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THE SO-CALLED REFLEXIVE PRONOUNS AND REFLEXIVIZATION IN IBIBIO[1]

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In Ibibio, there are certain NP's which superficially look like English reflexive pronouns. This paper critically examines such NP's and presents facts and arguments to demonstrate that they are in fact not reflexive pronouns but possessive NP's. In addition, the paper relates the *emphatics*, whose forms in Ibibio, like their English counterparts, are similar to the so-called reflexive pronouns. Since the facts of Ibibio strongly suggest that the so-ca-led reflexive pronouns are in fact examples of possessive NP's, it is suggested that these NP's be derived by the rule of Possessive pronominalization rather than by reflexivization. The paper finally considers the implication of such an analysis for the Ibibio grammar.

1. Introduction

Pronominalization can be looked upon as a rule that is concerned with the derivation of pronouns in relation to other NP's in a specified phrase marker. In a standard transformational approach [Lees and Klima 1963:147ff.], pronominalization derives a pronoun from an underlying more fully specified NP, provided, of course, such an NP satisfies certain conditions. Following Postal's [1966:61-66] further development and refinement of the mechanisms of this approach, pronominalization consists in specifying a noun stem as [+Pro] and additionally as [+Refl] in the case of reflexivization, a particular type of pronominalization. In Jackendoff's interpretative theory, pronominalization consists in specifying the relation between two NP's, one of which is a pronoun, in particular marking them as coreferential. In this approach [Jacken-

[1]Ibibio is spoken by about four million people in the Cross River State of Nigeria. It is very closely related to Efik.

doff 1972:108ff.], such a rule is not a syntactic but a semantic one of interpretation.

There are several types of pronominalization, the best known of which may be referred to as simple pronominalization, e.g. English he/him , she/her , etc.; reflexivization, e.g. English himself , herself , etc.; and relativization, e.g. English who/whom , which , etc.

There are other less discussed types of pronominalization such as reciprocal pronominalization (English each other , one another , etc.) and possessive pronominalization (English his , their , etc.). Even Lees and Klima [1963], in what has now become standard transformational reference for pronominalization, made no mention at all of possessive pronominalization. Yet the phrase "possessive pronoun" is quite often used by linguists (see Quirk and Greenbaum [1973:105-106], for example). Moreover, there are cases such as the following in English:

(1) a. John sold his car.
    b. The men saw their wives.

These involve a rule of pronominalization, but judged by the forms of the pronouns (his/their) and their relationship to the other elements in the sentences, they apparently differ from any of the well known types—simple pronominalization, reflexivization, and relativization—as they are generally formulated.

This paper examines the so-called reflexive pronouns and in comparison with English reflexive pronouns, which are currently derived by reflexivization, suggests that such NP's in Ibibio are not in fact reflexive but possessive. It further suggests that if reflexivization as currently formulated handles only reflexive pronouns, then the reflexive-like NP's in Ibibio, which are in fact possessive NP's, cannot be handled by the same rule. More importantly, the syntactic behaviour of Ibibio possessive NP's, which is substantially different from that of English reflexive pronouns, strongly suggests that possessive pronouns, themselves possessive NP's, be derived by another pronominal rule. That rule, in our view, is possessive pronominalization. Unlike reflexivization, possessive pronominalization, as we shall see, enables

us to relate the so-called reflexive pronouns to the emphatics, both of which have identical forms in Ibibio.

2. The So-called Reflexive Pronouns and Reflexivization

Definitions of reflexive pronouns are at best casual or informal. Jespersen [1964:111] defines them in terms of the identity between the subject and the object of a sentence: "When the subject and object are identical, we use for the latter the so-called reflexive pronouns." In other words, there is no mention of the SIMPLEX or CLAUSE-MATE condition that is commonly associated with reflexivization. For Quirk and Greenbaum [1973:103], "Reflexive pronouns replace a coreferent noun phrase, normally within the same finite verb." Here the definition is not only in terms of identity or coreference, but also in terms of the function of the pronoun, namely the replacement of a coreferent NP. And for Akmajian and Heny [1975:195ff.], each reflexive pronoun "may be thought of as composed of a noun stem with a possessive pronoun (such as my , your , her) attached to it." In this case, the definition is from the point of view of the composition of the pronoun itself.

