bùbá]$_i$ $[_{S'}$ $[_S$ mì pàdí dè brúk brúk e$_i$]]]
                      it is-   her-dress-   my-friend-PROG-wash-wash

            'it is her dress that my friend is constantly washing'

    d. $[_{S''}$ $[_{TOP}$ nà] $[_{NP}$ mì pàdí]$_i$ $[_{S'}$ $[_S$ e$_i$ dè brúk brúk ìn bùbá]]]
                      it is-   my-friend-   PROG-wash-wash-her-dress

            'it is my friend that is constantly washing her dress'

In (9a), e$_i$ (the empty category) is governed by brúk (and not by ìn
bùbá , which, as we have seen, is a maximal projection). In (9b), e$_i$ is also
governed by brúk (and not by dè —recall (3)). In (9c), e$_i$ is also gov-
erned by brúk . If we adopt Kayne's [1981] version of the Empty Category Prin-
ciple (ECP) in which government by a lexical category does not remove the need
for an antecedent, then, to account for (9a), (9b), and (9c), we are forced to
assume that S" (which contains the antecedent of e$_i$ in each case) is a projec-
tion of V, the lexical governor. That S" is a projection of V is suggested by
Chomsky [1981:140, footnote 27], but needs further investigation.

Sentence (9d) is more problematic. But, suppose we assume, following Rou-
veret & Vergnaud [1980:115] that S' deletes, since COMP is null. Suppose, fur-
ther, that S is Chomsky-adjoined to the cleft NP. The result is (10).

(10) $[_{S''}$ $[_{TOP}$ nà] $[NP_j$ $[_{NP_i}$ mì pàdí]$_i$ $[_S$ e$_i$ dè brúk brúk ìn bùbá]]]

Suppose we assume, further, that (i) S is not a maximal projection and (ii) a maximal projection cannot be dominated by a category of the same type. (ii) allows NP_j (but not NP_i) to be a maximal projection. Then the noun pàdí governs e_j if we adopt the definition of government given by Sportiche and Aoun [1981][1], see (11). The relevant maximal projections in (10) are S" and NP_j, both of which dominate pàdí and e_i.

(11) Government

α governs β if α = X^0 and α and β share all maximal

projections [Sportiche & Aoun 1981]

The preceding analysis implies that N is a governor, contrary to Kayne's [1982] claim. But it can be shown that Krio has features which Kayne claims not to exist, e.g. genitival constructions in which a non-maximal projection of N governs a maximal projection of N (see (12a)) and tensed clauses introduced by prepositions (see (12b)). As such, Krio shows the need for a parametrised version of Kayne's theory.

(12) a. $[_{NP}$ $[_N$ John] $[_{N''}$ ìn ós]]   'John's house'
            John-   his-house

      b.   à $[_V$ gládì] fó wé ùnà dón kám   'I am happy (for) that you have come'
           I-bè happy-for-that-you-PERF-come
           (PERF = perfective aspect)

Returning now to (4) and (5), the ungrammaticality of these sentences follows from a very simple fact, namely, that the verb brúk does not form a constituent with the auxiliary element or the direct object.

REFERENCES

Chomsky, N. 1977. "On WH-Movement."

Chomsky, N. 1981. *Lectures on Government and Binding.* Dordrecht: Foris.

Kayne, R. S. 1981. "ECP extensions." *Linguistic Inquiry* 12:93-133.

Kayne, R. S. 1982. "Predicates and arguments, verbs and nouns." Paper presented at 1981 GLOW.

Rouveret, A. and J-R Vergnaud. 1980. "Specifying reference to the subject." *Linguistic Inquiry* 11:97-202.

Sportiche, D. and Y. Aoun. 1981. "The formal theory of government." Paper presented at 1981 GLOW.

Valdman, A. 1978. "La créolisation dans les parlers franco-créoles." *Langue française* 37:40-59.
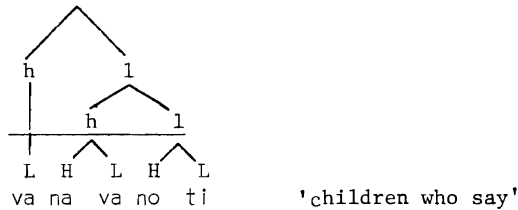
PROBLEMS IN THE METRICAL REPRESENTATION OF TONE

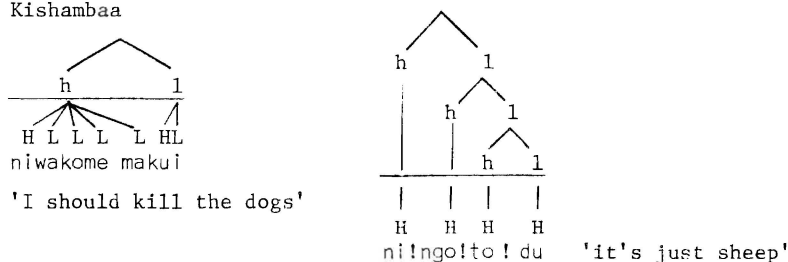David Odden
Yale University

     Although there has been considerable research into deep tonal alternations
in nonlinear phonology, less attention has been paid to relating abstract tonal
entities to actual pitch values. A typical example of this problem is down-
drift, whereby H and L tones do not receive an invariant translation into spe-
cific pitch levels, but are modified by a rule which gives the first H and L
tones relatively higher pitch, and gives following tones relatively lower pitch:
this iterates through the string so that every span of H and L tones is lower
than the preceding. Clements [1981] has argued that such phenomena can be giv-
en a metrical treatment. I argue that the machinery of metrical tone register
predicts that a wider range of tonal processes could be found and then show
that much of the predicted range of variation in tone register systems is ac-
tually attested.

     In the metrical treatment of tone terracing, different tonal registers are
described in terms of a metrical tree built on H and L tones with the labels h
and l, such as in (1).

(1)   Shona


```
         h          l
         |         /\
         |        h    l
        /|\      /\   /\
        L H    L H   L
        va na  va no  ti        'children who say'
```

This tree is generated by three rules:

(2) a. Every tonal matrix containing H preceded by L forms the left branch of
        a maximal n-ary branching tree.
    b. Any remaining tonal matrices are gathered into an n-ary branching tree.
    c. Trees constructed by (a) and (b) are gathered into right-branching bi-
        nary trees labeled by the labeling principle h,l.

     A change in one of these parameters for tree construction can yield a dif-
ferent tone register system. Consider first a process much like downdrift,
namely automatic downstepping, found in Kishambaa, inter alia, which has pre-
dictable downdrift. Unlike the usual case of downdrift, every H is downstepped
after a H as well. (See example 3 on the next page). The trees for this type
of downdrift are constructed by rules like those for classical downdrift, ex-
cept in Kishambaa, we specify that a H forms a left branch everywhere. The
crucial difference is that in Kishambaa, when H is preceded by H, both H's form
the left branch of a foot, so the first H forms the only member of its foot,
hence adjacent H tones are "downstepped".

(3) Kishambaa


```
           h        1
       H L L L  L HL
       niwakome makui
```

'I should kill the dogs'

```
H    H   H   H
ni!ngo!to! du    'it's just sheep'
```

The metrical theory of tone register also handles the problem of Kipare downstep. In this language, there is no downdrift, which alone is handled by gathering all tones into a single foot. Although there is no downdrift, there is downstep, which arises under two conditions. It arises when a L tone is set afloat by a rule spreading H leftward in ní !θúkári from ní θúkári 'it is sugar'. The tree construction rules of Kipare are very much like those found in Kikuyu [Clements 1981]. In both languages, only a floating L tone defines the edge of a tonal foot. Kipare differs from Kikuyu in that the drop in pitch between registers is less than the drop between different tones in Kipare, while in Kikuyu, the drop between registers is actually the same as the drop between different tones ("absolute downstep").
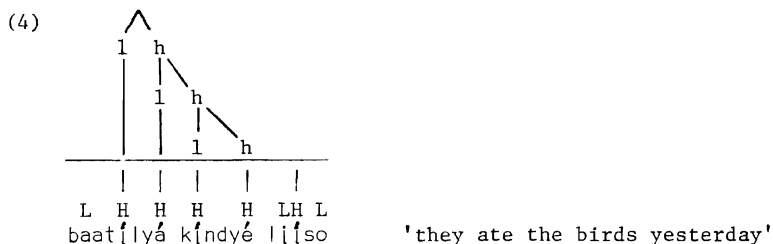
Kipare also has a rule assigning an utterance-final H to a lower register, so that underlying ípángá becomes ípá!ngá . This can be described by another rule which makes a final H be the sole member of a degenerate foot. This process differs from related processes of downdrift in that the environment for defining the foot is the end of an utterance, rather than some particular neighboring tone. The rule labeling sequences of feet h,1 which accounts for downsteps conditioned by floating L tones also applies to the foot created by the "marginal downstep" rule.

A similar process in final position is found in Kenyang, which makes an utterance final L the sole member of a degenerate foot. Kenyang also has downdrift, so we independently need the labeling principle h,1 for the feet constructed by the downdrift rule. Kenyang thus differs from Kipare in its utterance final register rules only by having a L tone rather than a H tone form the foot. At the utterance level, sequences of feet are grouped together into a tree labeled h,1 just as they are in Kipare, Shona, Kikuyu, and Kishambaa.

The difference between these languages lies in what tones form left-branches, what environmental factors condition foot formation, and what the physical interpretation of register shift is. They have in common the fact that all groups of feet are gathered into a tree labeled h,1. But trees can be labeled 1,h as well, and Clements [1981] shows that Zulu has a subsystem of downdrift, whereby a downstep becomes an upstep in a certain environment. Although upstep in Zulu is a modification of the basic labeling principle h,1, there are other register phenomena which require 1,h labeling independently. Thus, the selection of the labeling principle h,1 versus 1,h is an independent variable, just as the conditioning for foot formation or the tones which form branches are in-
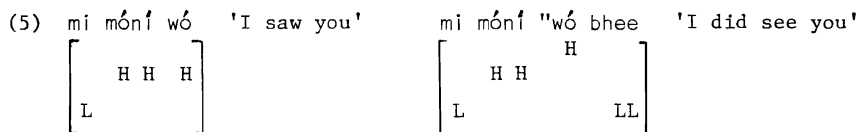
dependent variables.

A case of automatic upstep is found in Kimatuumbi. In this language, every H in a sequence of H's is automatically lower than the following H's. Kimatuumbi is then in one sense like Kishambaa; it has automatic stepping of H's after H's, so we will describe it by making every H the sole member of a degenerate foot. Kimatuumbi differs from Kishambaa mainly in the labeling princple, which is l,h in Kimatuumbi, but h,l in Kishambaa.

(4)

```
        /\
    l   h
    |    |\
    |    l  \ h
    |    |   |\
____|____|___l__\h____
    |   |   |   |   |
    L   H   H   H   H  LH  L
    baatʃlyá kĭndyé liʃso          'they ate the birds yesterday'
```

A similar upsweep rule is found in Bukusu, where a string of L tones is realised with ascending pitch, as described in Austen [1974]. Bukusu is thus described by the same mechanism used to describe Kimatuumbi, except that in Bukusu, L tones, and not H tones, form a degenerate foot.

There are similar processes which affect only a single tone standing at some phonologically defined margin. In Engenni, a H tone before a L stands in a higher register than preceding H's [Thomas 1974].

(5) mi mónĭ wó   'I saw you'   mi mónĭ "wó bhee   'I did see you'

```
⎡              ⎤                      ⎡         H       ⎤
⎢    H  H  H   ⎥                      ⎢    H H          ⎥
⎢ L            ⎥                      ⎢ L            LL ⎥
⎣              ⎦                      ⎣                 ⎦
```

Engenni thus employs the labeling principle l,h just like Kimatuumbi and Bukusu. The foot formation rule is different in Engenni; here, a H tone forms a degenerate foot only before a L tone, not everywhere. This is similar to the rule in Kipare where a H tone forms a degenerate foot before pause; the surface difference between these two languages results from the different labeling principles for the languages. A similar "marginal upstep" process is found in Imithupi Makua, where a H tone before a string of H's is lower than following H's. To describe this we merely specify that a H tone after a L or at the beginning of an utterance forms a degenerate foot, and that the following string of free H tones forms a foot. The labeling principle for Makua is l,h; it is the position of the conditioning material that distinguishes Makua from Engenni.

There are a considerable number of tone-register problems in languages beyond simple downdrift and downstep. Yet these all can be handled in a metrical theory by variations in a few parameters, including class of input tones, the conditioning environment, the physical interpretation of register differences, the labeling principle, and the includion of free tones into feet. A metrical

theory of tone register handles not just classical downdrift, but also seemingly aberrant forms of downdrift as are found in Kishambaa and Kipare, as well as a whole range of upsweep phenomena and a number of processes not discussed here. The machinery underlying the metrical theory of register predicts that such phenomena should be possible. The fact that the theory generalises to handle other phenomena besides those discussed in Clements [1981] provides quite strong support for the theory.

REFERENCES

Austen, C. 1974. "Anatomy of the tonal system of a Bantu language." In W.R. Leben (ed.), *Papers from the Fifth Annual Conference on African Linguistics*, pp. 21–33. *Studies in African Linguistics*, Supplement 5.

Clements, G. N. 1981. "The hierarchical representation to tone features." *Harvard Studies in Phonology* 2:50–107. [Distributed by IULC.]

Thomas, E. 1978. *A Grammatical Description of the Engenni Language*. SIL Publications in Linguistics, vol. 60. Dalles: Summer Institute of Linguistics.

LE FINI/L'INFINI OU
L'AFFIRMATION/L'INTERROGATION EN MOBA
(LANGUE VOLTAÏQUE PARLÉE AU NORD-TOGO)

Annie Rialland
C.N.R.S., E.R.A. 433

1. Les Marques Prosodiques: le Fini/l'Infini

Nous avons montré que l'opposition entre affirmation et interrogation n'utilisait pas de marques intonatives au sens propre, c'est à dire de marques mélodiques (tons de frontière ou suppression de downstep par exemple). La mélodie reste réservée aux réalisations des tons (4 tons et downstep; voir pour l'étude du système tonal, Rialland [1983]. Les marques prosodiques de l'affirmation/ interrogation sont d'une autre nature: elles consistent dans le mode d'arrêt de la voix, brutal pour l'affirmation (le fini), doux et progressif pour l'interrogation (l'infini).

Une étude phonétique nous a permis de préciser la nature de cette opposition, tant du point de vue physiologique qu'acoustique. L'arrêt brusque de la voix est obtenu, physiologiquement, par un coup de glotte, l'extinction lente et douce par une ouverture progressive de la glotte à la fin de la voyelle finale qui s'éteint dans un souffle. Du point de vue acoustique, l'extinction lente se traduit par un decrescendo et une disparition progressive des harmoniques élevés au cours de la voyelle. Le mode d'arrêt de la voix a également pour corrélat la longueur vocalique: l'arrêt brusque a pour effet de raccourcir la voyelle finale, l'extinction lente, au contraire, de l'"étirer".

A titre d'example, nous nous en tiendrons, pour ce résumé, aux tracés correspondant à l'opposition /táná`/ [táná] 'des pierres', /táná.../ [táná...] 'des pierres?' (les trois points indiquant l'étirement des voyelles finales) (Figure 1).

La voix s'arrête rapidement. La Fo correspond à la réalisation des tons, en l'occurrence des deux tons hauts (Figure 2).

On voit que la voyelle finale est "étirée" et que son énergie décroît progressivement, ce que traduit la forme en fuseau de l'oscillogramme. La Fo dont on peut constater qu'elle reste inchangée par rapport à la Figure 1, correspond toujours à la réalisation des deux tons hauts (Figure 3). N.B. Le zéro (0) du débit d'air est en haut de la figure. La remontée de la ligne traduit donc une diminution.)

On notera que le débit d'air décroît rapidement à la fin de la voyelle et qu'il devient vite nul, ce qui est dû à la fermeture glottale (Figure 4, p. 260).

On note ici, au contraire, que le débit d'air augmente: la glotte s'ouvre et la voyelle se termine dans un souffle. Sur l'oscillogramme, la simplification de la forme d'onde indique que les harmoniques élevés s'affaiblissent et disparaissent progressivement.
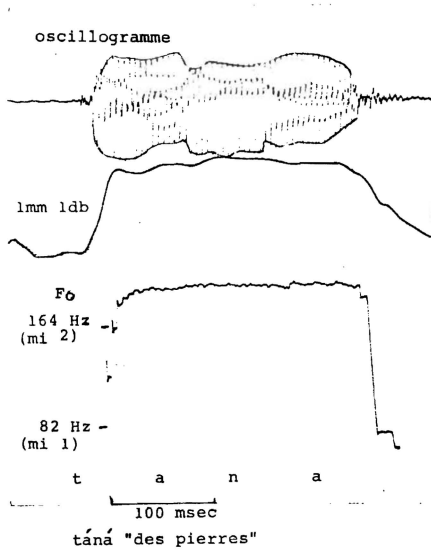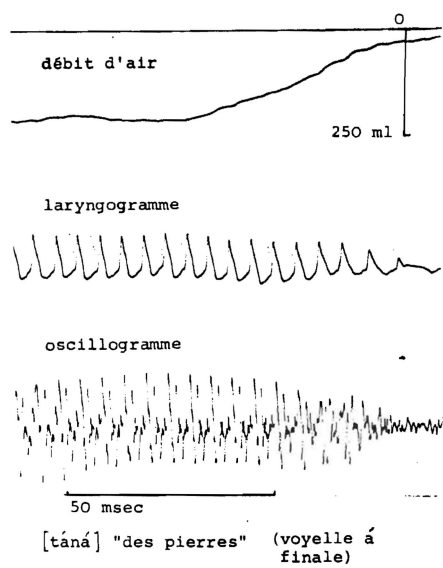
Figure 1. <u>Le fini: l'affirmation</u>

oscillogramme

lmm ldb

Fo
164 Hz
(mi 2)

82 Hz -
(mi 1)

t   a   n   a

100 msec

táná "des pierres"

Figure 3. <u>L'affirmation</u>

débit d'air

250 ml

laryngogramme

oscillogramme

50 msec

[táná] "des pierres"   (voyelle á
                        finale)

Figure 2. <u>L'infini: l'interrogation</u>

oscillogramme

lmm ldb

Fo
164 Hz
mi 2

82 Hz
mi l
        t   a   n   a . . . . .

100 msec   táná ... "des pierres ?"

Figure 4. L'interrogation

[táná...] "des pierres?"   (fin de la voyelle)
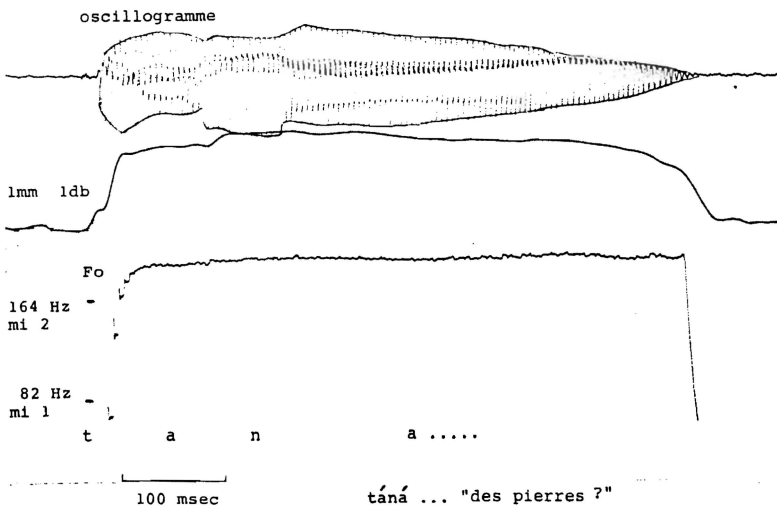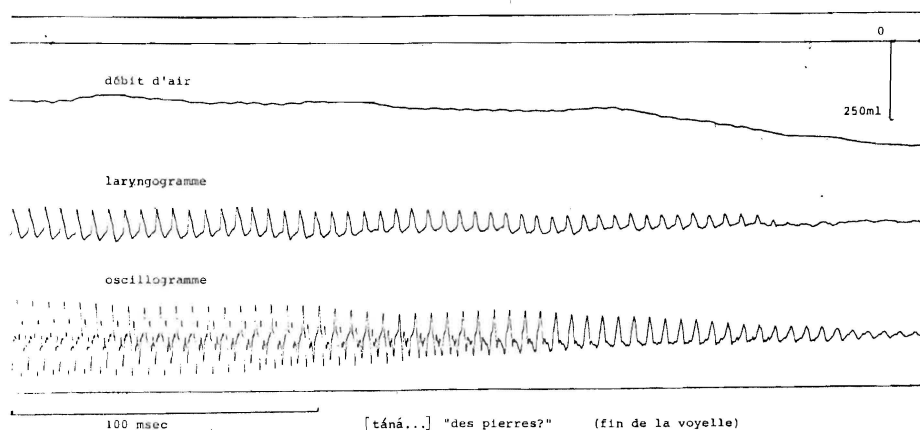
2.   Les Marques Segmentales: les Formes de Base dans l'Interrogation

Dans un deuxième temps de notre communication, nous avons montrés que les
formes apparaissant dans l'interrogation étaient les formes de base tandis que,
dans l'affirmation, ces formes avaient subi troncation ou métathèse. Ceci est
évidemment contraire au sens habituel des dérivations ou transformations entre
affirmation et interrogation. Le tableau suivant permet de comparer les formes
des mêmes noms dans l'affirmation (ou à l'intérieur d'énoncé) et dans l'interro-
gation. Dans la dernière colonne, nous avons indiqué les noms équivalents dans
une langue apparentée, très proche mais plus conservatrice, le gurma.