So from the above definitions (or so-called definitions), the following characteristics of the reflexive pronoun in English may be abstracted.

(1) It occurs as object of a sentence and is identical or coreferent with the subject of the sentence.

(2) This sentence in which the reflexive pronoun occurs is normally a simple clause.

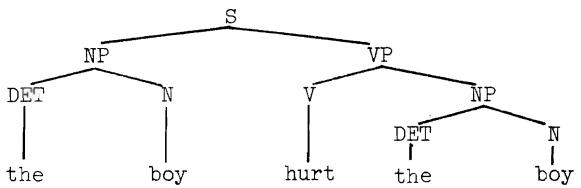
(3) It is a COMPOSITE pronoun consisting of a stem and some kind of modifier.

In recent years these characteristics have been formulated as a rule or transformation known as Reflexivization. As we have already pointed out above, this rule is a type of pronominalization.

From a typical standard transformational standpoint, e.g. Lees & Klima [1963:147ff.], Chomsky [1965:145-146], such a rule in English applies in a phrase marker of the following sort, provided the identity and the clause-mate conditions are met (See example (1) on the next page).

In Jackendoff's interpretative theory, the identity condition is not necessary, since there are semantic rules of interpretation which "establish relations between pairs of noun phrases marking them coreferential or non-coref-

(1)



erential with each other" [Jackendoff 1968:5].

We maintain that reflexivization, whether in the standard transformational theory or in Jackendoff's interpretative theory, is not the rule that derives Ibibio pronouns. As we shall see, the facts of Ibibio strongly suggest that these pronouns are a combination of Noun + Determiner of a possessive nature. Accordingly, our derivation of these pronouns will take this into consideration.

3. Facts and Arguments

To begin with, let us consider the forms of the so-called reflexive pronouns in Ibibio.

(2) a. (àmì)[2] ńnyààŋà ídém (m̀mì)
1 2 3 4
'I am helping myself'
1 ----2----- 4 3

b. (àfò) ànyààŋà ídém (m̀fò)
1 2 3 4
'you are helping yourself'
1 -----2----- 4 3

c. (ànyé) ányààŋà ídém (ámò)
1 2
'he/she/it is helping himself/herself/itself'
----1---- ----2-----

d. (ǹnyɨn) ǹnyààŋà ídém (ǹnyɨn)
1 2 3 4
'we are helping ourselves'
1 -----2----- 4 3

e. (ǹdùfò) ènyààŋà ídém (ǹdùfò)
1 2 3 4
'you are helping yourselves'
1 -----2----- 4 3

---

[2]Tones are indicated as follows:

´ High Tone

ˈ a combination of High Tone and Downstepped Tone in a syllable

ˇ Rising Tone

ˆ Falling Tone

` Low Tone

pure Downstepped Tone is unmarked

f. (ămmə̂) ényàáŋà ʃdém (ămmə̂) 'they are helping themselves'
1 2 3 4 1 -----2----- 4 3

The so-called reflexive pronouns are ʃdém (m̀mì) , ʃdém (m̀fò) , ʃdém (ámɔ̀) , ʃdém (ǹnyɬn) , ʃdém (ǹdùfò) , and ʃdém (ămmə̂) . The parentheses, as usual, indicate that the elements within them are optional.

First, we want to say that ʃdém is a lexical item (with a potential ambiguity between 'self' or 'body') that occurs in the lexicon of the base of the grammar. This is a familiar analysis in English that does not need further defence. In support of this analysis, Postal [1966:61] has said this:

> But the treatment of *self* as a grammatical formative is untenable. In fact *self* must be taken to be a noun stem as we see clearly in such phrases as *the expression of self in our society*, *selfish*, *selfless*, etc.