	Affirmation (ou intérieur d'énoncé)		Interrogation	Gurma	
Noms avec suffixe gù	fɔ̀ɔk	fàa+gù	faàgù...	faàgū̄	'feuille'
	kōbùk	kōb+gù	kōbgù...	kōbgū̄	'cheveu'
Noms avec suffixes ú`, í`, à	pi̋enú`	pi̋en+ú`	pi̋enú...`	pi̋emú	'flèche'
	pi̋ení`	pi̋en+í`	pi̋ení...`	pi̋emí	'flèches'
	táná`	tán+à	táná...`	tánā̄	'pierres'
Noms avec suffixes kì, lì, mì tì, bì, ì	bi̋k`	bí+k`	bígí...`	bígā/bíg꓆ (fort/faible)	'enfant'
	túo|`	túo+|`	túo|ì...	túo|꓆	'mortier'
	ɲúm`	ɲú+m`	ɲúmí...`	ɲi̋mā/ɲi̋m꓆ (fort/faible)	'eau'

Affirmation		Interrogation	Gurma	
kút`	kú+t`	kúdí...`	kúdT	'fer'
nìb`	nì+b`	nìbì...	nìbā/nìbT (fort/faible)	'des gens'
bát`	bát+`	bádí...`	bádō/bádT (fort/faible)	'chef'

(Pour une étude des formes "faibles" et "fortes" en gurma et de leurs emplois, voir Rialland [1981]).

On voit qu'à l'affirmation, la métathèse affecte la suffixe gù et que la troncation affecte les suffixes de la forme C(ì) . On aura pu également remarquer que, segmentalement, les formes des suffixes moba dans l'interrogation sont identiques aux formes faibles des suffixes gurma. Ainsi, dans l'interrogation, se trouvent conservées des formes plus archaïques.

3. Relations entre Marques Prosodiques et Marques Segmentales ou le Rôle du "Poids" Prosodique

L'existence de la marque prosodique "infinie" explique la présence des formes de base ou formes "pleines" dans l'interrogation ainsi que le maintien de formes plus archaïques. En conférant plus de "poids" (pour reprendre ici le terme de L. Hyman [1983]) à la voyelle finale, elle l'a préservée.

4. Conclusion

L'opposition affirmation/interrogation, en moba, est caractérisée par des marques prosodiques qui ne mettent pas en jeu la mélodie: le fini (ou arrêt brutal de la voix)/l'infini (extinction lente de la voix). La marque prosodique "infinie", par l'accroissement de poids qu'elle confère à la voyelle finale, a eu pour effet de sauvegarder les formes pleines des mots, lesquelles, à l'affirmation, subissent métathèse et troncation.

[Les tracés ont été obtenus à l'Institut de Phonétique de Paris III. Les enregistrements, pour cette étude, ont été faits, en partie, à Paris, en partie, à Bombouaka (Nord-togo).]

REFERENCES

Hyman, L. M. 1983. "A theory of phonological weight." Ms.

Rialland, A. 1981. "Marques de ponctuation et d'intégration en gurma."

Rialland, A. 1983. "Le système tonal du moba comparé à celui du gurma." Dans J. Kaye, H. Koopman, D. Sportiche et A. Dugas (éds.), *Current Approaches in African Linguistics*, pp. 217-234. Dordrecht: Foris.

SERIAL VERBS AND GOVERNMENT BINDING THEORY

Ian Roberts
University of Southern California

0. Introduction

The purpose of this paper is to give an account of the properties of one type of serial-verb construction (henceforth, SVC) in terms of Government Binding (GB) theory, as outlined in Chomsky [1981]. The language which forms the object of study is Gokana, an Ogoni language of Eastern Nigeria.

1. Data

The structure of the SVC we are concerned with is given schematically in (1):

(1) NP Tns(Neg) V_1 NP_1 V_2-ma NP_2

In all the examples we will discuss, V_1 is tú 'take', so we will refer to the construction illustrated in (1) as the tú...ma construction. Some examples are shown in (2):

(2) a. aè   tú   íìra kùùmà   nùtɔ   'he opened the door with the
     he-Past take key   open-ma door   key'

   b. aè   tú   nyìmànù   bùmà   nɔm   'he cooked the meat intel-
      he-Past take intelligence cook-ma animal   ligently'

   c. mm̀   tú   kpègè zamá   gíòrò   'I bought a slave with money'
      I-Past take money buy-ma slave

   d. aè   tú   gíma   kpɔɔmá nɔm   'he cut the meat with the
      he-Past take knife cut-ma animal   knife'

We can see that tú is necessary for grammaticality from (3):

(3) *aè   íìra kùùmà   nùtɔ
    he-Past key   open-with door

Similarly, (4) demonstrates the necessity of the presence of ma :

(4) *aè   tú íìra kùùrà nùtɔ
    he-Past take key open door

At this point, one might be tempted to question the categorial status of tú . Is tú a Verb? Morphological tests indicate clearly that it is.

First, tú obligatorily takes 1Sg and 2Sg present-tense agreement, which takes the form of an extra low-tone copy of the final vowel. This is shown in (5):

(5) a. m̀ túù   gíma kpɔɔmá nɔm   'I cut the meat with the knife'
        I take-AG knife cut-ma animal

    b. ò túù   ìpkpè bùmà   múúró 'you cook the soup with a spoon'
        you take-AG spoon cook-ma soup

Second, tú obligatorily shows 2Pl agreement in -ì and the logophoric
marker, a harmonically conditioned e/ɛ . Both of these affixes attach outside
of other affixes, e.g. -ma , and to both Verbs of an SVC:

(6) a. oò   tuì   gíma kpɔɔmaì   nɔm
        you-pl-past take-2pl knife cut-ma-2pl animal

        'you cut the meat with the knife'

    b. aè   kɔ aè   túè   gíma kpɔɔmàè   nɔm
        he-past say he-past take-log knife cut-ma-log animal

        'he$_i$ said he$_i$ cut the meat with a knife'

Third, tú can itself appear with -ma attached, occupying the place of V_2 in
(1):

(7) aè   tú gíma tuumá nɔm   lɔ̀l   m̀m̀ bá̃
    he-past take knife take-ma animal remove in pot

    'he removed the meat from the pot with a knife'

So it seems that tú is a Verb. That V_2 is a Verb is seen from the attach-
ment of ma , as this affix attaches only to Verbs.

The question we address in this paper is, then, "How can we derive the prop-
erties of the tú...ma construction from general principles of Universal Gram-
mar (UG)?" To answer this question, we need to look at some of those princi-
ples.

2. Theory

Our account of the tú...ma construction centres on the Case theory and θ-
theory modules of UG. The central structural relation of each of these modules
is government, defined as follows:

(8) Government: A governs C in a configuration like

                $(_B ...C...A...C...)$

    where: (i)   A = X^0 (= a lexical element);
            (ii) where P is a maximal projection, if P dominates C,
                  then either P dominates A, or P is the maximal
                  projection of C;
            (iii) A c-commands C.

                    [Belletti & Rizzi 1981]

The instances of government that will concern us are primarily the following:

(9) a. $(_{VP}$ V   NP)

   b. $(_{PP}$ P   NP)

In (9a), V governs NP and the head of NP; in (9b), P governs NP and the head of NP.

   The principal condition of Case Theory is the Case Filter:

(10)   <u>Case Filter</u>:   *NP if NP is both phonologically realised and lacks
                         (abstract) Case.

In order to not lack Case, and so pass the Case Filter, we assume that an NP's inherent abstract Case feature must be matched under government with the abstract Case feature of some other item. In (9a), for example, if V has an Accusative feature, NP must have an Accusative feature also. The features will match under government and so NP will pass the Case Filter. Note that the Case Filter does not hold of empty categories, as we have stated it here.

   What happens to an NP in the environments shown in (11)?

(11) a. $(_{NP}$ N   NP), e.g. *destruction the city

   b. $(_{AP}$ A   NP), e.g. *proud John

Adjectives and Nouns lack Case features which can match in the way just described. That is why the examples given in (11) are bad. However, languages possess various ways of escaping the effects of the Case Filter in such examples. In English, the Preposition *of* can be inserted. This Preposition has a Case feature, and so the NPs can now match their inherent features with the feature of *of*. As a result, the Case Filter is satisfied, and we find NPs and APs of the type of *destruction of the city*, *proud of John*. We will see that Gokana also makes use of "dummy Case-assigners", analogous to English *of*.

   If a Verb is subcategorised for an argument, e.g. a direct object NP or complement S/S̄, it assigns a θ-role to that argument. θ-roles are semantic notions of the type Theme, Patient, Agent, etc. They thus express the semantic relations between Verbs and their arguments. θ-roles are assigned subject to the following well-formedness condition:

(12)   Every argument must be assigned one and only one θ-role, and every θ-role
       must be assigned to one and only one argument.

(12) is the θ-criterion. θ-roles are lexically specified properties of Verbs, linked to subcategorisation. Lexical properties are guaranteed in syntax by the following requirement, known as the Projection Principle:

(13)   Lexical properties must hold at all syntactic levels, i.e. D-Structure,
       S-Structure, and Logical Form.

(12) and (13) combine to ensure that all θ-roles will be uniquely and exhaustively assigned at all syntactic levels. θ-role assignment takes place under government.

The Case Filter has been linked to θ-role assignment in the following way:

(14) NPs must be Case-matched in order to be assigned θ-roles.

(14) is called the Visibility Condition. Given (12) and (13), NPs (at least, those which are subcategorised arguments) must be Case matched in the manner described above.

Having presented the necessary theoretical notions, we now return to the Gokana tú...ma construction

3. Gokana

The properties of the tú...ma construction can now be deduced from the following statements:

(15) a. -ma is an affix which adds a θ-role to the Verb to which it attaches, but which lacks a Case features;

   b. tú is a Verb which transmits, rather than assigns, a θ-role, but which has a Case feature.

We will first support these statements and then show how they derive the properties of the tú...ma construction.

Given the θ-criterion, no argument NP is allowed unless it is assigned a θ-role by some Verb. What we find in Gokana is a consistent parallel between the number of arguments a Verb allows and the number allowed by that Verb + ma . In each case, the Verb + ma combination allows one "extra" argument NP in the clause. This is illustrated in (16):

(16) a. Intransitive Verb:

   aè   kpε   'he paid'
   he-Past pay

   aè   tú   kpègè kpεεmá   'he paid cash'
   he-Past take money pay-ma

   b. aè   kpɔ nɔm   'he cut the meat'
      he-Past cut animal

      aè   tú   gíma kpɔɔmá nɔm   'he cut the meat with the knife'
      he-Past take knife cut-ma animal

   c. Ditransitive Verb:

      aè   nὲ   nuù   nwín   'he gave the thing to the child'
      he-Past give thing-assoc child

c. Ditransitive Verb:

   aè   tú   nyìmànù   nɛɛma   gímà   nwín
   he-Past take intelligence give-ma knife-assoc child

   'he intelligently gave the knife to the child'

The simplest way to account for this is by saying that ma adds a θ-role to
the Verb to which it attaches.

   Further support for this view comes from evidence of another affix, -a ,
which attaches to Verbs and affects their θ-roles. In this case, however, the
affix in question *takes away* one of the Verb's arguments. As a result, transi-
tive Verbs receive an ergative or middle interpretation.

   Examples of the productive affixation of -a and -ma to Verbs, with the
concomitant effects on the Verb's θ-roles, are given below:

(17) a. aè   ìg   íìra   'he twisted the key'
         he-past twist key

     b. aè   tú   bá ìmà   íìra   'he twisted the key with his hand'
         he-past take hand twist-ma key

     c. íìra è   ìgà   'the key twisted'
         key past twist-a

(18) a. aè   zuge bǎ   'he shook the pot'
         he-past shake pot

     b. aè   tú   bá zuma   bǎ   'he shook the pot with his hand'
         he-past take hand shake-ma· pot

     c. bǎ è   zuga   'the pot shook'
         pot past shake-a

   So the fact that Verb + ma combinations consistently have one more θ-role
to assign than the corresponding Verb is evidence that ma has the property
given in (15a).

   All the examples we have given with ma so far also involve tú . So it
is reasonable to ask how we know that it is ma and not tú , or the combina-
tion of tú and ma , that adds a θ-role? Two pieces of evidence tell us that
it is ma alone which has this property.

   First, there is an alternative to the tú...ma construction available. In
certain circumstances, -ma can take a low-tone and tú is impossible (the ex-
act circumstances are phonologically determined and need not concern us here).
This possibility is illustrated in (19):

(19) aè   kpɔɔmà   gímà nɔm   'he cut the meat with the knife'
     he-past cut-ma (low) knife animal

Here, kpɔɔmà has three arguments, even though tú is not present. On the

other hand, in an example like (4), tú is present, ma is absent, there are three arguments and the sentence is bad. Given the θ-criterion, this contrast is sufficient to show that ma , and not tú , adds the extra θ-role.

A second piece of evidence comes from the form of ditransitives, without ma . There are two possibilities for ditransitive clauses. These are as follows:

(20) a. aè   nὲ   nuù   nwín   'he gave the thing to the child'
       he-past give thing-assoc child   (= 16c)

     b. aè   tú   nu   nὲ   nwín   'he gave the thing to the child'
        he-past take thing give child

In (20b), tú appears but there is no extra θ-role associated with nὲ . If tú added a θ-role to the structure it appeared in, (20b) would be impossible, given the θ-criterion. The grammaticality of this example shows then that tú does not add a θ-role.

tú is in complementary distribution with the associative marker in (20). The associative marker, exemplified on nuù in (20a), is a low tone that appears obligatorily following a mid-tone vowel and optionally following a low tone. Where the stem is CV, V is copied; otherwise the low tone appears on the final segment. The associative marker appears in the following environments:

(21) a. N^n___ NP:

         nɔm   nwín   'the child's animal'
         animal-assoc child

         kpɔɔ́   nɔm   'the cutting of the meat'
         cut-assoc animal

         mὴ   tɔ   'in the house'
         inside-assoc house

     b. A^n___ NP:

         miimiỳ   nɔm   'red animal'
         red-assoc animal

         taà   nwín   'three children'
         three-assoc children

         déὲ   múú   'all the water'
         all-assoc water

         ńdaà   gὲ   'my knife'
         my-assoc knife

(21a,b) are basically the environments where *of*-insertion takes place in English (cf. 11). So we propose that the associative marker is a dummy Case marker in Gokana. Now the fact that the associative marker is in complementary distribution with tú in (20) suggests that tú is a dummy Case marker also. More specifically, our suggestion is that in the tú...ma construction ma

contributes a θ-role but no Case feature, and tú a Case feature but no θ-role.

In addition to ditransitives, tú is in complementary distribution with the associative marker in transitives. Alongside examples like (2d), we find (22):

(22) aè   kpɔ̀ɔ̀mà nùù   nɔm   'he cut the meat with the thing'
      he-past cut-ma thing-assoc animal

In (22), -ma is low tone and nùù appears with the associative marker. In the discussion of low-tone -ma earlier (cf. 19), we showed that tú did not contribute an extra θ-role. Instead, it is a dummy Case marker. In (19) and (22), where tú is absent, low tone -ma acts as a Case marker. We may iden-tify the low tone on -ma with the low-tone associative marker. Thus the two instances of complementary distribution between tú and tonal morphemes just discussed collapse to the same phenomenon; both are ways of Case marking the ex-tra argument added by -ma .

We have now seen evidence to support the statements in (15). How do these statements derive the properties of the tú...ma construction?

Ma attaches freely to Verb stems in the lexicon, and adds a θ-role to the Verb's set of θ-roles. Accordingly, given the θ-criterion, an "extra" NP must appear in the government domain of V + ma . However, since ma lacks a Case feature, this NP will not meet the Case Filter (or, equivalently, the Visibility Condition). Thus some form of dummy Case marker must appear whenever ma ap-pears. We have seen that there are two dummy Case markers in Gokana: the as-sociative marker and tú . One of these items always appears with -ma . These are the features of the tú...ma construction that we can derive from (15) giv-en the theoretical considerations in Section 2.

Certain questions remain, in particular the question of why the tú VP pre-cedes the other VP in SVCs. A full discussion of this and other questions ap-pears in Roberts [forthcoming].

<div align="center">REFERENCES</div>

Belletti, A. and L. Rizzi. 1981. "The syntax of 'ne' : some theoretical im-plications." *The Linguistic Review*, 2(1):117-155.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris Publications.

Roberts, I. G. forthcoming. University of Southern California PhD disserta-tion.

THE PHONOLOGY OF BANDA-TANGBAGO

Douglas L. Sampson
University of Texas
and
Summer Institute of Linguistics

0. Introduction

The purpose of this paper is to outline the phonology of the Tangbago dialect of the Banda language. Greenberg [1963] classifies Banda in the Eastern branch of the Adamawa-Eastern language family. There are numerous dialects, some of which are mutually unintelligible.

Most of the Banda people live in the Central African Republic (CAR), but about 10,000 from eleven dialect groups live in Sudan. Members of these dialect groups are in CAR as well. Tangbago is a major dialect in both countries.

The Tangbago described in this paper was studied in the Sudanese town of Sopo in 1982 and 1983. This description may serve as a comparison to the work done on the Linda dialect by Cloarec-Heiss [1969, 1972, 1978], which is the most definitive work done on any of the dialects in recent times.

1. Consonants

1.1. Inventory. Banda-Tangbago has 33 consonants as charted in Table 1, p. 270. At one point in the study, a consonant count from the lexical file showed the following order of frequency, from most common to most rare: /r, k, l, t, ng, d, g, y, m, b, w, nd, s, n, gb, mb, p, ngb, š, kp, j, c, z, v, v̌, ʔ, nj, f, mv, ž, nz, h, ñ/ .

1.2. Distribution in the word. In a CVCV-type stem, there are no restrictions for consonants co-occurring within the word. For both consonants to be identical, however, is relatively rare, and when they are, the vowels are usually identical, too, e.g. /jaja/ 'to confuse', /šīšī/ (plant type). The only exception to this is /kãkó/ 'leaf'.

In stems of three syllables and more, if two contiguous syllables contain identical consonants, the vowels of those syllables are always identical.

2. Vowels

2.1. Inventory. Banda-Tangbago has ten vowels as charted in Table 2, p. 270. This is two less than Banda-Linda as described by Cloarec-Heiss, which has two more diphthongs /ae, ia/ .

2.2. Distribution.

2.2.1. In the syllable. /i/ and /e/ can never occur following /s, z, nz/ ; /ɨ/ and /ə/ can never occur following /š, ž, c, j, nj/ ; only /ə/ and /a/ can occur in a V syllable.

	labial	alveolar	palatal	velar	labio-velar	glottal
stopped						
voiceless	p	t	c	k	kp	ʔ
voiced	b	d	ĵ	g	gb	
prenasalized	mb	nd	nĵ	ng	ngb	
fricative						
voiceless	f	s	š			h
voiced	v	z	ž			
prenasalized	mv	nz				
nasal	m	n	ñ			
liquid						
retroflexed lateral		l				
flapped	v̌	r				
approximated			y		w	

Table 1. Consonant Phonemes

	front	central	back
high	i	ɨ	u
mid	e	ə	o
low simple		a	ɔ
glided	ea		oa

Table 2. Vowel Phonemes

2.2.2. In the word. /ə/ can never fill a V syllable (word-initial) if the word-final vowel is low.

In word stems, there is a tendency away from the occurrence of front and back vowels in contiguous syllables. At one point in the study, front and back vowels co-occurred in only 6.8% of the CVCV words filed in the lexicon.

CVCV words tend to contain identical vowels. In the same set of CVCV words, 47% contained identical vowels. In 37% of these, the vowels were /a/ .

Also in word stems, only /e/, /a/, and /o/   can occur in weak syllables

(see 4.2) if the vowel of the strong syllable is /a/ or /ea/ . If that vowel is /ɔ/ , however, only /e/ and /ɔ/ can occur. My data don't reveal /oa/ in strong syllables.

The high and mid vowels are also neutralized with free variation before nasals and prenasalized stops:

/kònjà/ [kùnjà] [kònjà]   'mat'

/mènɔ̀/ [mìnɔ̀] [mènɔ̀]   turtle type

3. Tone

3.1. Inventory. There are five tones in Banda-Tangbago: High (´), Mid (⁻), Low (`), Falling (ˆ), and Rising (ˇ). An allotone of Low occurring utterance final glides from low pitch to extra low pitch.

3.2. Distribution

3.2.1. In the syllable. All five tones occur in CV syllables. V syllables, however, can carry only H, M, or L.

3.2.2. In the word. Nouns usually contain only level tones, but there are some exceptions. All nine combinations of level tones are found in two-syllable words and all 27 combinations in three-syllable words. Verbs contain all tones but R. Adjectives contain only level tones, and usually the tones are identical. Adverbs and functors can carry all five tones.

3.3. Functional load. Tone has lexical function in all word classes. In verbs and pronouns, it has grammatical function as well:

/sè wú/   'he saw' (perfective)
  3s see

/sè wù/   'let him see' (imperative)

/sə́ wù/   'he will see' (imperfective)

4. Syllables

4.1. Configurations. There are two syllable configurations in Banda-Tangbago, V and CV. CV syllables can occur in any syllable in the word, but V syllables can occur only word-initial. Every syllable carries a tone.

4.2. Strong and weak. For the sake of convenience, CV syllables composed of a liquid and a low vowel are termed strong. Preceding CV syllables composed of a non-liquid and a simple vowel are termed weak. Occurrence of vowels in weak syllables is restricted to /e, a, o, ɔ/ , the latter three of which are shortened and altered in quality:

/ákɔ́rá/ [ák̆ɔ̆rá]   'peanuts'

/kara/ [kəra]   'to open'

/yɔrɔ/ [yerɔ]   'to be slippery'

5. Words

The following word shapes are found in Tangbago:

V	/á/	'not'
CV	/na/	'to go'
VCV	/ābā/	'food'
CVCV	/gūsū/	'grass'
VCVCV	/àgbòlò/	'child'
CVCVCV	/bāmàrā/	'lion'
VCVCVCV	/àmbér⨍pè/	'star'
CVCVCVCV	/mézⱦrégbà/	'rhinoceros'
VCVCVCVCV	/āfèrèkɔ̄ngɔ̄/	'bushbabies'
CVCVCVCVCV	/gbàgànékùmvⱦ/	'marabou stork'
VCVCVCVCVCV	/àwāzàgbógòrò/	'December'

Noun stems take all shapes except V. CV is very rare. Adjective stems take VCV, CVCV, VCVCV, CVCVCV, and CVCVCVCV. VCVCVCV does not occur in my data. Verb stems and adverbs take CV, CVCV, and CVCVCV. Functors take V, CV, VCV, and CVCV.

6. Word Boundary

6.1. Prose. Although there is no vowel elision at word boundaries in prose, vowel assimilation does occur. Obligatory assimilation is limited, and optional assimilation occurs depending on the rapidity of speech and the individual speaker. In any case, the tones remain the same.

The obligatory rules are:

1. /ə/ → [a] ‖ __/a/

2. /ɔ/ → [ɔ]

The optional rules are:

3. /a/ → [ɔ] ‖ /ɔ/ __

4. /ə/ → [V] ‖ /V/ __

5. /V/   → [ə] ‖ __/a/
    [-low]

6.2. <u>Song</u>. Although song has not been studied in detail, it has been noted in passing that vowel elision may occur in songs. In this case, it seems that the tone is elided with the vowel. In all examples so far, however, the elided element has always been a vestigial noun prefix /ə-/ or /a-/ , so it is difficult to tell whether the phenomenon is phonological or grammatical. In the following example, the bracketed portion is what gets elided:

    tètèrè kpé [à]wà [ə̄]bē   é sé lé [à]x̌ɔ̀
    Etere fled fear riki-grass and was in earth

    'Etere avoided the riki grass and was in the earth'

7. Pause Group

A pause group beginning with a vowel is often initiated with an etic glottal stop, which is lost medially in the pause group, in contrast with an emic one, which is retained. Note the morphemes /ʔā/ 'we, our' and /àndà/ 'house' in the following examples:

    /àndà né ʔā kè šé/ [ʔàndà né ʔā kè šé]   'this is our house'

    /ʔā wú àndà né yē/ [ʔā wú àndà né yē]   'we've seen his house'

A pause group final /ə/ is elided regularly along with its tone:

    /mē̄ sé gù tè/ [mē̄ sé gù t]   'I'm coming back'

    /àndà né mē̄/ [ʔàndà né m]   'my house'

Other pause group final vowels are elided in the same way following a voiceless fricative preceded by an identical vowel:

    /mórófó/ [móróf]   'ten'

    /bⲦšì/ [bⲦš]   'two'

Otherwise, a pause group may be terminated with an optional etic voiceless glottal fricative [h] :

    /àmà bàndà/ [ʔàmà bàndàh] ∿ [ʔàmà bàndà]   'the Banda language'

8. Intonation

There is not much in the way of contrastive intonation in Tangbago, but intonation is used to mark paragraph boundaries. That is, the first few phrases of a paragraph will exhibit a higher intonation level than the body of the paragraph. Also, the last phrase of the paragraph will drift down to a lower level. Thus, there are three levels involved.

The high level is also used to signal queries for information, astonishment, reprimands, and such like, and is maintained throughout the domain of the communicator's attitude or intent so being signaled. This level is usually one pitch above the mid intonation level, so that a (syllable level) mid tone in

normal statement intonation (paragraph medial) is on the same pitch as a (syllable level) low tone in question intonation (paragraph medial).

REFERENCES

Cloarec-Heiss, France. 1969. *Banda-Linda de Ippy: phonologie—dérivation et composition*. Bibliothèque de la SELAF no. 14. Paris: SELAF.

Cloarec- Heiss, France. 1972. *Le verbe Banda*. Langue et civilisations à tradition orale no. 3. Paris: SELAF.

Cloarec-Heiss. 1978. *Etudes comparatives: Oubanguien et Niger-Congo—Nilo-Saharan*. SELAF 65. Paris: SELAF.

Greenberg, J. H. 1963. *The Languages of Africa*. The Hague: Mouton.

THE METRICO-SYLLABIC APPROACH: EVIDENCE FROM KINYARWANDA

Paul Sauvageau
McGill University

1. Introduction

From the beginning, Generative Grammar has required from Linguistic Theory
to be "simple" and "natural" in accounting for the actual relation between data
and grammar, in order to justify languages' learnability. Recent improvements
in phonology have increased the explanatory power of Theory, accordingly reduc-
ing idiosyncrasies, by adopting parametric analyses implying language-particu-
lar well-formedness conditions constraining choices among universal principles.
This paper will show how an integrated view of three of these recent phonologi-
cal models allows one to capture a varied set of phenomena in Kinyarwanda nouns.

The first sub-theory that will be assumed here, roughly schematized under
(1), is that of "Three Dimensional Phonology", forwarded mainly by McCarthy
[1979] and by Halle and Vergnaud [1980].

(1)

← tonal/accentual tier

← syllabic (prosodic) tier

← skeleton

← melodic (segmental) tier

← harmonic (or else...) tier
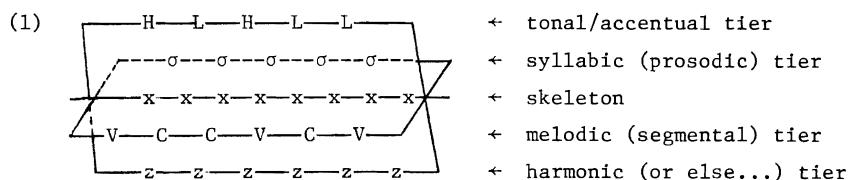
According to this approach, elements of various phonological tiers are linked
to the slots of a skeleton under conditions stipulating that segments and slots
are linked one-to-one from left to right, that each slot is linked to at least
one segment, and, conversely, that linking lines do not cross and that unlinked
elements ultimately delete.

Second, we will adopt a "Syllable Geometry" that has been developed by Kaye
and Lowenstamm [1979, 1980] and others. This theory, illustrated in (2),
claims that the minimal representation of a syllable is that of a binary branch-
ing structure, composed of at least two main constituents, onset and rime, the
latter being allowed itself to separate into two subconstituents, nucleus and
coda. Each of these constituents may branch in its turn, the nucleus being the
only universally obligatory constituent.

(2)
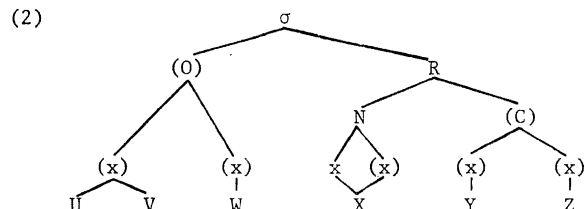
In such a model, the representation of a complex segment such as a prenasalized
or palatalized consonant will be that of several segments linked to a single
slot of the skeleton, as UV in (2), and that of a long vowel will correspond to
a single segment linked to two slots of the skeleton, Y in (2); a given segment
will receive its traditional [±syllabic] interpretation from the nature of the
syllabic constituent that dominates the skeletal slot it is attached to (thus
accounting for the behavior of ambivalent segments such as high vowels and na-
sals, which are marked as being both [+vocalic] and [+consonantal]).

Furthermore, three universal principles will be assumed with Kaye and Low-
enstamm. First, a constraint on syllabic inventory according to which the syl-
labic index of a given language is an ordered pair (m,n), where m is the value
of the most complex onset and n that of the most complex rime, the former hav-
ing a complexity that is lower than or equal to that of the latter. This means
that a language having branching onsets will also have branching rimes (but not
conversely). Second, a resolution principle, designed to eliminate from the
syllabic structure the null elements, which will first try to reanalyze an er-
ratic structure by resyllabifying it without violating syllabic constraints of
the language; if impossible, it will proceed to the insertion of an epenthetic
segment. Third, a Nuclear Fusion Principle which will cause two adjacent nu-
clei to combine into a single one, thus resulting in a long vowel if the skele-
tal slots dominated by the nuclei are linked to a single segment.

The third model we will refer to is Hayes' [1980] "Metrical Stress-Assign-
ment Theory", according to which stress is assigned by constructing feet and
word-trees based on the adjustment of parameters. Thus, for example, a given
language will have the choice between binary or illimited and right or left dom-
inant feet, and between right-to-left or left-to-right and iterative or non-it-
erative feet construction. Moreover, it will be assumed that a degenerate (non-
branching) foot is constructed at the edge of a domain when there is only one
foot terminal element left in a binary feet construction and that such a foot
can be deleted or not, depending on a further parametric choice.

2. Kinyarwanda: the Data

Let us now observe the following Kinyarwanda nouns:

(3) a. /u-mu-gabo/ → [ùmùgàbò]   'man'

    b. /a-ba-gabo/ → [àbàgàbò]   'men'

    c. /i-ki-gabo/ → [ìkìgàbò]   'big man (pej.)'

    d. /u-tu-saazi/ → [ùdìsààzì]   'small flies'

Most of the nouns are composed of a radical preceded by a classificatory prefix
of the CV type and by a pre-prefix composed of the same vowel as that found in
the prefix. However, there are two classes, illustrated in (4), that are excep-
tional with respect to that pattern.

(4) a. /i-ri-óya/   → [ìrǧóóyà]   'feather'

    b. /i-(ri)-no/ → [ìnò]   'toe'

   c. /i-n-zu/ → [ì^{n}zù]   'house'

   d. /i-(n)-šu/ → [ìšù]   'cabbage'

In one of these classes, (4a-b), the ri prefix drops in all but two nouns. In the other, (4c), the prefix consists of an n , which drops too in many nouns, as in (4d).

    Long vowels are found, which may have an independent morphological status since they can appear in radicals, as in (3d), or be derived in two ways, as a result of glide formation or of prenasalization. The first case is illustrated in (4a), where we see a high vowel change to a glide (and then get palatalized), the following vowel thus lengthening. The second case is exemplified in (5), where we see a short vowel becoming long when preceding a nasal followed by another consonant.

(5) /i-ki-ntu/ → [ìkìì^{n}hù]   'thing'

    Moreover, it can be seen in (6) that a place particle can "replace" the pre-prefix in nouns.

(6) a. /mu-ba-gabo/ → [mùbàgàbò]   'in the men'

    b. /ku-ri-óya/ → [kùřóóyà]   'on the feather'

    c. /mu-n-zu/ → [mùù^{n}zù]   'in the house'

    d. /ku-(ri)-no/ → [kʷìnò]   'on the toe'

    e. /mu-(n)-šu/ → [mʷììšù]   'in the cabbage'

When this occurs with a noun having an n prefix and a radical beginning with a consonant as in (6c), the vowel of the place particle lengthens, but when it occurs with a noun whose pre-prefix drops as in (6d-e), a vowel appears before the radical, which lengthens when the place particle vowel changes to a glide.

    Finally, Kinyarwanda has two tones, high and low. If a noun has a high tone on its last or penultimate syllable, this tone will be "lowered" (or will appear as a "falling tone") if the word occurs before a pause or in isolation, as in (7a). Similarly, the first of a sequence of high tones will be brought to a mid-tone (or "rising tone"), as in (7b).

(7a) a. [ìgítí]   → [ìgítì]   'tree'

    b. [ìgítí kìzìmà] → [ìgⲦtí kìzìmà]   'healthy tree'

This leads to viewing these processes as resulting from the application of late phonetic rules. Rialland and Furere [1983] have called attention to the fact that, notwithstanding these phonetic rules, nouns appeared to obey a parity constraint, illustrated in (8).

(8) a. /i-(ri)-bábá/ → [ìbábá]   'wing'

    b. /i-(n)-fí/ → [ífí]   'fish'

c. /a-ka-bábá/   → [àkàbábá]   'small wing'

d. /a-ka-fí/   → [àgáfí]   'small fish'

e. /u-mu-áana/   → [úmʷáànà]   'child'

f. /i-ki-sórógbá/   → [ìgísórógbá]   'worm (sp.)'

g. /a-ka-tééká/   → [àgátééká]   'little law'

h. /i-(n)-tééká/   → [ítééká]   'law'

i. /mu-n-ká/   → [mùúⁿhá]   'in the cow'

j. /mu-(n)-fí/   → [mʷìífí]   'in the fish'

More precisely, all nouns exhibit an even number of high tones. When the number of these in the radical is even as in (8a,c), syllables preceding it will bear low tones. When it is odd as in (8b,d-j), the first syllable preceding it will bear a high tone, as if to maintain the parity. Notice that under such an analysis, long vowels must be considered as being part of two distinct syllables.

3. The Metrico-Syllabic Analysis

All the facts already mentioned will ensue straightforwardly from the universal principles exposed in the introduction without any "rule" having to be stipulated once a few (parametric) well-formedness conditions or choices will have been made clear.

First, we will claim that Kinyarwanda's most complex syllable is a CV_iV_i one. This means that we will not find any branching onset nor any coda in that language and that its only permissible sequence of vowels will be that of two identical vowels. If two vowels of different quality meet over a word boundary, the first of these will drop. If they meet over a morpheme boundary, the first will either drop if it is low or change to a glide if it is high. The last case is what is found in words such as those of (4a) and (8e). In the theoretical framework that is assumed here, that process would be the following for a word like [irǧooya] .

(9)
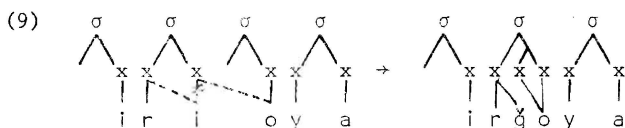
That is, the high vowel i , preceding another vowel, detaches itself from its point of the skeleton and reattaches under that of the preceding consonant, dominated by an onset, which will make it "consonantize", i.e. change to a glide, and even palatalize under the influence of the r with which it shares a same point. Subsequently, the slot of the skeleton that has been vacated by the i will "attract" the only segment that can attach to it without crossing lines, the o . The Nuclear Fusion Principle will then integrate the two adjacent nuclei in a single one, thus melting the two syllables they are part of (both ill-

formed) in a single one.

Similarly, if we posit that the nasal consonant in the words of (5), (6c), and (8i) is not underlyingly part of any syllable (maybe a remnant of a dia-chronic change), the long vowel preceding a NC cluster obtains along the same lines. For example, the derivation for [muuⁿzu] would be:

(10)
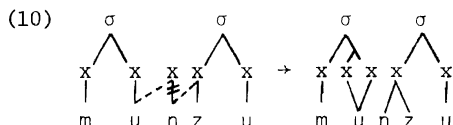
The point to which the n is linked cannot be interpreted as being part of a nucleus (since Kinyarwanda does not allow syllabic nasals) nor as part of an on-set (which would result in an ill-formed syllable missing the obligatory nucle-us). It cannot either be attached to the coda of the preceding syllable (Ki-nyarwanda has none) nor to the onset of the following one (the language does not allow branching onsets, since these would be more complex than the most complex rime). The n thus detaches from its point, reattaches to that of the follow-ing onset (which will yield a prenasalized consonant), and the preceding u spreads to fill the orphaned slot, which will then be unified in a single nucle-us.

Turning now to the status of the pre-prefix, we saw that there were nouns such as that of (4c), where the prefix was an n . If we assume that the pre-prefix is usually constructed by some kind of a copy process that duplicates the prefix vowel in a preceding syllable, such words will not have any, since there is not any vowel that can be copied in the prefix. Moreover, when the n will attach to the following onset, an epenthetic i will be inserted to re-place it, since there is not any vowel that can spread to do so. This accounts for the fact that we do not find any word beginning with a long vowel before a NC cluster. Similarly, in these words where the prefix drops, those of (4b,d) and (8a,b,h), no pre-prefix will be constructed either, and an epenthetic i will fill the nuclear slot deserted after the drop. If a place particle is then inserted before that i , i.e. under the syllable where we usually find the pre-prefix as in (6d-e) and (8j), this will trigger the same process as that illus-trated in (9), glidization of the place particle vowel and lengthening of the i .

Finally, tones will be assigned to nouns before pre-prefix construction in the following way. First, beginning with the lexically accented point of the skeleton (the one that actually bears phonetically the last high tone in the radical), the Feet Construction (FC) will erect from right to left maximally-binary right-dominant feet on the points of the skeleton dominated by nuclear nodes. If a single syllable remains at the left edge of the domain, a degener-ate foot will be constructed and immediately deleted. The Word-Tree Construc-tion (WTC) will then build a right-dominant structure over the feet (if there are two or more) and the High Tone Assignment (HTA) will attach a high tone to every skeletal point that is a terminal element of a foot. Ultimately, a few tonal adjustments will occur at the phonetic level, such as the assignment of a low (unmarked) tone to all elements that are not already bearing a high tone,
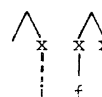
the facultative lowering of the tone whose tone-bearing unit is dominated by
weak nodes only in the metrical structure (provided that it is not preceded it-
self by another high tone), etc. Here are a few examples of complete deriva-
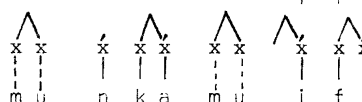tions.

(11) Lexicon
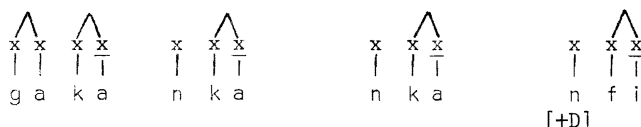
FC
WTC

HTA

Drop and
Insertion

Place
particle

Pre-prefix

Reanalysis

NFP
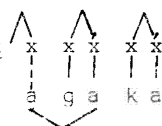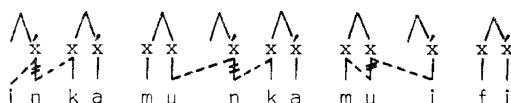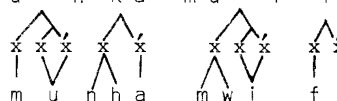
[àgáká]   [íⁿhá]   [mùúⁿhá]   [mʷìfí]

'small cow'   'cow'   'in the cow'   'in the fish'

4. Conclusion

The analysis presented here thus succeeds in giving an integrated account of
a whole series of morphological and phonological phenomena in a rather restrict-
ed area of a particular language, namely pre-prefix formation, prefix-vowel al-
ternations, tone assignment, contour tones creation, epenthesis, prenasaliza-
tion, glide formation, and compensatory vowel lengthening in nouns of Kinyar-
wanda. Since the theories we have been referring to have been elaborated inde-
pendently, in order to deal with completely different phenomena in completely

different languages, it can be said that the present analysis allows a deeper insight into their relatedness and brings further evidence for their relevance and their membership in Universal Grammar.

REFERENCES

McCarthy, John. 1979. "Formal problems in Semitic phonology and morphology." Ph.D. dissertation, MIT. [Distributed by IULC, Bloomington.]

Kaye, Jonathan D. and Jean Lowenstamm. 1979. "Syllable structure and markedness theory." To appear in Belleti, Brandi and Rizzi (eds.), *Theory of Markedness in Generative Grammar*, Pisa.

Kaye, Jonathan D. and Jean Lowenstamm. 1981. "De la syllabicité." To appear in Dell, Hirst and Vergnaud (eds.), *La Phonologie métrique*. Paris: Hermann.

Hayes, Bruce. 1980. "A metrical theory of stress rules." Ph.D. dissertation, MIT. [Distributied by IULC, Bloomington.]

Halle, Morris and Jean Roger Vergnaud. 1980. "Three dimensional phonology." *Journal of Linguistic Research* 1:83-105.

Rialland, Annie and Rutinywa Furere. 1983. "L'Accent tonal en kinyarwanda." In J. Kaye, H. Koopman, D. Sportiche and A. Dugas (eds.), *Current Approaches to African Linguistics* 2, pp. 139-150. Dordrecht: Foris.

THE DEVELOPMENT OF CASE AND FOCUS IN UMBUNDU

Thilo C. Schadeberg
State University at Leiden, The Netherlands

1. UMbundu

UMbundu is the single most important (Bantu) language of Angola. It is spoken by about two million people. I collected the data on which this study is based in Angola during 1981-82.

2. Noun Structure

Nouns have the structure: Augment - Nominal Prefix - Stem.

Stems occur in various lengths and tone types; the example used here has a disyllabic stem of the tone type Lo-Hi.

Nominal prefixes may have one of the shapes CV, N, or V, e.g. -ci- (class 7), -n- (class 9), e- (class 5).

The augment is o- in all classes. It is regularly absent (deleted) before a nominal prefix consisting of just one vowel. Thus we find, for example, é-yò 'tooth', ó-vá-yò 'teeth' (classes 5/6). Syntactically, the augment is stable, i.e. there are no syntactic environments in which the augment is deleted. Some nouns, however, never have an augment; this is typically the case with proper names, often derived from common nouns, and kinship terms.

3. Nominal Tones

Each noun appears in two tonal shapes. Shape A (Port. *alto*) is characterized by an initial sequence of high tones, shape B (*baixo*) is characterized by an initial sequence of low tones.