Similar arguments exist for Ibibio, where such nominalized phrases as m̀bùɔ̀t ìdém 'belief' (lit. 'borrowing of oneself'), úkɬd ʃdém 'pride' (lit. 'seeing oneself (above others)'), and úkpémé ʃdém 'caring for oneself' exist.

Even more important and crucial for our analysis is the fact that ʃdém can occur on its own. Consider the following examples:

(3) a. ʃdém ámɔ̀ ʃsɔ́ŋŋɔ́ 'he is not well' (lit. body-his not well)
1 2 3 1 2 ---3----

b. ʃdém ìmé ʃsɔ́ŋŋɔ́ 'Ime is not well' (lit. body-Ime not well)

But if ʃdém is a nominal that occurs in the base rather than a transformationally derived formative, the elements m̀mì , m̀fò , ámɔ̀ , ǹnyɬn , ǹdùfò , ámmɔ̀ can best be looked upon as nominal modifiers. Indeed they behave like nominal modifiers. More specifically ʃdém occurs as part of a possessive NP. Such NP's consist of two nominals (at least) with the first acting as a head noun (or N) and the following nominal acting as a modifier of some sort of the preceding nominal head (or N). The first nominal is the object possessed while the second or following nominal is the possessor. For arguments that analyse possessive NP's as consisting of N and DET, see Essien [1978:121-126].

Before we turn to facts and arguments to support our claim that the so-called reflexive pronouns in Ibibio consist of a noun + a determiner of a possessive nature, we should perhaps mention that the behaviour of ʃdém as

both a noun stem in a reflexive function and a purely lexical item meaning 'body' is not unique in Ibibio. A good number of the languages in the Cross River State of Nigeria with which I am familiar show this characteristic. Thus in Óróń, which is related to Ibibio, the interpretation of ile in (4a) is 'self' while in (4b), the interpretation is 'body'.

(4) a. ńtù ílé mì 'I shot myself'
1 2 3 --1--- 3 2

b. ńtù ílé ízìghí 'I shot his body'
1 2 3 --1--- 3 2

Similarly, in Ùsàk Èdèt, a language spoken by a small community near the Nigerian border with the United Republic of Cameroun, únem in (5a) means 'self' while in (5b) it means 'body'.

(5) a. mbàràdá únem mi 'I touched myself'
1 2 3 ----1---- 3 2

b. mbàràdá únem use 'I touched his body'
1 2 3 ----1---- 3 2

Returning to Ibibio, let us begin by examining the object NP's ídém mmì , ídém mfò , ídém ámò , etc. in (2) above. We claim that these NP's are in fact possessive NP's similar to those in (3). In that case the main difference between the possessive NP's in (2) and those in (3) is that in (2) the NP's occupy the object position while those in (3) occupy the subject position. Let us now consider the facts supporting our claim.

First, just as possessive NP's take articles, the so-called reflexive pronouns or NP's also take articles. Consider the following examples:

(6) a. Ìmé áyêm ùdèmé ámò ádò 'Ime wants that share of his'
1 2 3 4 5 1 2 5 3 4

b. Ìmé ákɨd idem amò ádò ábɔxɔ 'Ime is very arrogant' (lit. Ime sees himself art. too much (above others))
1 2 3 4 1 2 3 ---4----

The possessive NP in (6a) is ùdèmé ámò 'his share', the so-called reflexive pronoun is ídém ámò 'himself' in (6b), while the article is ádò .