	'hippopotamus'	'Ngeve' (n.pr.)
shape A:	ó-n-gé!vé	n-gé!vé
shape B:	ò-n-gèvé	n-gèvé

4. Distribution of Tonal Shapes

The distribution on these two shapes A and B is syntactically defined. Interestingly, the distribution is not the same for nouns with and without an augment. Three classes of syntactic environments have to be distinguished, of which at least two have much in common with what is traditionally regarded as case.

label	synt. env.	with augment	w/o augment
PRED	predicative, citation form	A: óngé!vé	A: ngé!vé
OC	first complement of affirmative main verb	A: óngé!vé	B: ngèvé
CC	elsewhere	B: òngèvé	B: ngèvé

The function of Direct Object provides the name for the Object Case (OC).
The most salient function of the Common Case is Subject; however, this case al-
so marks the second complement, the first complement of a negative verb or of a
subordinated clause, as well as nouns in several more specific syntactic envir-
onments.

5. Origin of the Distribution between OC and CC

Phonologically, A-forms can be derived from B-forms by positing a word-ini-
tial Hi tone. The further derivation by Hi-Spreading is regular.

I suggest that the augment originally only occurred in OC environments and
that it had a high tone (see Meeussen [1967], De Blois [1970]). Later, the al-
ternation (presence versus absence of augment) was eliminated by spreading the
augment to all other environments. However, the original tonal distinction was
preserved. This hypothesis is supported by the fact that those nouns that lack
the augment in all syntactic environments also lack the tonal distinction be-
tween OC and CC; such nouns attest formerly augment-less forms in both environ-
ments. This development appears to provide a nice contrast with better docu-
mented cases where a tonal distinction originates from the loss of all phonic
material except tone.

6. Source of A-forms for PRED

It is this better-known type of development which I propose to regard as the
source of the use of A-forms for PRED. I assume that a vocalic predicative in-
dex such as is found in Kongo and Bemba existed in pre-UMbundu. When the aug-
ment became stabilized throughout the paradigm it occurred predominantly in pre-
vocalic position where only its high tone has survived.

It should be clear that the augment and its high tone cannot be the source
of the PRED A-forms. Firstly, an initial high tone is present even in words
which have no augment and never had one, even in pre-UMbundu. Secondly, there
is good comparative evidence that the predicative noun should be reconstructed
as having no augment. Compare

Kinga:	sinu	'it is food'	(isinu	cl.8	'food')
Ganda:	bitabo	'they are books'	(ebitabo	cl.8	'books')

7. Focus Marking

UMbundu has not only developed a rudimentary case system, it also suggests
a possible further development of focus marking. Consider relative clauses.
The most conspicuous differences between relative and non-relative verb forms
are again tonal.

ngèvé wá'fá kóvì'tá   'Ngeve died in the war'
B:CC ABS   A:OC

ngé'vé wàfá kòvìtá   'it is Ngeve who died in the war'
A:PRED REL   B:CC

An alternative translation of the second of these two sentences would be

'NGEVE died in the war', with contrastive emphasis on "Ngeve". I do not think that this would be the proper analysis for UMbundu, but I think it shows how focus markings in nouns and in verbs could develop.

8. Typology

Greenberg [1978] has shown how a weak demonstrative or "definite article" may develop into a gender marker. UMbundu provides a typologically interesting alternative in which the same element, i.e. the augment, develops into a case marker. This is consistent with the important role of definiteness in conditioning alternative case markings of objects as described by Moravcsik [1978].

[Note: A full version of this paper is to appear in *Africana Linguistica* 10, Tervuren: Musée royal de l'Afrique Centrale.]

<div align="center">REFERENCES</div>

De Blois, K. F. 1970. "The augment in the Bantu languages." *Africana Linguistica* 4:85-165. (Annales, 68.) Tervuren: Musée royal de l'Afrique Centrale.

Greenberg, Joseph H. 1978. "How does a language acquire gender markers?" In J. H. Greenberg (ed.), *Universals of Human Language*, vol. 3: *Word Structure*, pp. 47-82. Stanford: Stanford University Press.

Meeussen, A. E. 1967. "Bantu grammatical reconstructions." *Africana Linguistica* 3:79-121. (Annales, 61.) Tervuren: Musée royal de l'Afrique Centrale.

Moravcsik, Edith A. 1978. "On the case marking of objects." In J. H. Greenberg (ed.), *Universals of Human Language*, vol. 4: *Syntax*, pp. 249-289. Stanford: Stanford University Press.

DOWNSTEP IN THE KIPARE VERB COMPLEX

Deborah Schlindwein
University of Southern California

This paper deals with some selected aspects of the tone system of one dialect of Kipare, an Eastern Bantu language spoken in Tanzania.

Kipare downstep is the phonetic realization of a floating low tone sandwiched between two high tones. Downstep, in this language, often results from a rule of High Tone Anticipation (HTA), which operates as described in (1) and exemplified in (2):

(1) High Tone Anticipation (HTA)

(2) magáré 'vehicles' + matátu '3' ==> magáré ᵎmátátu '3 vehicles'

We will examine the operation of HTA in the Kipare verb complex and draw some conclusions about the nature and interaction of lexical and post-lexical rules based on what we find in the verb tonology.

The Kipare verb radical generally consists of either one or two syllables, the first of which is lexically specified for either a high (H) or a low (L) tone. Two examples are given in (3):

(3) ˈkom 'kill'   som 'stab'

     │   │
     H   L

The composite verb structure, which is similar or identical to that of the verb complexes in most Eastern Bantu languages, is shown in (4):

(4) [SM (neg) (tns/asp) – (OM) RAD (ext's) FV]$_{verb}$

     _____/ _____/
          pre-base   base

The optional object marker (OM), as well as the radical, also carries an inherent lexical tone, H or L, with two examples given in (5):

(5) ní 'me'   tu 'us'

     │   │
     L   H

High-toned tu , the first person plural OM, will appear in subsequent examples.
Example verbs are given in (6):

(6) a. vénetúkóma [ve + ne + tu + kom + a]   'they'll kill us'
         | | | | |
         H L H H L   3p   fut   1p   kill   FV

    b. vénetúsoma [ve + ne + tu + som + a]   'they'll stab us'
         | | | | |
         H L H L L   3p   fut   1p   stab   FV

    c. vesíkatú'sómé [ve + si + ka + tu + som + e]   'they won't stab us'
         | | | | V
         L H L H L H   3p   neg   fut   1p   stab   FV

         (HTA effect)

We can see the effects of HTA in example (6c), where the low-toned radical
som , because it occurs between a high-toned OM and a high-toned FV, is realized
with a downstepped high tone. Its lexical L has been floated off of it. Sur-
prisingly, however, we observe in the examples in (6) that there seems to be
perhaps some strong "boundary" between the verb pre-base and the verb base
across which HTA does not apply. In each of the examples (6a,b,c) we would ex-
pect the ne and ka of the pre-base to be realized with a downstepped high
tone, rather than with a low tone.

    I introduce this idea of a "boundary" existing between the pre-base and the
base as a descriptive device, *not* as the answer to why we don't find HTA ef-
fects. I will try to derive the non-application of HTA shortly. In every tns/
polarity combination that I have looked at in this language, it is precisely and
invariably at the juncture between the pre-base and the base that the applica-
tion of HTA is blocked.

    The data presented in (7) lend further support to the idea of a "boundary"
existing between the pre-base and the base:

(7)   (repeated from (6)   relative clause forms

    a. vénetúkóma   vené'túkóma
         | | | | | / / | | |
         H L H H L   L H L   H H L

    b. vénetúsoma   vené'túsoma
         | | | | | / / | | |
         H L H L L   L H L   H L L

    c. vesíkatú'sómé   vesíkatú'sómé
         | | | | V | | | | V
         L H L H L H   (L) L H L H L H
                                   ↘
                                    Ø

In the second column of (7) are shown the verbs originally presented in (6)

in their corresponding relative clause forms. The relative form marker is the L that appears as the leftmost tone of the verb complex. In (7a,b) it pushes the tones of the pre-base, but not those of the base, to the right. In (7c), the L which marks the relative has been deleted, or in another way of looking at it, it has been absorbed by the first L of the pre-base. In other words, the melody of the pre-base seems to obey the Obligatory Contour Principle.

This suggests the possibility that the melody of the pre-base is a floating melody, which I think is correct. That is, it is an unattached melody which is specific to each particular verb tense. We have seen HL for the future tense pre-base and LHL for the future negative. LH, which is absent from the presented data, is the melody of the past tense negative pre-base.

Taking as given the assumption that the melody of the verb pre-base is a floating melody, let us see if we can derive the effects of the "boundary" which blocks HTA between the verb pre-base and the verb base. We shall adopt a model of word building essentially like that of Kiparsky [1982] and exploit the resultant cyclicity and Elsewhere effects.

(8) Word building

    (morphology) ==> $[tu + kom]_{base}$ 'us' + 'kill'
                    | |
                    H   H

    (phonology) ==> (none)

    (morphology) ==> $[vene + tukom = a]_{verb}$ 'they will' + 'kill us'
                          | |
                    H L   H H   L

    (HTA) ==> N/A

    (tone association) ==> $[vene + tukom + a]_{verb}$
                              | | | | |
                           H L   H H   L

    (identity) ==> venetukoma = vénetúkóma
                  | | | | | | | | | |
                  H L H H L   H L H H L

In (8) the rule of HTA is inapplicable because HTA floats only an attached L. It would be meaningless to imagine it floating a L that is already floating. Tone association ensures that untoned vowels are matched up with unassociated tones from left to right.

(9) Word building

    (morphology) ==> [tu + som]_base   'us' + 'stab'
                           H   L

    (phonology) ==> (none)

    (morphology) ==> [vesika + tusom + e]_verb   'they won't' + 'stab us'
                          L H L   H L   H

    (HTA) ==> [vesika + tusom + e]_verb
               L H L   H L H

    (tone association) ==> [vesika + tusom + e]_verb
                           L H L   H L H

    (identity) ==> vesikatusome = vesíkatú'sómé...
                   L H L H L H   L H L H L H

Each of these verbs, as it emerges from the word building process, is, in effect, its own identity rule.

The identity rule provides a very specific SD (and SC) for the output of each cycle. It is the identity rule which acts to exempt the output representation of each cycle from undergoing subsequent internal changes during a later cycle within the same component. This is the Elsewhere account of the Strict Cycle phenomenon.

Let us now build phrases out of the verbs built in (8) and (9). The word vacé 'women' will be used as the subject of the phrases.

(10) Phrase building

    a. vacé + vénetúkóma ==> vacé vénetúkóma   'the women will kill us'
    b. vacé + vesíkatú'sómé ==> vacé 'vésíkatú'sómé...   'the women won't
                                           stab us'
                 (HTA effect)

Example (10a) is completely straightforward. In example (10b) we encounter the rule of HTA once again. This time, however, the rule is operating between words (as it did in example (2) earlier).

In the sense that HTA operates phrasally, between words, it must be considered a post-lexical rule. However, it does not operate exceptionlessly across the board. As we observe in (10), ka and ne still resist the effects of HTA. They resist the effects of HTA precisely due to the effects of the Elsewhere Condition. This means that Kipare word building and phrase building must

belong to the same component, which is a requirement of the Elsewhere Condition. In the model of phonology and morphology presented in Kiparsky [1982] it was suggested that lexical rules could not enter into an Elsewhere relationship with post-lexical rules. Furthermore, the post-lexical rules were assumed to be non-cyclic, hence their exceptionless application, because there could be no Elsewhere effects where there was no cyclicity.

My analysis of Kipare, however, suggests that cyclicity may continue beyond word building. It suggests that in Kipare, at least, it would be incorrect to maintain a strict separation between a lexical phonological component and a post-lexical phonological component.

[Mary Marunda graciously supplied the data used in this study.]

REFERENCE

Kiparsky, Paul. 1982. "Lexical morphology and phonology." The Linguistic Society of Korea (ed.), *Linguistics in the Morning Calm*, pp. 3-91. Seoul: Hanshin Publishing Co.

LANGUAGE UNIVERSALS AND SYNTACTIC CHANGES IN
SWAHILI AS A SECOND LANGUAGE

Carol Myers Scotton
Michigan State University

This paper focuses on changes in the use of the locative copula in Swahili spoken as a second language in Nairobi, with additional examples from urban Swahili in Dar es Salaam. In both cases, the Svahili variety is spoken by some children as a first language, as well as by adults as a second language. (No claims are made that the usages described characterize *all* second language Swahili varieties in these cities. These usages, however, were widespread in over 100 hours of recordings of natural, informal conversations by speakers from diverse ethnic and socio-economic backgrounds in Nairobi; similar usaages were also observed in Dar es Salaam or self-reported there.)

A major purpose of this paper is to argue that new uses of the Swahili locative copula to refer to temporary or acquired state may reflect a universal tendency to derive temporal indications from spatial ones and to argue more specifically there is a tendency to use similar derived forms to indicate temporary/ acquired state and imperfect aspect. Also the paper argues that the particular socio-psychological conditions surrounding Swahili acquisition in the cases studied are such that language universals are likely to surface. In this way, second language acquisition can resemble creole development [Bickerton 1981].

While these second language Swahili varieties (hereafter SL Swahili), show a number of syntactic differences from native or Standard Swahili, the most striking innovation concerns the locative copula. It is being chosen over simpler and equally accessible strategies as a device to indicate temporary/acquired state. The locative copula consists of a bound stem and a prefix agreeing with its subject in person and number or in noun class. It occurs in the present tense only and, in native or St. Swahili, only before nouns inflected with the locative suffix -ni or before place names.

(1) Watu   wengi wa-ko   njia-ni.   'Many people are on the road.'
    people many they-LOC road-LOC

The role of the locative copula is being expanded by SL Swahili speakers so that expressions of state, and especially a temporary or acquired state, increasingly, take a locative copula. See (2-5).

(2) a. U-ko mgonjwa?   b. I-ko fresh sana.

       'Are you sick?'   'It (cl.9) is very fresh.'

(3) Yu-ko worried.   'He is worried'

(4) M-ko na wasiwasi nyingi. 'You (pl.) have much uneasiness.'

(5) Tu-ko confused.   'We are confused.'

This new use of the locative copula (hereafter KO form) occurs whether the form expressing state in native or St. Swahili is invariant ni (before predicate nouns and adjectives), as it would be in (2); associative -na (inflected with a subject prefix), as it would be in (3) and (4); or a stative verb stem, as it would be in (5).

A reaction to this semantic re-analysis and extension of the KO form is to explain it as a simplification. But the simplest possible innovation (using Swahili material) would be to generalize the invariant ni copula. A second reaction might be to explain it as interference from English, since the KO form occurs with many English loans. Yet, for example, while it occurs with many English past participles, other English loan verbs are used with regular Swahili bound prefixes to express other tenses/aspects. Another possibility would be sub-stratum effect from the speakers' first languages. This is not ruled out, but no direct and single source of borrowing is evident. A final explanation is to hypothesize that the preference for a locative form to express a temporary/acquired state may represent a language universal.

To support this universals hypothesis, data are presented making an inferential connection between the KO usage and forms in both some creoles cited by Bickerton [1981:27, 1975:55] and one not cited by him, West African Pidgin English [Eze 1980]. Connections are also seen in data from some non-creoles, Spanish and Amharic, for example. The connection is made through imperfect aspect: I argue that a natural semantic connection exists between non-punctual aspect, a component of imperfectivity, and temporary/acquired state. It is noted that Hawaiian Creole stei and other locative-based forms in other creoles cited by Bickerton are auxiliaries to express non-punctual meanings. Further, in Nigerian Pidgin English, a single form (dey) is used for such meanings and also to express temporary/acquired state. All of these forms have locative sources, along with the KO form.

The argument that universals should surface most easily in linguistic varieties such as creoles seems a good one because the innate tendencies of speakers are not suppressed by an omni-present target. (The fact Bickerton defines creoles very narrowly is irrelevant to my argument since my interest is in the socio-psychological conditions surrounding acquisition, not in whether the variety is a creole.) The link I argue for between Swahili development and creole development is this: it is predicted that when second language acquisition by adult speakers and creole development share social conditions, similar structures result.

The only major social difference between SL Swahili development and that of the creoles which Bickerton cites involves access to models of the target language, it is shown. Although children producing creoles have only partial access to the model, in SL Swahili development there is ample access. Yet, the end result can show similarities because when a model is present, but not highly valued by the language learners, the result is that the prescriptive power of the model is severely mitigated. Such is the case with either native or St. Swahili as a model for language learners in East Africa, especially in Nairobi and other up-country areas. While speakers want to acquire Swahili, they do not necessarily wish to be identified with native speakers of Swahili. In such situations, the conditions of acquisition can resemble those in a creole situation:

innovative structures have more of a chance to survive when there is no specif-
ic target. If these structures reflect a universal grammar, they should show
similarities to structures found in other varieties emerging without a clear
target, but also found in languages in general. This is the argument regarding
the locative copula in SL Swahili and its use to express temporary/acquired
state.

REFERENCES

Bickerton, Derek. 1975. *Dynamics of a Creole System*. London: Cambridge Uni-
     versity Press.

Bickerton, Derek. 1981. *Roots of Language*. Ann Arbor: Karoma.

Eze, Smart N. 1980. *Nigerian Pidgin English Sentence Complexity*. Wien:
     Beitrage sur Afrikanistik.

LOANWORDS AND MSC'S IN OSHIKWANYAMA

Aleksandra Steinbergs
Memorial University of Newfoundland

This paper explores some aspects of loanword phonology as illustrated by da-
ta from OshiKwanyama, a Bantu language spoken in northern Namibia and southern
Angola. The principal European source languages for borrowing in OshiKwanyama
are English, Afrikaans, and German.

The degree to which a loanword is modified can vary considerably: some
loanwords are hardly changed at all and may seem quite foreign-sounding to na-
tive speakers of the borrowing language. Other words may be so strongly modi-
fied that, to the native speaker, their shape is indistinguishable from that of
a native word. Often, the degree to which a loanword is modified seems to de-
pend as much on social, cultural, and historical factors as on purely linguis-
tic ones. My focus in this paper is on loanwords which have been modified, and
on the source of these modifications. Those loanwords which have not undergone
any of the modification processes which I will discuss are not counterexamples;
they are merely loanwords which have not been completely incorporated into the
native lexicon.

Loanwords are often modified by sound substitutions, i.e. for any source
language sound which the borrowing language lacks, the phonetically closest
sound is substituted. The consonant inventory of OshiKwanyama is shown in (1)
below (only [g] is not contrastive):

(1) p   t   k

     b   d   g

             č

             ǰ

         f   š   x   h

         v

     m   n   ɲ   ŋ

             l

                 y   w

Since OshiKwanyama has no r , l is normally substituted, as shown in (2):

(2) source language   source word   loanword in OshiKwanyama

     German   [radiyo]   [oladiyo]   'radio'

     English   [tayə˞]   [etayela]   'tire'

     Afrikaans   [frax]   [ofulaxa]   'burden, load'

OshiKwanyama also has no s sound; both [f] and [š] are substituted, al-
though [š] seems to be preferred. Some examples are shown in (3):

(3)   source language   source word   loanword in OshiKwanyama

    Eng   [sæk]   [ošako]   'sack'

    Eng   [vɐs]   [oveliša]   'verse'

    Eng   [sɔɹt]   [ofoloto]   'sort'

One of the major constraints on sounds in OshiKwanyama is the constraint on
closed syllables; that is, no syllable may end in a consonant. It follows from
this that all OshiKwanyama words must end in a vowel. This appears to be the
very strongest constraint in the language. I have found not one single loan-
word which ends in a consonant. Even loanwords which lack most other signs of
incorporation have acquired a final vowel; the examples in (4) are very "for-
eign-sounding" loanwords, yet all of them have final vowels.

(4)   Eng   [ays kɹiʸm]   [oayskrima]   'ice cream'

    Eng   [biɹ]   [obira]   'beer'

    Eng   [blækbɔɹd]   [blækbolda]   'blackboard'

    Eng   [sɛɹəf]   [šelafi]   'seraph'

The example words meaning 'ice cream' and 'beer' are foreign-sounding in large
measure because the r was not replaced by l . The other words do not sound
native primarily because they lack noun class prefixes.

OshiKwanyama has nine noun classes. The noun class prefix system (slightly
simplified) is: Cl. 1 omu-/ova- , Cl. 2 omu-/omi- , Cl. 3 e-/oma- , Cl. 4
o(N)-/e:(N)- , Cl. 5 oši-/oi , Cl. 6 olu-/omalu- , Cl. 7 oku-/oma- , Cl. 8
ou-/omau- , Cl. 9 oka-/ou- . Loanword assignment of noun classes corresponds
closely to the size of the noun class; that is, the classes which contain the
largest number of native nouns also contain the most loanwords. Loanwords be-
longing to the five classes with largest membership are shown in (5):

(5)   Eng   [læmp]   [olampa]   'lamp'   Cl. 4

    Eng   [pɛn]   [opena]   'pen'

    Eng   [fɔɹk]   [efoloka]   'fork'   Cl. 3

    Germ   [hawfə]   [ehawfu]   'dune'

    Afr   [ta·fəl]   [ošitafula]   'table'   Cl. 5

    Eng   [goʷld]   [ošiŋgolodo]   'gold'

    Eng   [pəliʸs]   [omupolifi]   'policeman'   Cl. 1

    Eng   [bɪšəp]   [omumbišopa]   'bishop'

source language	source word	loanword in OshiKwanyama		
Eng	[poʷniʸ]	[okaponi]	'pony'	Cl. 9
Eng	[spəɹ]	[okašipolo]	'spur'	

An interesting interaction occurs between the phonological constraint against certain kinds of consonant clusters and the sound substitution processes. Native OshiKwanyama words have a constraint against all clusters except consonant plus glide and nasal plus voiced stop. Clusters consisting of obstruents or clusters which contain liquids never occur. When these sorts of clusters are found in borrowings, they are almost always eliminated. A few of the small number of loans which have not eliminated such clusters were shown in (4). The most common method of cluster simplification is to insert a vowel, as in the first five examples in (6); occasionally one of the two consonants is deleted, as in the last three examples in (6):

(6)	Eng	[faɹm]	[ofalama]	'farm'
	Germ	[kartə]	[okalita]	'map'
	Eng	[kɹɪsməs]	[okilišitimiša]	'Christmas'
	Germ	[brot]	[ombolota]	'bread'
	Afr	[spɛlt]	[ošipela]	'pin'
	Eng	[poʷst]	[oposa]	'post, mail'
	Afr	[kɔmbərs]	[ošikumbafa]	'blanket'

Note that, while unsimplified clusters of consonant plus r and consonant plus l may occur (as in (4)), simplified clusters, like those in (6) always contain the substituted l sound. Thus, while substitution of a native sound for a foreign sound does not necessarily imply cluster simplification, cluster simplification does imply sound substitution; consequently forms such as *[oaysikirima] and *[osipela] never occur. Thus, there must be a hierarchy of loanword incorporation processes; sound substitution is *primary* with respect to processes which reflect constraints against consonant clusters.