Second, both kinds of NP's take adjectives, as the following examples show:

(7) a. Àtâ áyèm ètʌk áyɨn àmɔ̀ 'Ata is looking for his small child'
1 2 3 4 ------1------- 4 2 3

b. Àtâ ámà ètʌk ídèm àmɔ̀ ńko 'Ata also likes his small self'
1 2 3 4 5 5 1 4 2 3

Third, both the possessive NP and the so-called reflexive pronoun allow quantifiers, as the following examples show:

(8) a. èté ádò áyèm àfɨt ínìè àmɔ̀ 'the man wants all his wealth'
1 2 3 4 5 6 2 1 3 4 6 5

b. èté ádò áyie àfɨt ídèm àmɔ̀ 'the man has washed his whole body/self'
1 ----1-----

Fourth, and very crucially, if the so-called reflexive pronoun is in fact a possessive NP, then ídém , the thing possessed, can be replaced by a pronominal element ákè 'own'. The object possessed is easily replaceable by ákè , as the following examples show:

(9) a. Àtâ áyêm ḿmótò m̀fò, ídóxó ḿmótò m̀mì 'Ata wants your car, not my car'
1 2 3 4 5 1 3 2 4 5

b. Àtâ áyêm ḿmótò m̀fò, ídóxó ákè m̀mì 'Ata wants your car, not my own'

The same sort of replacement observed in (9) is evident in the following examples, which involve the so-called reflexive pronouns:

(10) a. ńnyaaŋa idem m̀mì, àfò nyááŋá ídém m̀fò 'I am helping myself, you help
1 2 3 -----1------ 2 3
yourself'

b. ńnyaaŋa idem m̀mì, àfò nyááŋá ákè m̀fò 'I am helping myself, you help
your own'

The sentences in (10a) and (10b) are, of course, paraphrases of each other and they show a real difference between the reflexives in English and the so-called reflexives in Ibibio. They also very convincingly show that such "reflexives" in the latter language are in fact possessive in nature.

Related to this and very interesting is the behaviour of ákè with the first person singular m̀mì . Ákè and m̀mì may coalesce, as it were, to become one word in certain sentence types. Consider the following examples which are paraphrases of each other:

(11) a. dép ŋ̀wèd m̀fò kpʌ́ŋ ŋ̀wèd m̀mì 'buy your books, leave my books'
1 2 3 4 5 1 3 2 4 5

b. dép ŋwèd m̀fò, kpʌ́ŋ ákɬm 'buy your books, leave my own'

The same coalescing process observed in (11), which illustrates obvious cases of possession, also takes place in the case of the so-called reflexive pronouns, as the following pairs of examples show:

(12) a. kéré ʃdém m̀fò, kpʌ́ŋ ʃdém m̀mì 'think of yourself, leave me' (lit. think of yourself, leave myself)
1 2 1 2

b. kéré ʃdém m̀fò, kpʌ́ŋ ákɬm 'think of yourself, leave me' (lit. think of yourself, leave my own)

(13) a. ì̀mé ásuennè ʃdém ámɔ̀, ʃdóxó ʃdém m̀mì 'Ime has disgraced himself, not me' (lit. Ime has disgraced himself, not myself)
1 2 ------1------ 2

b. ì̀mé ásuennè ʃdém ámɔ̀, ʃdóxó ákɬm 'Ime has disgraced himself, not me' (lit. Ime has disgraced himself, not my own)

Now, although (12) and (13) are grammatical only in the context of a contrast, they nevertheless touch on an important and fundamental aspect of reflexivization. It is constantly maintained that the reflexive pronoun, as the object, must be identical to its subject in the sentence in which the two occur. Indeed that is the essence of the word ***reflexive***. But in (12a), the subject of the clause kpʌ́ŋ ʃdém (lit. leave myself) is àfò 'you', while the object is ʃdém m̀mì 'myself'. Similarly in (13a), the subject of the second clause ì̀mé and the object of that clause, ʃdém m̀mì , are not identical. If we derive the so-called reflexive pronouns from reflexivization, we have to make an exception in the identity condition to accommodate the sentences in (12) and (13). But no such problem arises if we derive them as possessive NP's. After all, not all possessive NP's undergo possessive pronominalization.