Finally, I will discuss the processes which modify nasal clusters. In the native system of OshiKwanyama, the voiceless stops are all underlyingly distinct. The voiced alveolar stop, d , is also contrastive. However, it occasionally alternates with l . The b also is contrastive, although it sometimes alternates with v . The g occurs only after [ŋ] . None of the voiceless stops occur after nasals; only voiced stops are found in this environment. When nasals and stops come together as a result of morpheme conjunction, the results are illustrated in (7):

(7)	native root	non-nasal precedes		nasal precedes	
	-pat-	[olupati]	'rib'	[e·mati]	'ribs'
	-pot-	[okupota]	'to be rude'	[omote]	'good-for-nothing'
	-tan-	[okatana]	'little calf'	[onana]	'calf'

native root	non-nasal precedes		nasal precedes	
-tuŋgwa-	[okatuŋgwa]	'little basket'	[onuŋgwa]	'basket'
-kak-	[olukaku]	'shoe'	[e·ŋaku]	'shoes'
-kwat-	[okukwata]	'to take, seize'	[oŋwate]	'prisoner of war'
-viŋg-	[oluviŋga]	'horn'	[e·mbiŋga]	'horns'
-vel-	[okuvela]	'to arrive'	[embedi]	'arrival'
-ly-	[okulya]	'to eat'	[e·ndya]	'food'
-lum-	[omulumenu]	'human male'	[ondume]	male of Cl. 4 nouns

What, then, occurs in loanwords? If the source language word has an initial voiced stop, normally the loanword is modified in one of two ways (as shown in (8): either a homorganic nasal is inserted before the voiced stop, as in 'bet' and 'gold', or else the word is assigned the nasal-final form of the Class 4 prefix:

(8) Eng   [bɛt]   [mbeta]   'bet, gamble' (verb)

   Eng   [goʷld]   [ošiŋgolodo]   'gold'

   Germ   [bibɛl]   [ombibela]   'Bible'

   Eng   [dæm]   [ondama]   'dam'

   Eng   [dɔŋkiʸ]   [ondoŋgi]   'donkey'

   Source language words which contain clusters of nasal plus voiceless stop are normally modified as well, as shown in (9):

(9) Eng   [stæmp]   [šitamba]   'stamp' (verb)

   Afr   [pɔmp]   [opomba]   'pump'

   Eng   [pɹɪnt]   [pelenda]   'print' (verb)

   Germ   [tɪntə]   [otinda]   'ink'

   Afr   [trɔŋk]   [ondoloŋgo]   'prison'

   Eng   [ɪŋk]   [oiŋga]   'ink'

In these cases the voiceless stops are voiced after nasals. But note, this mod- ification can not be the result of applying a synchronic phonological rule. OshiKwanyama has no rule which voices stops after nasals; instead the OshiKwa- nyama rule would delete the voiceless stops, as shown in (7). As well, note that nasal plus voiceless stop clusters are, in fact, allowed in OshiKwanyama in certain cases. As a result of certain fast speech rules, clusters of nasal plus any consonant may actually occur, even though there is a deep structure con- straint against any but nasal plus voiced stop clusters. (Thus, 'tree' may be pronounced [omuti], [om:ti], [omti], or even [onti] in increasingly more casual and faster speech.) However, the loanwords are modified in spite of

this; it seems clear that in this case the loanword incorporation process is derived not from the surface structure but as a result of the deep structure constraints.

Although OshiKwanyama allows voiceless stops to occur both in stem-initial and word-initial position, nevertheless a small number of loanwords with initial p , t , or k undergo the modifications illustrated in (10):

(10) Afr   [papi·r]   [ombapila]   'paper, letter'

     Eng   [pɪk]   [ombiki]   'pick-axe'

     Afr   [kɛrk]   [oŋgeleka]   'church'

     Germ   [kamel]   [oŋgamelo]   'camel'

     Afr   [trɔŋk]   [ondoloŋgo]   'prison'

The word in each case is assigned the nasal-final form of the Class 4 prefix, even though initial op , ot , or ok are perfectly allowable sequences. However, there are no sequences of these sounds in this particular class of nouns. Thus, it is possible to find words like [opo] 'here', [otwa] 'we', and [okakadona] 'girl' (Cl. 9), but no such sequences occur in the native words of class 4 (because, of course, of the rule illustrated in (7)). However, these initial voiceless stops could have been retained without inserting a preceding nasal if the words had been assigned to class 3 or class 5, both of which contain large numbers of loanwords and which allow stem-initial voiceless stops. However, it would appear that these words were simply assigned to class 4 because this is the class that most loanwords are assigned to; however, once in class 4, a class-specific constraint against stem-initial voiceless stops gave rise to the use of the nasal-final form of the prefix. Once this form of the prefix *was* assigned, the incorporation process illustrated in (9) came into effect and voiced all of these post-nasal voiceless stops.

In conclusion, there appears to be a hierarchy of loanword incorporation processes in OshiKwanyama. As well, some of these incorporation processes derive from the deep structure constraints and not from the surface structure. Finally, some processes may even be specific to a particular subset of words, i.e. nouns of Class 4.

REFERENCES

Brincker, P. H. 1891. *Lehrbuch des Oshikuanjama*. Stuttgart: W. Spemann.

Tobial, G. and B. Turvey. 1965. *English-Kwanyama Dictionary*. Johannesburg: Witwatersrand University Press.

Tönjes, H. 1910. *Lehrbuch des Ovambo-Sprache: Oshikuanjama*. Berlin: Georg Reimer.

SWAHILI RELATIVE CLAUSES
A GENERALIZED PHRASE STRUCTURE GRAMMAR ANALYSIS

Andrea Tyler
University of Iowa

Swahili relative clause constructions are complex and variable. On the sur-
face, the language has three relative clause constructions, each of which has
subvarieties. This paper argues that earlier attempts to analyze Swahili rela-
tives as one construction have masked significant differences between the rela-
tives and presents a Generalized Phrase Structure Grammar (hereafter GPSG) ac-
count of Swahili relatives. Transformational accounts [Givon 1972, Vitale 1981]
have derived all three types of relative clauses from one deep structure, see-
ing these surface variations as reflexes of other rules applying to the output
of a single relative clause rule. These accounts have obscured differences in
constituent structure and conditions on extraction among the types of relative
clauses. A phrase structure approach, on the other hand, emphasizes the differ-
ences in surface strings. In Swahili relatives these surface variations pro-
vide key information about differences in internal constituent structure in the
three relative constructions which in turn account for differences in subject
post-posing, occurrences of the complementizer KWAMBA, and conditions on extrac-
tion. The analysis I present is basically within the framework presented by
Gazdar and Pullum [1982].

Consider the following TENSED relative constructions:

(1) a. mtoto a-   li- ye- ki- ona kitabu   'child who saw the book'
         child subj past rel obj see book

    b. kitabu a- li- cho- ki- ona mtoto 'book which the child saw'
         book   subj past rel obj see child

    c. *kitabu mtoto a-   li- cho- ki- ona
          book   child subj past rel obj see

In (1a) the head noun is followed immediately by the inflected verb, which is
expected as the subject noun phrase is relativized. However, in (1b) the head
noun is also followed immediately by the verb with the subject appearing after
the verb. Sentences in which the full noun subject appears before the verb are
ungrammatical as shown in (1c). In short, a canonical SVO sentence construction
never appears in TENSED relatives.

AMBA relatives, on the other hand, evidence a rather different pattern.
Consider the following AMBA relatives:

(2) a. Mary ambaye a-   li- m- pa   mtoto kitabu
         Mary rel   subj past obj give child book

         'Mary who gave the child the book'

   b. mtoto ambaye Mary a- li- m- pa kitabu
      child rel   Mary subj past obj give book

      'the child who Mary gave the book'

   c. kitabu ambacho Mary a- li- m- pa   mtoto
      book   rel   Mary subj past obj give child

      'the book which Mary gave the child'

Sentences (2b) and (2c) show a full noun subject occurring before the verb in
these relatives. In fact, AMBA relatives appear to be canonical SVO sentences
in which a noun phrase is missing, i.e. in (2a) the subject noun is missing, in
(2b) the direct object noun is missing, and in (2c) the indirect object noun is
missing.

    Traditional analyses have accounted for these differences in surface
strings by positing a single deep structure for both relatives. An obligatory
subject post-posing mechanism moves the subject noun phrase to a post-verbal po-
sition in TENSED relatives. However, another way to look at AMBA and TENSED
relatives is to accept the surface strings at face value. Instead of analyzing
these strings as representing one deep structure to which different transforma-
tions have applied, AMBA and TENSED relatives could be seen as having different
constituent structures. AMBA relatives would be analyzed as a head noun fol-
lowed by a $\bar{\bar{V}}$ and TENSED relatives as a head noun followed by a $\bar{V}$ $\bar{N}$. Assuming
this analysis, AMBA relatives will be admitted by rule (3):

$$(3) \quad [\underset{[\alpha\text{class}]}{R}] \quad \underset{[\alpha\text{class}]}{AMBA} \quad \underset{[\alpha\text{class}]}{\bar{\bar{V}} / \bar{\bar{N}}} \quad]$$

Rule (3) employs the /category convention developed by Gazdar to represent ex-
traction phenomena. It indicates that there will be a gap at some point in the
string. In the case of /NP a gap will appear in the string where one would ex-
pect a noun phrase to appear. Rule (3), then, claims that a relative intro-
duced by AMBA is a head noun followed by a sentence which is missing a noun
phrase.

    TENSED relatives will be admitted by rules (4a) and (4b):

$$(4) \text{ a. } \left[\begin{matrix} R \\ [\alpha\text{class}] \end{matrix}\right] \begin{bmatrix} V \\ \alpha\text{rel} \\ \alpha\text{subj} \\ \beta\text{obj} \\ \begin{Bmatrix} na \\ li \\ si \\ taka \end{Bmatrix} \end{bmatrix} [\underset{\beta\text{obj}}{\bar{\bar{N}}}] \quad \text{ b. } \left[\begin{matrix} R \\ [\alpha\text{class}] \end{matrix}\right] \begin{bmatrix} V \\ \alpha\text{rel} \\ \alpha\text{obj} \\ \beta\text{subj} \\ \begin{Bmatrix} na \\ li \\ si \\ taka \end{Bmatrix} \end{bmatrix} [\underset{\beta\text{subj}}{\bar{\bar{N}}}] \quad]$$

Rule (4a) claims that a TENSED relative in which the subject noun phrase has
been relativized consists simply of a verb bearing the proper markings followed
by a noun phrase which agrees with the object markings on the verb. TENSED rel-

atives formed on object noun phrases are admitted by rule (4b).

Before accepting such a proliferation of phrase structure rules and the notion that these two relatives are quite different structurally, we would want proof that indeed these strings act differently. The appearance of the complementizer KWAMBA provides such evidence.

KWAMBA is an optional complementizer which appears before complements which seem to be full sentences displaying canonical SVO order. Sentences involving S-complements will be introduced by rule (5):

(5) $[\ _{[\overline{\overline{V}}\atop +\text{comp}]}\ (\ \text{kwamba}\ )\ _{[\overline{\overline{V}}\atop -\text{comp}]}\ ]$

This rule specifies that any embedded $\overline{\overline{V}}$ can be optionally introduced by KWAMBA. Thus pairs of sentences such as:

(6) a. Mary a- li- sema John a- li- kwenda
        Mary subj past say John subj past go

        'Mary said John went'

    b. Mary a- li- sema kwamba John a- li- kwenda
        Mary subj past say that   John subj past go

        'Mary said that John went'

are both introduced by the same rule. KWAMBA can occur in AMBA relatives but never in TENSED relatives:

(7) a. mtu   ambaye kwamba Mary a- na- m- penda a- li- kwenda sokoni
        person rel   comp   Mary subj present obj like subj past went   store to

        'the person who Mary likes went to the store'

    b. *mtu   kwamba a- na- ye- penda Mary a- li- kwenda sokoni
        person comp   subj pres rel like Mary subj past go   store to

A plausible explanation for these facts is that the internal constituent structure of the two relatives differs. If TENSED relatives do not have the internal constituent structure of a $\overline{\overline{V}}$, then we would not expect KWAMBA to appear before the verb in these constructions. And indeed, it cannot. If the AMBA relatives, on the other hand, have $\overline{\overline{V}}$ as their constituent structure, we would expect KWAMBA to be able to appear after AMBA, as it does. Simply allowing the KWAMBA rule, which is independently needed in the grammar, to apply in relatives predicts the correct distribution. Thus analyzing the constituent structure of the TENSED relative as $\overline{V}\ \overline{N}$ and AMBA relatives as $\overline{\overline{V}}$ automatically accounts for the restrictions on KWAMBA in relative clauses.

Post-verbal subject data provide additional support for this analysis. Givon [1972] and others have argued that subjects in AMBA constructions are moved to a post-verbal position by the same process that moves subjects to a post-verbal position in TENSED relatives. Hence the argument says that the

two constructions are essentially the same. Close examination of the data,
however, indicates that post-verbal subjects in AMBA relatives do not behave
the same as post-verbal subjects in TENSED relatives.

When both the subject and the relativized object of TENSED relatives are of
the same noun class, sentences are ambiguous. For instance, sentence (8) can
be interpreted as either 'the person who liked Juma' or 'the person who Juma
liked.'

(8)   mtu   a- li- ye- m- penda Juma
      person subj past rel obj like Juma

Keach [1982] points out, however, that AMBA relatives in which the subject
appears post-verbally are not ambiguous. This is because a noun phrase follow-
ing the verb in an AMBA relative must be set off with a pause if it is to be
interpreted as the subject.

(9) a.   mtu   ambaye Juma a- li- m- penda   'the person who Juma liked'
         person rel   Juma subj past obj like

    b.   mtu   ambaye a- li- m- penda Juma   'the person who liked Juma'
         person rel   subj past obj like Juma *'the person who Juma liked'

    c.   mtu   ambaye a- li- m- penda,   Juma
         person rel   subj past obj like (pause) Juma

         'the person who Juma liked'

(Keach: 161)

Keach emphasizes that these AMBA constructions are never ambiguous while seem-
ingly parallel TENSED constructions are.

Keach further notes that subjects can appear post-verbally in non-relatives:

(10)   a- li- m- penda Juma,   mtu   'the person liked Juma'
       subj past obj like Juma (pause) person 's/he liked Juma, the person'
                                              (s/he = person)

Thus there appears to be an optional rule in Swahili that allows subjects of
full sentences to appear post-verbally if the subject noun is set off by a pause.
A GPSG type analysis could account for these sentences by a meta-rule as in (11):

(11) $\bar{\bar{N}}$ $\bar{V}$ $\bar{V}$ $°\bar{\bar{N}}$
      if [$_{\bar{V}}$ [αsubj] [+ fin]] → [$_{\bar{V}}$ [+fin] [αsubj]]
                              α subj   αsubj

I assume the morphophonemic rules will interpret °N as "pause N". This rule
says that if $\bar{N}$ $\bar{V}$ is an acceptable string then $\bar{V}$ pause $\bar{N}$ will also be an accept-
ble string.

Without adding any further conditions, we would expect this rule to apply
to any $\bar{\bar{V}}$ construction. Thus if the constituent structure of AMBA relatives is

$\bar{\bar{V}}$, we would expect to find post-verbal subject nouns set off by pauses occur-
ring in AMBA relatives but not in TENSED relatives. The data indicate that
this is the case. Again, we find that an independently motivated rule which
applies to $\bar{\bar{V}}$ can automatically account for a difference between TENSED and AMBA
relatives if AMBA constructions are analyzed as $\bar{\bar{V}}$. These representations have
the further consequence of predicting differences in the conditions on extrac-
tion for each construction.

Gazdar [1981] showed that the /category notation could be used to account
for unbounded dependencies such as those formed by wh-movement in English rela-
tives. With no modification of Gazdar's /category convention, the phrase struc-
ture rules introducing AMBA relatives predict that AMBA constructions will al-
low unbounded dependencies. TENSED relatives, however, are not introduced by
the /category notation. Since /category is the only mechanism in GPSG allowing
unbounded dependencies, phrase structure rules (4a) and (4b) predict that
TENSED relatives will allow only bounded extractions. Consider sentence (12):

(12) $[_{S_1}$ mtu $[_{S_2}$ ambaye John a-   na-   fikiri $[_{S_3}$ kwamba ___ a- li-
       person   rel   John subj present think   comp   ___ subj past

       m- piga Mary]] a- na- ki- penda kitabu]
       obj hit   Mary

       'the person who John thinks hit Mary likes the book'

In this sentence a dependency occurs between the relative marker and a gap in
S_3 which is one cyclic node away. This sentence is perfectly grammatical.
However, a parallel sentence using the TENSED strategy is ungrammatical:

(13) *$[_{S_1}$ mtu $[_{S_2}$ a-   na- ye- fikiri John $[_{S_3}$ kwamba ___ a- li- m-
        person   subj pres rel think John   comp   ___ subj past obj

        piga Mary]] a-   na- ki- penda kitabu]
        hit   Mary   subj pres obj like   book

       'the person who John thinks hit Mary likes the book'

The only difference between the strings is that the AMBA construction is used
in (12) while the TENSED construction is used in (13). These sentences indi-
cate that a noun phrase cannot be extracted from a lower clause in the TENSED
construct but can be extracted from a lower clause in the AMBA relative. The
conditions on extraction are clearly different for TENSED and AMBA relatives as
predicted by the phrase structure rules.

To summarize, we began this analysis by simply examining TENSED and AMBA
constructions and noting that TENSED relatives always appear as verb initial
strings while AMBA relatives appear as SVO sentences missing a noun phrase.
Following a GPSG type analysis which emphasizes surface structure, we posited
different constituent structures for AMBA and TENSED relatives. This analysis,
in turn, automatically accounted for the distribution of KWAMBA and the differ-
ences in ambiguity in subject post-posed relatives. These phrase structure
rules had the additional consequence of correctly predicting the conditions on
extraction in TENSED and AMBA relatives.

   A persistent objection to phrase structure accounts has been that they sim-
ply list possible surface strings, thus missing generalizations which could be
captured in transformational accounts. In this paper I argue the contrary: a
phrase structure account which begins by paying close attention to surface
structure reveals important generalizations about Swahili relatives which have
been masked in earlier transformational accounts.

[All data, unless otherwise indicated, is from Judy Nyanda who is a native
speaker of Swahili from Dar Es Salaam, Tanzania.]

REFERENCES

Gazdar, G. 1981. "Unbounded Dependencies and Coordinate Structure." *Linguis-
     tic Inquiry* 12:155-184.

Gazdar, G. and G. Pullum. 1982. *Generalized Phrase Structure Grammar: A
     Theoretical Synopsis*. Bloomington, Indiana: IULC.

Givon, T. 1972. "Pronoun Attraction and Subject Post-posing in Bantu." In
     P. Perateu, J. Levi, and G. Phares (eds.), *The Chicago Which Hunt:
     Papers from the Relative Clause Festival*, pp. 190-197. Chicago: Univer-
     sity of Chicago Press.

Keach, C. 1982. *The Syntax and Interpretation of the Relative Clause Con-
     struction in Swahili*. Amherst, Mass.: University of Massachusetts
     Graduate Linguistic Student Association.

Vitale, J. 1981. *Swahili Syntax*. Dordrecht, Holland: Foris Publications.

OBJECTS IN GOKANA

Donna Wagner
University of Southern California

    The methodology of this paper assumes that the existence of grammatical re-
lations (GR's) must be established language-internally on the basis of a prolif-
eration of morpho-syntactic phenomena which make reference to the same set of
logical argument positions in a clause. I furthermore reject a methodology
which makes a priori initial assignments to GR's based ultimately on semantic
roles as in mainstream Relational Grammar (RG), which consequently must often
sanction obligatory revaluations to account for surface accessibility to the GR-
defining phenomena. Note that this methodological point is a natural extension
of recent findings with respect to the Unaccusative Hypothesis [Rosen 1982],
which have shown that it is impossible to decide on universal semantic grounds
whether the single argument of a monovalent verb will head an unaccusative (2)
or unergative (1) arc at the initial level. To say that there is no "universal
alignment" between semantic roles and unaccusativity is equivalent to saying
that there is no such alighment between semantic roles and 2-hood, which is in-
dependent of transitivity. These arguments may be extended to the 3 relation,
initial instantiation of which is restricted to semantic recipients in RG.