Fifthly, the fact that elements like mmi 'my', mfo 'your', amɔ 'his/her', etc. can be deleted, as pointed out earlier, follows from the fact that in possessives the possessor element can be deleted in cases where the possessor is obvious. Consider the following examples, where items in the brackets are deletable:

(14) a. ánwáàn (ámɔ̀) ɨ̀dí? 'has his wife come?'
1 2 3 2 1 3

b. èbè (ámɔ̀) ɨ̀dàkká 'her husband has left'
1 2 1 ---2----

c. m̀má (m̀mì) ányem 'my mother is looking for me'
1 2 3 2 1 ------3-------

The recoverability of the deletable elements generally depend on the context in which the utterance is made. However, there are cases where recoverability does not depend on the context but on the grammar itself. Consider the following examples:

(15) a. Cain ámà áwòt áyɨ́n ékà ámɔ̀ 'Cain killed his brother' (lit. Cain past tense morpheme kill his mother's son)
1 2 3 4 5 ---------1--------- 2 5 4 3

b. Cain ama awot ayɨ́n eka 'Cain killed his brother'

In (15b), ámɔ̀ 'his' can obviously be recovered from the grammar itself by coreference with Cain , because given the structure of that sentence, áyɨ́n ékà 'brother' can only be related to the antecedent Cain .

So the deletability of the elements m̀mì , m̀fò , ámɔ̀ , etc. in (2), which contain the co-called reflexive pronouns and in (14) and (15), which contain possessive NP's, appear to follow from the fact that these elements in the two sets of NP's are essentially the same and also perform the same function in both sets of NP's. This strongly suggests that the elements in both cases be derived from the same source. If that is the case, we can either derive them by reflexivization, as in English, or by possessive pronominalization, given a proper analysis. Since (14) and (15) clearly cannot provide the proper analysis for reflexivization, it seems obvious that possessive pronominalization is the alternative.

Sixth, Essien [1978:121-130] has shown that in Efik, the so-called picture nouns, together with the reflexive-like forms associated with them, such as ńdɨ́sé ɨ́dèm m̀mì and m̀bùk ɨ́dèm èsɨ̀é in (16) are better analysed as possessive NP's.

(16) a. ḿmekud ndise idèm m̀mì 'I have seen a picture of myself'
1 2 3 4 ----1---- 2 4 3

b. Bássèy étɨ̀ŋ m̀bùk ɨ́dèm èsɨ̀é 'Bassey has told a story of himself'
1 2 3 4 ---1---- 2 4 3

The same arguments that apply to Efik in this regard also apply to Ibibio, a very closely related language. Similarly, the same possessive rule that handles the so-called picture nouns in Efik [Essien 1978:130ff] can also handle the so-called picture nouns, such as the following, in Ibibio:

(17) a. Ḿmekɨd ndise ìdèm m̀mì 'I have seen a picture of myself'

b. Bássèy ǎtaŋ m̀bʌ̀k ídèm àmɔ̀ 'Bassey has told a story of himself'

Since both the so-called picture nouns and the so-called reflexive pronouns in Ibibio are possessive in nature, they can be derived by the same possessive rule that derives ordinary possessive NP's. In other words, one does not need two different rules to handle the so-called reflexive pronouns and those reflexive-like forms connected with the so-called picture nouns. A revision of the 1978 possessive rule will be given in Section 4.

Finally, let us consider the emphatic cases which contain the reflexive-like elements. In doing this we shall first of all return to the examples in (12) and (13) so that we may be able to relate them to other emphatic cases.

The examples in (12) and (13) involve some emphasis that arises from contrast. As we see presently, they are in fact just examples of emphatic cases that involve the use of the lexical item ídém and the possessive pronoun, or any other possessive nominal for that matter. This fact relates the so-called reflexive pronouns to the emphatics, both of which have the reflexive-like forms, and makes our analysis more revealing. Under reflexivization as currently formulated, this relationship has not been, and indeed cannot be, accounted for.