    A consequence of the methodological assumption that GR's are logically inde-
pendent of semantic roles is that the set of semantic roles which can be mapped
onto initial GR's in one language will not necessarily be coextensive with the
same set in another language. I will argue that in Gokana, a Benue-Cross lan-
gugage of Nigeria, there are two object relations (2 and 3), accessibility to
which is determined inversely along a hierarchy of semantic roles such that:

(1)   Recipient/benefactive/possessor - Patient - Cognate object - Instrument
       3→   ←2

That hierarchies of this kind may characterize GR's at an initial level has
been argued for a number of languages, including Huichol [Comrie 1982], Fula
[Wagner 1982a], Nahuatl [Wagner 1982b], and Bantu generally [Hyman and Duranti
1982]. Note that whereas the hierarchies corresponding to objects in these lan-
guages are not identical in every respect, a consistent generalization underly-
ing them indicates a tendency to grammaticalize a ranking of semantic roles on
the basis of the relative discourse prominence (or "topic-worthiness") of the
class of NP's most typically instantiating those roles and suggests the need
for further research into the explanatory power of such discourse notions on
phenomena involving grammatical relations, as in, e.g. Schachter [1977]. Note
furthermore that a proliferation of object-types should be regarded as no more
problematic (or "unconstrained") for a theory of language than, for example,
the extension of a verb form in one language to assume semantic functions en-
coded in other languages by means of prepositions (as in serial verb languages)
or adjectives. The point here is that language-internal evidence must decide
category membership.

    One property of the non-subject argument of monotransitive verbs in Gokana

is that, under certain discourse conditions, it may appear both in its characteristic immediate post-verbal position and in a serial construction as the object of tú 'take':

(2) a. aè   fέ   nɔm   'he killed the animal'
        3sg-pst kill animal

    b. aè   tú   nɔm fὲ   = (2a)
        3sg-pst take animal kill

As a serial verb language Gokana prefers a clause type with one object per verb. Nevertheless it has a small number of underived ditransitive predicates which may occur with two overt objects. Note that it is the patient which evinces the 2-hood properties of word order and tú serialization here:

(3) a. ŋín è   nὲ kpá pábia   'the child gave the book to the woman'
        child pst give book woman

    b. *ŋín è   nὲ   pábia kpá

(4) a. ŋín è   tú kpá nὲ pábia = (3a)
        child pst take book give woman

    b. *ŋín è   tú pábia nὲ kpá

     In clauses with an expressed instrumental (a category which includes comitative and manner NP's as well), the suffix -ma is added to the verb, increasing its valence by one. Here however it is the instrument which must occur in immediate post-verbal position:

(5) a. aè   feὲmà   gíma nɔm   'he killed the animal with a knife'
        3sg-pst kill-with knife animal

    b. *aè   feὲmà   nɔm gíma

Furthermore only the instrument may appear as the object of tú :

(6) a. aè   tú gíma feɛmá   nɔm   = (5a)
        3sg-pst take knife kill-with animal

    b. *aè   tú nɔm feɛmá   gíma

Note finally that there is no alternative periphrastic means for expressing instrumentality and thus no motivation for any non-obligatory advancement rule (see below).

     Gokana also has a number of verbs which take obligatory cognate objects bearing various participant roles with respect to the verb. These occur in the direct object slot:

(7) a. aè   bire múū ŋín   'he bathed the child'
        3sg-pst wash water child
                  (CO)

   b. *aè birɛ ŋín múü

Nevertheless, either the patient or the cognate object may appear as the object of tú in the serial construction:

(8) a. aè   tú   múü   birɛ ŋín   = (7a)
        3sg-pst take water wash child

    b. aè   tú   ŋín   birɛ múü   = (7a)

Thus tú serialization (as well as passive, not discussed for this construc-tion) does not determine 2-hood unambiguously, suggesting that this object re-lation is to some degree diffuse; accessibility to the 2-relation diminishes as one moves up the hierarchy from the right. Note that the facts in (7) and (8) can be accounted for within a RG framework which assumes that different targets of demotion accompany different promotion rules. Thus tú serialization would be sensitive to *working*, and word order to *final*, 2-hood. While this is of course an adequate formalization of the facts discussed, we must look elsewhere, e.g. to discourse factors, for explanatory principles governing such behaviors.

    Gokana has a lexically detransitivizing suffix -a which denotes either passive or reciprocal meaning. With monotransitive roots this form may be con-strued in either way if pragmatically feasible:

(9) tɔ   tiv - à   'the house has been built'
      house build- a

(10) gbopáŋín ɔ́v - á   a. 'the children are hated'
     children hate-a   b. 'the children hate each other'

Interpretations of the -a forms derived from ditransitive verbs show that the processes of passivization and reciprocal formation characterize (at least pref-erentially) different NP's; however, that NP identified as the 2 above may pas-sivize, while the target of reciprocal formation must be a 3, i.e. that NP bear-ing the leftmost semantic role in (1) above:

(11) gbopáŋín è   nè- à   nɔm
     children pst give-a animal

    a. 'the children gave each other an animal'   reciprocal on recipient
    b. 'the children gave each other to the animal'   reciprocal on patient
    c. 'the children were given to the animal'   passive on patient
    d. '*the children were given an animal'   *passive on recipient

Thus in (11) the preferred interpretation is a reciprocal reading on the recipi-ent (a), though this reading is possible on the patient (b), which may also serve as passive subject (c). (11) does not, however, admit a passive reading on the recipient (d).

    The facts involving derived instrumental-verbs are more categorical. As in (11), only the rightmost NP in (1) may passivize:

(12) a. gὲ   kpɔ́- á nɔm   'the knife was used to cut the meat'
         knife cut- a meat

    b. *nɔm   kpɔ́ - á gὲ   '*the meat was cut with a knife'
        meat cut - a knife

Nevertheless, the subject may be interpreted as coreferential to the patient:

(13) gbopáŋín fɛ- à gíma   a. 'the children killed each other with a knife'
     children kill-a knife b. '*the children were killed with the knife'
                                 (i.e. not by each other)

Note that the instrumental-2 is not a possible target for reciprocal formation
here, though in principle it may be instantiated by a comitative NP with human
reference.

    Benefactives in Gokana are normally expressed using a serial construction
with nὲ 'give':

(14) baὲ   tîb   tɔ   nὲ   ŋín   'they built a house for the child'
     3pl-pst build house give child

(15) gbopáŋín fέ- á nɔm
     children kill-a animal

        a. 'the children killed animals for each other'   benefactive-reciprocal
        b. '*the children were killed an animal'   *benefactive-passive
        c. 'the children killed each other's animals'   possessor-reciprocal
        d. '*the children's animals were killed'   *possessor-passive

Reciprocal Formation may access the benefactive nominal directly (a), though
this NP is not available for advancement to subject via passive (b). Note that
(15) also admits a reading in which the possessor of the patient NP is corefer-
ential with the subject (c), though it may not be construed as a passive with a
possessor-subject (d). Now a maximally general characterization of the class
of possible targets of reciprocal formation under the assumptions of RG, i.e.
the initial "oblique" status of non-subcategorized arguments and the relegation
of possessor NPs to "pre"-relational status, would require promotion in the
case of benefactives and possessives to some GR accessible to reciprocal forma-
tion. Since neither NP is a possible passive subject, and since we have seen
above that 2's may passivize, it follows that these nominals are promoted to 3
(though note, in the case of the possessor of the initial 2, nɔm (cf. (c)
above) that this violates the Relational Succession Law constraining the class
of possible ascensions.). Nevertheless there is no evidence from active
clauses for this level of derivation; reciprocal formation w/-a is thus obliga-
tory for non-initial 3's. Yet while we cannot rule out obligatory rules a pri-
ori, there is no language internal evidence for such rules independent of their
interaction with the grammatical processes we are seeking to explain. In con-
trast a formulation of GR's as in (1), in terms of ordered sets of participant
roles, does not require this unmotivated (and unexplanatory) abstractness.

    In conclusion the data discussed here from Gokana provide three morpho-syn-

tactic tests which motivate the category of DO—word order, tú-serialization,
and passivization. These phenomena consistently isolate the rightmost position
in (1), though further up the hierarchy the notion of DO is more diffuse; NP's
bearing roles to the left of patient are inaccessible. The 3-relation is de-
fined here by accessibility to reciprocal formation and is instantiated by the
NP in (at least strongly preferentially) the leftmost position, stopping to the
right of the patient. I have argued against the positing of obligatory rules
required in RG by assumptions involving the possible semantic roles of initial
GR's, assumptions which we have rejected in our methodology and which, indeed,
are untenable if an initial level distinct from a representation of partici-
pant relations is to be motivated. Finally, I have suggested that further re-
search may afford an explanation of the structure of hierarchies such as (1)
above in terms of the discourse properties of the processes which reference
GR's.

REFERENCES

Comrie, B. 1982. "Grammatical relations in Huichol." In P. J. Hopper and S.
     A. Thompson (eds.), *Syntax and Semantics 15: Studies in Transitivity*,
     pp. 95-115. Chicago: University of Chicago Press.

Hyman, L. M. and A. Duranti. 1982. "On the object relation in Bantu." In
     P. J. Hopper and S. A. Thompson (eds.), *Syntax and Semantics 15: Studies
     in Transitivity*, pp. 217-239. Chicago: University of Chicago Press.

Rosen, C. 1982. "The interface between semantic roles and initial grammatical
     relations." In A. Zaenen (ed.), *Subjects and Other Subjects: Proceed-
     ings of the Harvard Conference on the Representation of Grammatical Re-
     lations*. Bloomington: Indiana University Linguistics Club Publications.

Schachter, P. 1977. "Reference-related and role-related properties of sub-
     jects." In P. Cole and J. M. Sadock (eds.), *Syntax and Semantics 8:
     Grammatical Relations*, pp. 279-306. New York: Academic Press.

Wagner, D. 1982a. "The object relations in Fula." Unpublished manuscript.

Wagner, D. 1982b. "Grammatical relations in Aztec." Unpublished manuscript.

SOME ASPECTS OF LF MOVEMENT IN IRAQI ARABIC

Wafaa Wahba
University of Mansoura, Egypt

0. Introduction

This study investigates certain aspects of the Syntax of S-Structure (SS) and the syntax of Logical Form (LF) as manifested by the behaviour of wh-questions in the grammar of Iraqi Arabic (IA), as spoken in Baghdad and in central and southern Iraq. Wh-operators in IA can appear in the Comp node or in their base position (wh-in-situ). Like English, the wh-operator appears in the Comp and the questioned site is marked by a gap:

(1) a. meno$_i$ Mona shaafat e$_i$?   b. weyya meno$_i$ Mona xarjat e$_i$?
         who   Mona saw   with whom Mona left

        'who did Mona see?'   'with whom did Mona leave?

Like Turkish, Japanese [Hankamer 1973], and Chinese [Huang 1982], the wh-operator in IA has the option of occurring in its base position:

(2) a. Mona shaafat meno?   b. Mona xarjat weyya meno?
         Mona saw   whom   Mona left   with whom

        'whom did Mona see?'   'with whom did Mona leave?'

Following a long tradition, I assume the existence of a rule of wh-movement in LF. This rule moves the wh-phrase-in-situ to a position c-commanding the S that constitutes its domain. The fact that the grammar of IA allows wh-movement both in the Syntax and in LF provides us with the opportunity to contrast the syntax of SS with the syntax of LF as manifested by the same construction in the same grammar. The question arises as to what extent the properties of the LF rule and the Syntactic rule are the same. The data in this paper provide strong support for the existence of the LF movement rule and hence for the level itself. This rule affords a uniform account of numerous significant generalizations that hold between the two levels of representations of SS and LF, which might otherwise be describable via a conjunction of unrelated properties. This rule will also enable us to account for the fact that wh-in-situ questions observe several locality requirements which are observed by wh-Movement in the Syntax. The data discussed in this paper provide evidence for the following claims with respect to the LF rule: (a) Subjacency holds as a well-formedness condition at LF, i.e. the LF rule in IA observes the various island conditions; (b) there is independent evidence that there is Comp-to-Comp LF movement, hence, LF extraction affects both argument and non-argument positions; (c) successive cyclicity is observed by the SS and LF rules. Due to space limitations, I will condense my arguments, and, for a more detailed and fully analysed version of this paper, the reader is referred to Wahba [forthcoming], where I discuss in detail the logical structure of wh-in-situ questions in IA.

Section (1) deals with some scope as well as distributional properties of

wh-in-situ. Section (2) discusses the weak crossover phenomenon which holds
both at SS and at LF in IA. Section (3) provides empirical evidence that Move
alpha applies in successive-cyclic steps. Section (4) discusses the behaviour
of wh-phrases-in-situ with respect to Subjacency. Section (5) summarizes the
major points of this paper.

1. Scope Properties of Wh-phrases-in-situ

   This section argues in favor of a movement rule at LF to account for the
fact that syntactically unmoved wh-operators exhibit similar scope properties
to syntactically moved wh-operators. This rule will also help to account for
the scope ambiguities exercised by wh-phrases-in-situ in IA.

   I will assume, following Chomsky [1973], that the Comp node is marked [+wh]
to mark its complement as interrogative and [-wh] to mark it as indicative.
Consider a paradigm where a wh-phrase appears in the complement clause of a
verb subcategorized only for indicative complements, as in (3a), for both [+wh]
and [-wh] Comp's, as in (3b) and, finally, for [+wh] Comp only, as in (3c):

(3) a. Mona itmannat tishtri sheno? b. Mona nasat tishtri sheno./?
        Mona hoped   to-buy what   Mona forgot to-buy what

        'what did Mona hope to buy?'   'Mona forgot what to buy'
                                     or 'what did Mona forget to buy?'

   c. Mona se?lat Ali Ro?a ishtarat sheno
       Mona asked Ali Ro'a bought   what

       'Mona asked Ali what Ro'a bought'

In (3a), sheno must have a wide scope, since the lower Comp is marked [-wh].
In (3b), it may have a narrow scope, resulting in an indirect question reading.
(3b) may also have a direct question reading where eeh has a wide scope over
the entire sentence. In (3c), sheno must have a narrow scope since the matrix
verb se?al 'to ask' obligatorily takes an interrogative complement.

   The scope properties exhibited by the wh-in-situ sheno in (3a-c) above
mirror those of syntactically moved wh-operators. The paradigm in (4) illus-
trates this point with respect to syntactic wh-movement in IA. The translations
demonstrate that similar facts obtain in English:

(4) a. sheno$_i$ Mona itmannat tishtri e$_i$?   'what did Mona hope to buy?'
        what   Mona hoped   to-buy

   b. Mona nasat [sheno$_i$ [tishtri e$_i$]] 'Mona forgot what to-buy'

   b'. [sheno$_i$ [M. nasat [e$_i$ [tishtri e$_i$]]]]? 'what did Mona forget to buy?'
        what   M. forgot   to-buy

   c. Mona se?lat Ali [sheno$_i$ [Ro'a ishtarat e$_i$]]

       'Mona asked Ali what Ro'a bought'

Assuming that wh-phrases-in-situ undergo movement in LF in a way similar to wh-
movement in SS accounts for the fact that they exercise the same scope proper-

ties as syntactically moved wh-operators. This rule will also account for the
scope ambiguities in (3b) by allowing the wh-phrase to move to where it can c-
command its scope at LF. Hence (3b) will have two LF structures as in (5) be-
low:

(5) a. [sheno$_i$ [M. nasat[[tishtri e$_i$]]]] b. Mona nasat[sheno$_i$[tistiri e$_i$]]]]

2. Wh-movement and the Weak Crossover Phenomenon

The second argument which strongly supports an abstract movement rule at LF
has to do with the weak crossover phenomenon which prohibits a coindexed pro-
noun from preceding a variable [Chomsky 1976]. Thus, (6) is excluded on the
grounds that e is preceded by the coreferential pronoun *his*:

(6) *Who$_i$ did his$_i$ mother see e$_i$?

One way to exclude (6) is to assume that a moved element cannot cross a coin-
dexed pronoun in its path to Comp. The weak crossover phenomenon holds in the
Syntax and LF of IA. Thus, a syntactically moved wh-phrase can not cross a co-
indexed pronoun as in (7a), whereas a wh-phrase-in-situ can not be preceded by
a coindexed pronoun in its domain as in (7b):

(7) a. *meno$_i$?uxt-ha   darbat e$_i$? b. *?uxta-ha$_i$ darbat meno$_i$?
        who sister-her hit   e   sister-her hit   who

        'who did her sister hit?'   'who did her sister hit?'

(7a) is ruled out because the moved wh-operator crosses the coindexed pronoun
-ha resulting, thus, in a crossover violation. In (7a), there is no visual
movement, but the sentence is ruled out due to the presence of a coindexed pro-
noun that precedes the wh-phrase-in-situ. The similarity between (7a) and (7b)
can be captured if we make the assumption that meno in (7b) undergoes move-
ment at LF. Accordingly, (7b) will have the LF structure in (8):

(8) [meno$_i$ [?uxta-ha darbat e$_i$]]

In (8), we have a crossover violation since meno crosses a coindexed pronoun
in its path to Comp. Thus, (7b) is ruled out on the same grounds as (7a) and
(6).

3. Move alpha and Successive-cyclicity in SS and LF

I now provide empirical evidence that Move alpha applies in successive-cyc-
lic steps as opposed to a single step in both SS and LF. Two arguments will be
given below towards this end. One argument deals with the behaviour of a wh-
phrase-in-situ at SS, where it has the option of appearing in any Comp node that
intervenes between its base position and the matrix Comp. A second argument
deals with Subjacency as a well-formedness condition at LF. Finally, I discuss
the implications of the above claim with respect to the LF movement rule.

In addition to the fact that wh-operators in IA appear in argument (in-situ) as well as non-argument (Comp) positions, wh-phrases-in-situ have the option of appearing in any intermediate Comp that intervenes between their locus and the controlling Comp. In (9a), meno appears in its base position in the most embedded clause. In (9b), it appears in the next higher Comp (Comp3). In (c), it appears in Comp2. In (9d), it appears in the matrix Comp (Comp 3):

(9) a. [[Mona hawlat [[tijbir Su'ad [[tisa'ad meno]]]]]]?
       Comp 1   Comp2   Comp3
         Mona tried   to-force S.   to-help who

       'who did Mona try to force Su'ad to help?'

   b. [[Mona hawlat [[tijbir S. [meno$_i$ [tisa'ad e$_i$]]]]]]?
      Comp 1   Comp2   Comp3

   c. [[Mona hawlat [meno$_i$ [tijbir S. [e$_i$ [tisa'ad   e$_i$]]]]]]?
      Comp 1   Comp2   Comp3

   d. [meno$_i$ [Mona hawlat [e$_i$ [tijbir S. [e$_i$ [tisa'ad e$_i$]]]]]]?
      Comp 1   Comp2   Comp3

All sentences in (9) have the reading of a direct question, where meno assumes a wide scope over the entire sentence, regardless of where it appears at SS. Thus, (9a-c) will have a single LF structure where meno moves to the matrix Comp, as in (9d).

The above paradigm has a number of significant consequences with respect to the rule Move alpha in general and LF movement in particular. The first has to do with the mode of application of Move alpha, i.e. whether it moves in successive cyclic steps or in a single step from its base position to the controlling Comp. To capture the fact that meno in (9a-c) above exhibits a wide scope over the entire sentence, we must conclude that Move alpha applies in successive steps; otherwise, we will not be able to account for the fact that meno surfaces in the intermediate Comp's in (9b-c), having a wide scope over the entire sentence and not over the domain it c-commands at SS.

The second consequence of the paradigm in (9) is that LF movement mimics SS movement in that extraction at LF takes place from argument as well as non-argument positions. In (9b-c), LF obligatorily moves meno from [Comp 1] and [Comp2] respectively, to the matrix Comp where it c-commands its entire domain (contra Aoun et al. [1981]). This also indicates that a wh-operator at S-structure may occupy a [-wh] Comp node. This provides evidence that LF movement applies successive cyclically. Huang [1982] has shown that this is the case with respect to LF movement of adjuncts only since the latter exhibits stricter locality requirements than their argument counterpart at LF. In IA, both arguments and adjuncts can be extracted from Comp position.

The third consequence of the paradigm in (9) is that it provides more compelling evidence for the presence of a nonovert wh-movement rule at LF and hence for the level itself. This rule, which is assumed to be an instance of Move alpha, captures the striking similarities that hold between wh-in-Comp and wh-

in-situ questions in IA that have been shown so far: both constructions behave
the same with respect to scope properties, the weak crossover phenomenon, and
both allow extraction from argument as well as non-argument positions.

4. LF Movement and Subjacency

It has been assumed so far that the LF rule violates Subjacency; hence, a
wh-in-situ in Chinese, Japanese, Turkish, English, etc., can have a wide scope
if it occurs inside a syntactic island (except for adjuncts, cf. Huang [1982,
1983]). However, in IA, a wh-phrase-in-situ is barred from occurring inside
syntactic island. The following examples show that a wh-in-situ is barred from
occurring inside a wh-island (10a), a Complex NP (10b), and finally, a co-or-
dinate structure (10c):

(10) a. *Mona nasat [li-meno$_i$ [tinti   sheno e$_i$]]
          Mona forgot   to-whom [to-give what   ]]

         '*what did Mona forget to whom to give?'
         (Mona forgot [for which x, for which y [to give x to y]])

   b. *Mona ʕurfut [$_{NP}$ il-bint$_i$ [$_{NP}$ illi [e$_i$ ishtarat sheno]]?
        Mona knew   the-girl   who   bought   what

        '*what did Mona know the girl who bought?'

   c. *Mona shaafat [Ali [wi-[meno]]?
        Mona saw   Ali   and-whom

        'whom did Mona see Ali and?'

The sentences in (10) are ungrammatical because sheno occurs inside syntactic
islands.

5. Conclusion

To summarize, I have independent evidence that (a) LF Comp-to-Comp exists.
As a consequence, the LF rule can extract from Comp positions (cf. 9b-c). It
also follows that wh-operators in IA may surface in [-wh] Comp at SS despite the
fact that IA has wh-movement in the Syntax. (b) Subjacency holds at LF applying
to all operators, arguments and adjuncts. To account for the facts discussed
with respect to the behaviour of the LF rule in IA, some SS parametres need to
be modified (cf. Aoun et al. [1981], Lasnik and Saito [1984]). Furthermore, we
need a new parameter that applies at LF to accommodate the fact that Subjacency
is observed by the LF rule in IA, Egyptian Arabic [Wahba 1984], and Tangale
[Kidda 1983].

REFERENCES

Aoun, Y., N. Hornstein, and D. Sportiche. 1981. "Some aspects of wide scope quantification." *Journal of Linguistic Research* 1:69-95.

Chomsky, N. 1973. "Conditions on transformations." In S. R. Anderson and P. Kiparsky (eds.), *A Festschrift für Morris Halle*, pp. 232-286. New York: Holt, Rinehart and Winston, Inc.

Chomsky, N. 1976. "Conditions on rules of grammar." *Linguistic Analysis* 2: 303-351.

Hankamer, J. 1973. "Unacceptable ambiguity." *Linguistic Inquiry* 4:17-68.

Huang, J. 1982. "Logical relations in Chinese and the theory of grammar." PhD dissertation, MIT.

Huang, J. 1983. "On the distribution of empty pronouns." ms, University of Hawaii, Manoa.

Lasnik, H. and M. Saito. 1984. "On the nature of proper government." *Linguistic Inquiry* 15:235-290.

Wahba, W. 1984. "WH-constructions in Egyptian Arabic." PhD dissertation, University of Illinois at Champaign-Urbana.

Wahba, W. forthcoming. ms.

THE INFLUENCE OF ARABIC ON THE SYNTAX OF SWAHILI DISCOURSE
(Part 1: Verbal and Nominal strategies
in temporal clause subordination)

Benji Wald
National Center for Bilingual Research

    The paper raises the suggestion that Arabic has had an impact on Swahili be-
yond the lexicon. In particular, it suggests that Arabic has affected or rein-
forced trends in the syntactic devices used to organize discourse in Swahili at
the inter-clause level.

    Attention first focuses on syntactic devices for the overt expression of
the temporal relations *before* and *after* between Swahili clause pairs. It is
noted that Swahili has two basic strategies for expressing these relations,
characterized as *verbal* and *nominal* strategies. The verbal strategies make use
of verbal auxiliaries to express the interclausal relationships, e.g.

(1) a.   sasa tu-ki-SHA   ku-toka...tunakwenda mpaka ile dau
         now we-when-FINISH Inf-leave...we.go   to   the dhow

         'now, AFTER we leave... we go to the dhow' (AB21mMS)

    b.   hata h-a-JA-osha   uso a-na-yo   yeye
         even Ng-he-'come'-wash face he-with-it him

         'even BEFORE he washes his face he has it' (FZ18mMS)

This strategy is roughly equivalent to:

    a.   (when) we FINISH leaving... (and then) we go to the dhow
    b.   (when) he HASN'T YET washed his face (and) he has it

The nominal strategies treat one clause as a nominal using an Arabic origin
"conjunction" to introduce the clause, e.g.

(2) a.   BAADA ya ku-wa n-SHA-dung-wa   zile sindano ...
         AFTER of Inf-be I-FINISH-stab-Pass those needles ...

         'AFTER I was given the injections...' (CH18mMS)

    b.   napajui hapa KABLA nyi   ha-m-JA-zal-iwa
         I.knew here BEFORE y'all Ng-y'all-'come'-bear-Pass

         'I knew this place BEFORE you were born' (MS42mMS)

This strategy approaches the more felicitous BEFORE and AFTER English transla-
tions given for all the sentences above. The source of these conjunctions are
Arabic verbal nouns semantically used in either temporal (before/after) or loca-
tive senses (facing/beyond), and syntactically used to introduce either full
clauses (in most varieties of Arabic baʕada/qabla MA: + Clause) or NPs

(baʕada/qabla + NP). In Swahili the borrowed conjunctions are restricted to temporal uses, but preserve the Arabic privileges of occurrence, i.e. introducing a clause or NP. Swahili has a pair of Bantu prepositions (actually NPs) semantically equivalent to baʕada and qabla , in nyuma 'behind' and mbele 'front', respectively, in that the latter pair have both temporal and locative uses. However, these are syntactically restricted to introducing NPs, *not* full clauses.

One may suspect that baʕada/qabla have simply replaced nyuma/mbele as clause introducers, and therefore have not altered the strategies inherited from Bantu for expressing the temporal relations at issue. However, several considerations suggest that such a summary dismissal of the impact of Arabic in these cases is premature. First, the verbal strategies exemplified in (1) above are an extremely widespread areal phenomenon in subequitorial Africa, especially among the Bantu and Nilotic languages, in many of these languages to the exclusion of the alternative nominal strategy. While not unknown among African languages, the nominal strategies in discourse are more typical of a more northerly area including Semitic and Southern Indo-European. (Space limitations prevent a full discussion of the evidence for this assertion, but particularly noteworthy is the detail of structural parallelism between Classical Arabic and Latin in the use of a preposition followed by a "wh" pronoun, Latin quam , Arabic ma: , to form a clausal conjunction). Furthermore, in vernacular Swahili speech (at least among first speakers from traditional Swahili communities in Kenya), the verbal strategies are highly resistant to replacement by the nominal strategies. Thus, a compromise strategy involving elements of both strategies is found (double-marking). With respect to baʕada , the 'after' clause tends to retain the verbal auxiliary sha 'finish', essential to the verbal strategy. The 'before' clause is even more resistant so that, as in (2b) above, kabla is a superfluous "left-bracket" of the clause, which fully retains the verbal strategy. The kabla-clause, then, shows minimal adaption to the Arabic syntactic pattern. If kabla simply replaced mbele introducing a 'before' clause, why does Swahili retain the verbal strategy (involving negation), even when kabla is used?

The paper goes on to mitigate the possibly exaggerated conclusion that Arabic is having a typological effect on Swahili with regard to a shift in preference from verbal to nominal strategies, even in the case of baada and kabla . It is important not to overstate the case because much work remains to be done in determining the interplay of structural and social factors which may favor nominal strategies at the expense of verbal ones in Swahili discourse. At the same time, some examples are given of the impact of Arabic in erasing Bantu-derived verbal strategies which have become opaque (i.e. of limited syntactic distribution) in current Swahili speech. Among these examples are:

(3) BADO 'still/yet' (Arabic baʕdu) as a replacement for i-NGA/K'A-li
     (K'A is the traditional Kenyan Swahili auxiliary).

(4) the use of hata (Arabic hatta) 'even/up to' + 'if' clause, paralleling the Arabic construction for 'even if' clauses, coupled with the restriction of historical NGA 'even if/though' to i-NGA-wa , now exclusively used for 'though' clauses.

The simpler case is (3), the restriction of K'A to the syntactic forma-
tion i-K'A-li (historically SM-K'A-copula), a verbal strategy. Semantical-
ly, BADO and i-K'A-li differ under scope of negation. Thus, BADO in a
negative clause signals 'still-not', i.e. 'not-yet' as in the Arabic source
(internal negation), while i-K'A-li is only subject to external negation,
'not-still', i.e. 'not-anymore'.

The case of i-NGA-wa in (4) is more complex. Originally, NGA was an
auxiliary marker neutral to the belief status of the clause, hence 'even if/
though'. This state of affairs is still represented in archaic Swahili poetry
(traditional Swahili poetry preserves the archaism), e.g.

(5) a. u-NG-enda   mbio h-u-ki-tafuta
         you-EVEN.IF-go fast Ng-you-TM-it-pursue

         'EVEN IF you ran all the way, you would not be able to keep up with it'
                                        (Basheikh: mahaba si tamu)

    b. a-NGA-ji-shauza ...   ha-i-na   kirengo
         she-EVEN.THO-Rlfx-pride ... Ng-it-with content

         'EVEN THOUGH she's very proud of herself ... she has no content'
                                        (op. cit.)

In current Swahili, however, NGA remains only in the expression i-NGA-wa
(SM-NGA-be) and signals '(even) though', i.e. the truth of the introduced
proposition is presupposed. The 'even if' use of NGA has been replaced by
hata + an 'if' clause. This results in a distinction not often made among Ban-
tu languages, but of ancient vintage in Arabic.

These examples indicate that in the past Arabic has had some effect in al-
tering the strategic base of Swahili by replacing verbal strategies with non-
verbal strategies. The least that can be suggested is that Arabic has had some
impact on Swahili beyond the "mere" lexical level. Traditional statements
about the lack of Arabic impact on Swahili grammar, based on the "inviolable"
morphological peculiarity of Swahili's Bantu structure, needs to be reconsid-
ered in view of a broader perspective of grammar encompassing the use of syntax
to organize information in discourse.

LANGUAGE CONTACT AND GRAMMATICAL INTERFERENCE:
HAUSA AND ZARMA IN NIAMEY, NIGER

Jennifer J. Yanco
Indiana University/Boston University

1. Introduction

The West African city of Niamey, in the Republic of Niger, is a particularly interesting setting for the study of language contact and bilingualism. In this city of nearly 300,000 people, there are two major languages spoken, each of which is extremely important in the day-to-day life of city residents, a large portion of whom are bilingual in the two languages. The languages, Hausa and Zarma-Songhai (hereafter referred to as Zarma in keeping with usage in Niamey), belong to separate language families and are structurally quite distinct from one another. Although there are other languages spoken in the city, it is Hausa and Zarma which serve as languages of intergroup communication. Together, native speakers of these two languages make up approximately 75% of the city's population and, although native Zarma speakers outnumber native Hausa speakers two to one, the two languages nevertheless are on a more or less equal footing in the city (for details, see Yanco [1984]).

This paper examines some of the syntactic consequences of the contact between Hausa and Zarma in the non-native (NN) speech of bilinguals, focussing on word order and the extent to which differing word order patterns in the native and second language are a source of interference or transfer. It is found that the acquisition of a differing order in the adposition phrase is the least problematic, which is similar to findings of a study among Quechua (postpositional) children learning Spanish (prepositional) [Lujan et al. 1983]. Differing order in the genitive construction was found to be the most problematic, native order persisting in this construction more so than in others. Both of these findings bear interestingly on Hawkins' [1983] recent work on the relative stability of noun modifiers in maintaining the noun-modifier serialization of the adposition phrase.

The data which form the basis for this paper were collected through a series of interviews in the 19 major quartiers of the city of Niamey. In each quartier two sets of interviews were conducted, one set with native speakers of Hausa and one set with native speakers of Zarma. The purpose of these interviews was twofold: to gather information on speakers' linguistic life histories and to collect second language data. The second language data were collected through a translation task in which individual respondents were presented with utterances in their native language and asked how they would say the same thing in their second language. The choice of a translation task was motivated by the desire to elicit as many pertinent (in terms of contrasts between the two languages) constructions as possible. Nor was it an unfamiliar task, as respondents frequently cited interpreting as one of the most important uses to which they put their bilingual skills. Whenever possible, analyses based on this data have been corroborated with data from natural conversation. All interviews were audio recorded, transcribed, and coded for the use of various patterns.

Zarma, part of the Songhai dialect cluster classified by Greenberg [1966] as a branch of Nilo-Saharan, is postpositional; Hausa, of the Afro-Asiatic family, is prepositional. The table below summarizes the serialization of elements in the noun phrase. (The notation is meant to express semantic equivalents across the two languages; thus, for example, N Attr refers to the attributive construction, but entails no claim as to the syntactic category of Attr.)

ZARMA (Postpositional)	HAUSA (Prepositional)
N Num	N Num
N Dem	Dem N/N Dem
N Attr	Attr N/N Attr
Poss N	N Poss
Gen N	N Gen
N Rel	N Rel

As can be seen above, relative clauses and numeral quantifiers pattern the same way in both languages. Hausa has two doubling constructions, demonstratives and attributives; in each case the more basic is indicated first. (For a discussion of the term "basic", see Hawkins [1983:12-16].) For a number of constructions, the basic order in one language is the opposite of that in the other. This is true for adpositions, attributives, possessives, and genitives. (I have distinguished possessive constructions in which the possessive element is a pronominal form from those in which it is a nominal, as they pattern quite differently in the non-native speech data.) It is also of interest to note that, while Hausa is strictly SVO, Zarma has dominant SOV order, with a limited number of verbs requiring that their objects follow. This is not a stylistic variation, but is determined by the verb itself. For a few verbs, either order (OV or VO) appears to be acceptable; however, informants varied widely in their interpretations of what the difference was.

2. The Data

In this section, word order in non-native speech is summarized in terms of percentages for each of the following constructions: numeral quantification, adposition phrase, attributive construction, possessive construction (with a pronominal form), and genitive construction (with a nominal form). Left hand columns refer to non-native Zarma (NN ZARMA), i.e. Zarma spoken by native Hausa speakers. Right hand columns refer to non-native Hausa (NN HAUSA). Examples labeled (a) reflect the standard or basic word order used by native speakers of the language in question; examples labeled (b) reflect reversed order; and (c), "other", includes all tokens which were not analyzable in terms of the construction in question, including omission of the relevant item. I was not concerned with whether or not people used the "correct" forms; using English as an example, I would accept 'men' and 'mans' or 'under' and 'beneath' as being the same item for the purposes of this study. The number of tokens serving as the basis for percentage calculations varies with the different constructions. The smallest number is 90, the largest, 384.

As an example of a construction in which the order of meaningful elements is the same in both languages, the word order percentages for numeral quantifica-

tion are presented below:

% NN ZARMA tokens			% NN HAUSA tokens			
(a)	boro hinka man two	100%	(a)	mutum biyu man two	100%	'two men'
(b)	hinka boro	0%	(b)	biyu mutum	0%	
(c)	other	0%	(c)	other	0%	

Not surprisingly, there are no reversals of basic word order in this construc-
tion. In relative constructions, the situation is somewhat more complex since
what is most commonly expressed in one language by a relative may be most com-
monly expressed in the other by a different construction. However, in no cases
was the order N Rel reversed by non-native speakers.

In those construction which have different word order in the two languages,
reversals are made by non-native speakers, but not nearly as frequently as one
might expect. The first construction to be examined is the adposition phrase:

% NN ZARMA tokens			% NN Hausa tokens			
(a)	tabalo boŋ table on	91.0%	(a)	bisa tebur on table	89.5%	'on the table'
(b)	boŋ tabalo	less than	.5%	(b)	tebur bisa	0.0%
(c)	other	8.5%	(c)	other	10.5%	

The low percentage of reversals in adposition order is interesting in light of
Lujan et al.'s findings. They found that the acquisition of prepositions was
not problematic, suggesting that it represents "...an exception to the massive
word order transfer simply because they [prepositions] correspond to Quechua
postpositions, which are not words, but inflexional suffixes" [1983:3]. Howev-
er, this argument could not be used to explain the case of Hausaphones non-prob-
lematic acquisition of postpositions in Zarma.

In attributive construction once again, Zarma and Hausa have contrasting
orders. Hausa, however, has an alternative order as well.

% NN ZARMA tokens			% NN HAUSA tokens			
(a)	mooto beeri car big	92.0%	(a)	babban mota big car	79.0%	'a big car'
(b)	beeri mooto	1.0%	(b)	mota babba	18.0%	
(c)	other	7.0%	(c)	other	3.0%	

The relatively high percentage of NN HAUSA tokens using the N Attr order does
not necessarily reflect interference or transfer of native Zarma patterns, since
both orders are attested in Hausa. The N Attr order, however, is infrequently
used by native speakers and has a special meaning.

Possessive constructions have been divided into two groups: those in which the element expressing the possessor is a pronominal form (Poss N), and those in which it is a nominal (Gen N). First, the constructions with pronominal forms:

% NN ZARMA tokens			% NN HAUSA tokens			
(a)	ay cora 1 sg. friend	66.5%	(a)	aboki-na friend-1 sg.	76.0%	'my friend'
(b)	cora ay	0.0%	(b)	na aboki	.5%	
(c)	other	4.5%	(c)	other	6.0%	
(d)	poss element omitted	29.0%	(d)	poss element omitted	17.5%	

In the above, although there are few cases of reversal, there is a high percentage of tokens in which the possessive element is omitted altogether. This may have to do with pragmatic considerations; since the antecedent is known, omitting the pronoun does not greatly impede comprehension. What is most interesting here, however, is the difference in the figures for NN ZARMA and NN HAUSA. Not only are there substantially fewer cases of omission in NN HAUSA, but there are also substantially more cases of reproduction of the normal or basic word order. Whereas in Zarma the possessive element is an independent form, in Hausa, it is a syntactically bound form. This may explain why it is less frequently omitted.

When the possessive element is a nominal, the percentage of reversals is higher in both groups:

% NN ZARMA tokens			% NN HAUSA tokens			
(a)	Mintu zaara Mintu "pagne"	79.0%	(a)	zanen Mintu "pagne" Mintu	74.5%	'Mintu's "pagne"'
(b)	zaara Mintu	15.0%	(b)	Mintu zanen	13.5%	
(c)	other	6.0%	(c)	other	12.0%	

Of the 6% "other" in NN ZARMA, 2% used a doubling construction of the form Gen N Gen. In NN HAUSA, 8.8% of the tokens under "other" were of the type Gen N Poss, a sort of doubling in which the respondent used both nominal and pronominal forms. This construction seems to be the most difficult to master in terms of word order, native language order persisting in this construction more so than in others.

3. Summary

One of the most interesting things about these data is the fact that the percentages of 'faithful' word order reproduction as well as the percentages of reversed word order remain about the same in each group, as shown in the table on the next page:

| | % Standard Order | | % Reversed Order | |
Construction	NN ZARMA	NN HAUSA	NN ZARMA	NN HAUSA
Numerals	100.0%	100.0%	0.0%	0.0%
Adpositions	91.0%	89.5%	>0.5%	0.0%
Attributives	92.0%	79.0%/97.0%	1.0%	18.0%/0.0%
Possessives	66.5%	76.0%	0.0%	0.5%
Genitives	79.0%	74.5%	15.0%	13.5%

Overall, basic word order patterns in these constructions appear to be quite faithfully reproduced by non-native speakers. One wonders why this should be the case. I would suggest that extra-linguistic considerations are important here. Respondents claim that the most important uses for their bilingual skills are in speaking with monolinguals and interpreting for them. When one is speaking with a monolingual, one cannot stray too far from standard patterns without risking a breakdown in communication. This is in contrast to other situations where the languages in contact have had a greater influence on one another.

REFERENCES

Greenberg, Joseph. 1966. *The Languages of Africa*. The Hague: Mouton.

Hawkins, John A. 1983. *Word Order Universals*. New York: Academic Press.

Lujan, Marta, L. Minaya and D. Sankoff. 1983. *The Universal Consistency Hypothesis and the Prediction of Word Order Acquisition in the Speech of Bilingual Children*. Montréal: Centre de Recherche de Mathématiques Appliquées, Université de Montréal.

Yanco, Jennifer. 1984. "Language attitudes and bilingualism in Niamey, Niger." To appear in *Africana Journal*.

THE DIVERSITY OF JUBA ARABIC

Eluzai M. Yokwe
University of Illinois

1. Introduction

The aim of this paper is to investigate the socio-linguistic features which distinguish Juba Arabic from Khartoum variety. A descriptive analysis involving a comparison of the linguistic features of Juba Arabic and Khartoum Arabic is presented on the basis of phonological, syntactic, and semantic data. The paper concludes with a number of observations on the future development of Juba Arabic in relation to Khartoum variety in the field of education in the region.

Juba Arabic (JA) is a variety of the Sudanese Colloquial Arabic spoken in Khartoum, the capital of the Sudan. Juba Arabic has been classified as a Pidgin or pidgin-creole [Nhial 1975, Mohmud 1983] respectively. It is used as lingua franca by the different ethnic groups of the Southern Sudan who reside in Juba. This paper investigates the socio-linguistic features which distinguish JA from Khartoum Arabic (KhA) phonologically, syntactically, and semantically. It concludes with a speculative statement that JA will in the far future give way to Khartoum variety given the factors of education and mobility of the people.

2. Phonology

2.1. Consonants. Arabic language in general and KhA in particular contains phonological characters such as the pharyngeals (emphatic sounds) (ṭ, ḍ, ẓ, ḥ, ṣ), velarized (kh, gh), and laryngeal (ʕ) consonants used as in (la-b).

(1) a. ṭéer   'bird'   ḍéef   'visitor'
       ẓárif   'envelope'   ḥúwa   'he'
       ṣabúun   'soap'

    b. khámsa   'five'   ghárib 'west'
       ʕámal   'work'

These characters are non-existent in the native languages, and they present great difficulty to the non-Arab speakers. As a result the speakers of JA substitute the obstruents t, d, k, g, s, and the glottal ? , for those Arabic characters as in (1c-d).

(1) c. tér   'bird'   difán   'visitor'
       jaríf   'envelope'   úwa   'he'

    d. kámísa   'five'   gárib   'west'
       ?ámal   'work'

2.2. <u>Stress</u>. In KhA the rule of stress places stress on the heavy syllable (a syllable is heavy when it contains a long vowel or when the syllable is followed by two consonants) of a word beginning with the last, the penultimate, and the antepenultimate syllables respectively; otherwise, stress is placed on the first syllable of the word. For example, in the bisyllabic words ṣabúun and khámsa , stress is placed according to where the heavy syllable of the word is. In ṣabúun stress is placed on the last heavy syllable while in khámsa , stress is placed in the penultimate syllable which is the heavy syllable of the word. Otherwise stress is placed on the first syllable of the rest of the words such as ẓárif , ḥúwa , gháríb .

However, JA substitutes tone for stress and so the stress-tone (´) is placed on the words according to the tone pattern of the native languages. Thus in KhA the words thaláatha 'three' and khámsa 'five' each bear a single stress on the heavy syllable. The same words in JA, talátá and kámísa , bear two high tones each, with low tones on the unmarked syllables.

These phonological changes in JA indicate what Bokamba [1977] referred to as "reanalysis" of data resulting from languages in contact. In this case KhA is being reanalyzed by the JA speakers. These changes may be explained in terms of tendency toward simplification of complex structures, mother tongue interference, and socio-economic factors involving jobs, education and ethnicity.

3. <u>Morphology</u>

3.1. <u>Gender</u>. KhA strictly speaking distinguishes between masc/fem gender which is reflected in personal pronouns and case inflections. For example, the 2 and 3 persons singular inta/inti 'you (masc/fem)', ḥuwa/ḥiya 'he/she' are distinct forms. In each pair the feminine gender is represented by the morphemes -i , as in (int-i) and -iy- , as in (ḥ-iy-a) . In the pair ḥum/ ḥunna 'they (masc/fem)', the feminine gender is marked by -nna as in (hu-nna) .

In JA, however, all the fem. gender markers are lost and replaced by the masc. gender as shown in (2).

(2) ita   'you' (for both sexes)   itakum   'you (pl)' (for both sexes)

     uwa   'he/she'   umen   'they' (for both sexes)

3.2. <u>Case</u>. In KhA, the nominative, accusative, and possessive case forms are strictly speaking inflected word finally. For example, the nominative suffix forms -ta, -ti, -na, -tum, -tuna, -u, represent the 1, 2, 3 persons singular and plural respectively. These forms are inflected verb finally as in (3).

(3) a. (inta) akal-ta   'you (masc) ate'

    b. (inti) akal-ti   'you (fem) ate'

    c. (huna) akal-tuna   'they (fem) ate'

Likewise, in KhA, the accusative case forms -ni, -ak, -ik, -u, -ha, -na, -kum, -ḥum, -ḥuna of 1, 2, 3 persons singular and plural respectively and are

inflected verb (transitive) finally as in (4).

(4) a. (húwa) darab-ni   'he hit me'

    b. (húwa) dárab-ak   'he hit you'

    c. (húwa) dárab-ik   'he hit your (fem)'

The words in parentheses are optional. In KhA they are commonly deleted.

    Possessive cases are also inflected word finally in KhA. Thus the posses-
sive forms -i, -ak, -ik, -hu, -ha, -na, -kum, -un, -huna are inflected to the
noun 'pencil' as in (5).

(5) a. gálam-i   'my pen'

    b. gálam-ak   'your pen'

    c. gálam-ik   'your (fem) pen'

    d. gálam-un   'your (masc) pen'   etc.

    The case inflections in KhA do not exist in Juba Arabic. The inflection
forms are reanalyzed into independent nominative, accusative and possessive
pronouns ana, ita, uwa, anina, itakum, umen 'I, you, he/she, we, you (pl),
they' respectively. The sentences in (6) illustrate the nominative case struc-
tures.

(6) a. ána akúlu   'I ate'

    b. íta akúlu   'you ate'

    c. úwa akúlu   'he ate'

    d. úmen akúlu   'they ate'   etc.

Thus the pronouns ana, ita, uwa, umen...appearing sentence initially in (6)
represent the nominative case in JA. Note that the verb has no agreement suf-
fix.

    When the same pronouns follow a verb as in (7) below, then they stand for
the accusative case.

(7) a. úwa dúgu ána   'he hit me'

    b. úwa dúgu íta   'he hit you'

    c. úwa dúgu úman   'he hit them'

    d. úwa dúgu ítákum   'he hit you (pl)'   etc.

    JA has adopted the possessive word morpheme pita 'of' from KhA and used
it to represent possessive case throughout as shown in (8).

(8) a. gálam pítái   'my pen'

    b. gálam pítak   'your pen'

c. gálam pítáu   'his pen'

d. gálam píta úmen   'their pen'   etc.

This phenomenon is dealt with in Section (5).

In KhA, an adjective must agree with the noun it modifies in number and gender. Gender agreement is lost in JA.

(9)   KhA   JA

1.sg. ana tawíil   ána tówil   'I am tall'

2.sg. ínta tawíil   íta tówil   'you are tall'

       ínti tawíil-a   -   'you (fem) are tall'

3.sg. ḥuwa tawíil   úwa tówil   'he is tall'

       ḥíya tawíil-a   -   'she is tall'

1.pl. níḥna tuwáal   anína tówílin   'we are tall'

2.pl. íntu tuwáal   ítákum tówílin   'you are tall'

3.pl. ḥum tuwáal   úmen tówílin   'they are tall'

4. Syntax

4.1. Declaratives. Khartoum Variety maintains verb agreement in declarative sentences. Secondly, there is an optional rule in KhA that deletes the subject noun phrase at the beginning of the sentence so that (10a) is, for example, derived from (10b).

(10) a. fatar-ta as saa atámanya   'I breakfasted at eight o'clock'
         breakfasted I the time the eight

     b. ana fatar-ta as saa atámanya   = (10a)
         I breakfasted I the time the eight

Here the suffix -ta is the nominative form of ana 'I' inflected to the verb fatar 'breakfasted' to mark the verb agreement. For the feminine it would be fatar-ti , with suffix morpheme -ti 'you (fem)' marking the gender, person, and number agreement. The nominal pronoun ana in (10b) has been optionally deleted to yield (10a), the form that is widely used by the Khartoum speakers. This pattern applies to almost all the declaratives in KhA.

In JA the verb-agreement is lost and the nominative pronoun is maintained as in (10c).

(10) c. ána akúlu fatúr fi sá támánya   = (10a)
         I ate breakfast in time eight

4.2. Interrogatives. Like the declaratives, interrogatives in KhA delete or omit the nominal pronouns, as in (11a-c).

(11) a. saama   sínu?   'what are you listening to?'
         listening what

    b.   akál-ta sínu?   'what did you eat?'
          ate what (masc)

    c.   akál-ti sínu   'what did you eat?'
          ate what (fem)

The rule of Verb Agreement is also maintained in (11b-c) just in the same way as it has been maintained in the declaratives, etc.

    JA tends to be analytic throughout and maintains the subject pronouns without verb agreement as in (11d-e).

(11) d. íta gé asúma súnu?   'what are you hearing?'
        you marker hearing what

      e. íta akúlu súnu?   'what did you eat?'
        you ate   what

The element ge functions as a present/future tense marker which is a creation of JA for it does not exist in KhA.

4.3. Negation. Even in negation, the aspects of Verb Agreement and inflection are observed in KhA as in (12a-c).

(12) a. má   tá-sma   kála-mu   'don't listen to his talk'
        not, you hear talk his

      b. má tá-sma   -i   akál-mu   = (12a)
        not you hear (fem) talk his

      c. má akál-ta al fatúur   'I did not eat breakfast'
        not ate I   the breakfast

    Again Verb Agreement and nominal inflections are lost in JA as shown in (12d-e).

(12) d. máta asúma kalám pítáu   = (12a)
        not listen talk his

      e. ána má akúlu fátur   = (12c)
        I   not ate   breakfast

5. Vocabulary

    Interestingly JA has borrowed substantially from the native languages in contact with Arabic language, particularly Bari language (spoken by Bari people among whom Juba City is located). The following are examples of borrowed words:

(13) kúrju   (Bari)   'to dig or cultivate'

      kɔrɔ́pɔ   (Bari)   'leaves (used in contexts like kɔrɔ́pɔ lubia
                              'bean leaves', kɔrɔ́pɔ shai 'tea leaves')

      tóŋga   (Bari)   'to pinch'

      'dóŋóŋ   (Bari)   'back part of the head'

      gwáŋgírí (Bari)   'cheek'

láŋga	(Bari)	'to wander aimlessly or to take a walk'
köíni	(Bari)	'a woman who shares a husband with another woman'
nyárkuk	(Dinka)	'child'
makúŋgu	(Luganda)	'headman or assistant chief'
surkáli	(Kiswahili)	'local police, usually chief's police'

Another semantic aspect of JA that is worth mentioning is the extraction of single words from the Arabic synonyms and their invariable usage. The words ruh/maashi , salaam/izaeyyek , kwes/zeyyid , etc. are pairs of synonyms which exist in KhA and are used according to shades of meanings and situations. JA picks up single members of those sets and uses them invariably as shown in (14a-b).

(14) a. íta gé   rúwa weén?   'where are you going?
         you marker go   where

    b. ána gé   rúwa fi súk   'I am going to the market'
         I   marker go   to market

In KhA the word salaam 'peace be with you' is used for greetings in formal oc-casions such as funeral gatherings or political rallies or when entering the house of someone who is a non-acquaintance. The word izeyyek is the informal one for greeting friends, relatives, age mates, etc. JA picks up the word salaam and employs it in every situation.

6. Conclusion

    The above descriptive analysis has shown and illustrated how JA differs from KhA on phonological, syntactic, and semantic levels. Children born in Juba to-day tend to pick up JA faster than they do their native languages [Ushari 1983]. It is speculated that due to influence of education where children read Arabic in schools, JA may in the distant future be replaced by the Khartoum variety.

REFERENCES

Bokamba, Eyamba G. 1977. "The impact of multilingualism on language structures: the case of Central Africa." *Anthropological Linguistics* 19(5):181-202.

Mahmud, Ushari A. 1983. *Arabic in the Southern Sudan: History and Spread of a Pidgin-creole*. Khartoum University Press.

Nhial, Abdon A. J. 1975. "Ki-Nubi and Juba Arabic: a comparative study." In Sayyid H. Hurreiz and Herman Bell (eds.), *Directions in Sudanese Linguistics and Folklore*, pp. 81-93. Khartoum Institute of African and Asian Studies, University of Khartoum.

A FUNCTIONAL EXPLANATION FOR
THE NÍ-NP CONSTRUCTION IN YORÙBÁ

Ọrẹ Yusuf
University of California, Los Angeles

1. Introduction

     There is sparse grammatical marking in Yorùbá. Word order usually carries
the sole burden of differentiating grammatical relations. Of the few markers is
ní , which is homophonous with both the verb meaning 'to have' and the preposi-
tion that marks LOCATION, TIME, DIRECTION, or MANNER, but which is clearly dif-
ferent from the verbal ní and seemingly also from the preposition in that it
often has no meaning, however vague. For instance, the meaning of ní is dis-
cernible in (1) and (2), but not in (3):

(1)   mo ní   owó   'I have money'
      I have money

(2)   Adé wà ní ilé   'Ade is at home'
           be at house

(3)   ó   ya mí ní aṣọ   'he tore my cloth'
      3sg. tear me (?) cloth

     Primarily because no meaning is available for ní in sentences like (3)
Awobuluyi [1969, 1978] has hypothesised that the ní has been transformational-
ly inserted, i.e. where the ní appears, the basic word order has been tampered
with. Awobuluyi's work has been the only analysis that draws any serious atten-
tion to this morpheme. Other Yorùbá scholars have dismissed it rather casually,
treating it variously as "verb", "preposition", or "particle" (see Awobuluyi
[1969].

     Despite the rigors with which Awobuluyi pursues the transformational analy-
sis, the result has not been entirely satisfactory, and no new formulation has
been proposed. This paper re-examines the phenomenon and comes to the conclu-
sion that the ní is an Oblique case marker, not a transformational marker.
Our analysis also takes care of the supposedly different ní as in (2). We
should note that Madugu [1982] has analyzed ní with a similar result, but un-
like our analysis, he assumes the correctness of the transformational analysis,
and he treats adverbial ní as homophonous only with ní-NP.

2. The Transformation Analysis

2.1. Awobuluyi's analysis. Awobuluyi [1969] has posited a tripartite source
for the ní-NP construction, namely, the genitival, the adverbial, and the caus-
ative constructions, illustrated with (4), (5), and (6) respectively, with the
(b) set as the hypothesised bases.

(4) a. Dàda jí   Ojó ní owó   'Dàda stole Ojó's money'
            steal   (?) money

(4) b.   Dada jí   owó Òjó   'Dada stole Ojo's money'
              steal money

(5) a.   Dàdə ja Òjó ní iyàn.   'Dada argued with Òjó'
              wage   (?) argument

    b.   Dàda bá Òjó ja iyàn.   'Dàda argued with Òjó'
              with   wage argument

(6) a.   oúnje náà kún Òjó ní inú   'the food gave Ojo indigestion'
              food   the fill   (?) stomach

    b.   oúnje náà mú   inú   kún Òjó   'the food gave Òjó indigestion'
              food   the cause stomach fill

2.2.   Problems of the transformational analysis.   There are a number of prob-
lems arising from the transformational analysis above.

     a. The first argument against the analysis is that the ní construction is
derived from heterogenous sources, amounting to a taxonomic listing of the sup-
posed sources based on our ability to find semantic (or quasi-semantic) para-
phrases.   Here, one cannot objectively predict which structure any given ní-NP
would be derived from.

     b. The adverbial and causative sources are akin to serial verb construc-
tions, and the syntax of the serial verb is far from settled.   In other words,
an analysis that uses a poorly understood phenomenon to solve another cannot be
neat.

     c. Apparently, the only plausible motivation for introducing ní by
transformation is that it has no meaning.   But there are other ni's that equal-
ly have no meaning (as we shall soon show) and yet the transformational inser-
tion hypothesis is not extended to them.

     d. Not only will some of the supposed "bases" not have corresponding ní-NP
counterparts, examples could be multiplied where ní-NP sentences could not be
traced to any other underlying sources.   Thus, (7b) cannot possibly be related
to (7a) and all of (7b-d) simply do not have non-ní counterparts:

(7) a.   mo mọ ajá Adé   'I know Adé's dog'
              I know dog

    b.   Mo mọ Adé ní ajá   'I know Adé as a dog'
              I know   (?) dog

    c.   mo ní owó ní ọwọ́   'I have money'
              I have money (?) hand

    d.   olè fi àdá   ṣa Adé ní ọgbẹ́ 'the thief wounded Adé with a
              thief use machete cut   (?) wound   machete'

These shortcomings call for a reanalysis.   We find that a more economical
one would be the one that takes the ní-construction as basic too.   As we shall
soon show, our non-transformational account offers a unitary explanation for the

sentences supposedly derived from heterogeneous sources. We also observe that while the non-ní forms are grammatical, the ní types are definitely pre-ferred, more commonly used, and more idiomatic. In fact, the adverbial and causative types are hardly heard, either in formal, or colloquial usage. In ad-dition, our analysis would account for all non-verbal ní .

3. The Functional Explanation

The key to the explanation of ní is the fact that the "enigmatic" form ap-pears only in bitransitive sentences, apparently functioning to keep the argu-ments apart. As the verb separates the subject and the object (Yorùbá is SVO), the distribution of ní is invariably between the object and the additional ar-gument(s) as in (8). NPs are underlined for easy recognition:

(8) a. <u>mo</u> gba <u>Adé</u> ní <u>ìyànjú</u>   'I encouraged Adé'
        I take   (?) trial

    b. <u>owó</u> n je <u>tálákà</u> ní <u>ìyà</u>   'money is a big bother for the
        money ASP eat poor-man (?) punishment   poor'

Removing ní in these sentences automatically renders them ungrammatical.

3.1. Language universals. Returning to the issue of the basicness of the ní construction, we note that this view correlates in a most simple and economical manner with a number of independent language universals dealing with the syntax of body parts [Hyman 1977, Fox 1981], transitivity [Hopper and Thompson 1980] and Indirect Objects [Faltz 1977]. For example, Hyman [1977] has shown that grammars tend to code as nuclear terms the NPs referring to the possessor of a body part rather than the NPs referring to the body part. It is interesting that Hyman treats "possessor promotion" as a transformational process (like Awobuluyi does). For instance, Hyman says:

    "Possessor promotion in Haya, as well as every Bantu language that I have
    studied *transforms* the possessor into a direct object if the verb is tran-
    sitive" [emphasis mine] (p. 101).

The transformational process in possessor promotion is given as:

    SUBJECT-VERB COMPLEX- X of Y ===> SUBJECT-VERB COMPLEX-YX

However, what is more important for our study is the pragmatic explanation for the transformation. Hyman says that the transformation "is brought about in a situation in which the possessor is at the same time the experiencer of the ac-tion of the verb. The object created by possessor promotion experiences in oth-er words is *affected* by the action of the verb" [emphasis Hyman's] (p. 104). The same conclusion is reached (though not by transformational means) by Fox [1981].

Hyman's grammar is interesting for another reason. He claims that the con-struction with Prepositional phrase is the basis of Possessor promotion; an ex-act opposite claim to Awobuluyi's:

(9) Awobuluyi: .... YX ---> X Prep Y

    Hyman: .... X Prep Y ---> YX

It would appear that the conflicting claims derive from the fact that there are
no objective criteria for positing one construction as the basis of the other.

    In their discussion of the transitivity hypothesis, Hopper and Thompson
[1980] give us an insight into which NPs would be marked object which coded as
oblique. For instance, they suggest that the owner of the body is more "highly
individuated" than the parts of the body and is more likely to be coded as di-
rect object. Our examples of the sentences which contain body parts amply il-
lustrate this. Witness (6a) and (10):

(10) ó   yà mí ní ẹnu   'it surprised me'
      3sg. open me (?) mouth

The same principle applies in POSSESSOR-POSSESSED relationship with the posses-
sor being more highly individuated, i.e. more salient. Where the relationship
of the NPs is not strictly Possessor-Possessed or part-whole, we may note that
the individuation hypothesis is not violated either. For instance in

(5a) Dàda ja Òjó ní iyàn.   'Dàda argued with Òjó'
          wage   (?) argument

(11) wọ́n fún Àsùnlé ní oyún   'they made Àsùnlé pregnant'
     they give   (?) pregnancy

it is the more individuated personal NPs, Òjó , Àsùnlé that get coded as di-
rect objects (the first NPs in the sentence are uncontroversially subjects) and
the less individuated NPs coded with ní .

    It is equally interesting that the universals hold where prepositional
phrases with adverbial "meaning" as in (12) are involved. Where three arguments
are called for, the preposition codes the third arguments, and these could be
seen to be less individuated.

(12) a. ó   pè   mí ní   alẹ́   'he called me at night'
         3sg. call me TIME night

     b. ọ̀gá   na ọmọ ní   ìnàkunà
         teacher flog child MANNER beating-bad-beating

         'the teacher flogged the child badly'

It would be interesting to find instances of such a violation as where ní codes
NPs other than the third.

3.2. <u>Intransitive sentences</u>. Finally, we look at intransitive sentences.
Briefly, where the verb does not select an object, any NP following it will be
coded as oblique. Sentences like (2) (p. 329) and (13) illustrate this point.

(13) obì   pọ̀   ní àpò   mi   'there is plenty of colanut in my pocket'
     colanut plenty in pocket my

Note that ní marks the oblique NPs. In fact I would want to posit that the
ní variously glossed as 'in', 'at', 'on', 'as', etc. is equally empty of any
semantic content. Any meaning attributed to it is nothing inherent but derives
from our knowledge of the NPs which follow it. In short, there is only one non-
verbal ní which is an empty form that marks all oblique NPs. It is not a
marker of a derived order.

4. Conclusion

    In sum, we have shown that ni functions to case mark any NP that cannot
otherwise receive Nominative, Accusative, or any other case. Also, there is no
need to distinguish more than one non-verbal ní . And although this idea was
not explicitly developed in the paper, we want to note that the most recent for-
mulations of the transformational syntax would support our case-assigning func-
tion of ni . And by way of a summary vindication we offer the following sen-
tence:

(14) ọ̀gá   fi   ẹ̀gbà na   ọmọ   iṣẹ́ rẹ̀ ní ìnàkunà ní ojú gbogbo
      master INSTR. belt flog child work his (?) badly   (?) eye all

      èèyàn ní etí odò   ní àná
      people (?) ear river (?) yesterday

      'the master flogged his apprentice badly with a belt in front of all the
          people at the river bank yesterday'

where ọ̀gá 'master' receives Nominative Case, ẹ̀gbà 'belt', Instrumental, and
the post verbal ọmọ'ṣẹ́ 'apprentice' Objective, and the other NPs were unexcep-
tionally coded as Oblique, with ní . In short, ní is a case marker, not a
transformational marker.

REFERENCES

Awobuluyi, O. 1969. "The Particle |i in Yoruba." *Journal of West African Languages* 6:67-77. Ibadan: Oxford University Press.

Awobuluyi, O. 1978. *Essentials of Yoruba Grammar*. Ibadan: Oxford University Press.

Chomsky, N. 1981. *Lectures on Government and Binding: The Pisa Lectures*. Dordrecht: Foris Publications.

Faltz, L. M. 1978. "On indirect object in universal syntax." CLS, 14:76-87.

Fox, B. 1981. "Body part syntax: towards a universal characterization." *Studies in Languages* 5:323-342.

Hopper, P. and S. A. Thompson. 1980. "Transitivity in grammar and discourse." *Language* 56:256-299.

Hyman, L. M. 1977. "The syntax of body parts." In E. Byarushengo et al. (eds.), *Haya Grammatical Structure*, pp. 99-117. Southern California Occasional Papers in Linguistics #6. Los Angeles: University of Southern California, Department of Linguistics.

Madugu, I. G. 1982. "The Yoruba ni-object construction in pragmatic perspective." *Journal of African Languages and Linguistics* 4:43-58.