Before we consider other emphatic cases, let us point out two facts. First, the grammaticality of (12) and (13) arises from the contrast. Thus the following is ungrammatical in isolation:

(18) a. *kpʌ́ŋ ídém m̀mì '*leave myself'
1 2 3 1 3 2

But in the contrast situation in which àfò 'you' is the subject of both S's in the underlying phrase marker and in which the so-called reflexive pronoun occurs in the first of the S's in (12), this NP, i.e. the so-called reflexive pronoun, is apparently attracted in the second S, hence the grammaticality of (12). Second, the non-reflexive form mí ìn 'me' would, of course, be grammatical in (12), as the grammaticality of (18b), where mí ìn has replaced

ídém m̀mì , shows:

(18) b. kéré ídém m̀fò, kpʌ́ŋ mí ìn 'think of yourself, leave me'

In terms of meaning, however, much of the emphasis or force in (12) is lost in (18b) by the use of mí ìn in place of ídém m̀mì .

The commonest type of emphatic cases (hereafter referred to simply as emphatics) is exemplified by the following:

(19) a. ì mé ké ídém ámɔ̀ 'Ime himself'
1 2 2 1

b. àfò ke ídém m̀fò 'you yourself'
1 2 3 1 3 2

In some cases, possession involving emphasis is formally marked as in (19), where the emphatic marker ké (also used in cleft sentences) follows the "emphasized" nominal, and in the following examples:

(20) a. Òkón ádò áyín kè ì dèm m̀mì (ídóxó ànìè ǹdɔ́pkè)
1 2 3 4 5 6 7

'Okon is my real/natural child (not an adopted one)'
1 4 -----3------ 2 5 7 6

b. nám útóm ádò ǹtè útóm kè ì dèm m̀fò (ídóxó ákè àwò àfén)
1 2 3 4 5 6 7 8 9 10 11

'do that job as your personal job (not as someone else's)'
1 3 2 4 7 6 5 8 10 11

In the case of (20), the ké is optionally deletable. Thus, (21a,b) are paraphrases of (20a,b), respectively:

(21) a. Òkón ádò áyín ídèm m̀mì (ídóxó ànìè ǹdɔ́pkè)

'Okon is my real/natural child (not an adopted one)'

b. nám útóm ádò ǹtè útóm ídèm m̀fò (ídóxó ákè àwò àfén)

'do that job as your personal job (not as someone else's)'

Observe that the particle ké occurs between two nominals. In (19), it occurs between ì mé/àfò and ídém and in (20), between áyín/útóm and ídém. One way of deriving the particle is to introduce it transformationally depending on the NP configuration (see the expansion of the NP in Section 4 below). Alternatively, ké could be generated in the base in all emphatic cases. Then in the case of (12), it is obligatorily deleted, where there is no immediately preceding nominal. It is, however, optionally deletable in the case of (20), as (21) shows. It is not deletable in the case of (19).

How ké is to be derived is not the issue. The issue is that some cases of emphasis require the use of ídém in possessive relationship with other nominals.

4. Formulation of the Possessive Rule

Essien [1978:127] proposed the following expansion of the NP to account for the facts of possessive NP's in Efik, where NOM stands for nominal:

(i) NP → N DET
(ii) DET → (NOM) ART
(iii) NOM → NP

Given the above expansion of the NP, the possessor NP will be dominated by the NOM of the DET. This then accounts for the "Determiner" behaviour of the possessor nominal observed in Efik (and in Ibibio, as pointed out in Section 3, pp. 96-102).

The above expansion rules as they are cannot account for all the facts of Ibibio possessive NP's presented above. For example, it cannot account for emphasis in the NP. However, with a little amendment to the rules to include EMPH (Emphasis), which is a required category anyway, e.g. the expansion of the VP must include EMPH to account for emphasis in the VP, the facts of Ibibio can be accomodated. Accordingly, we propose the following expansion rules:

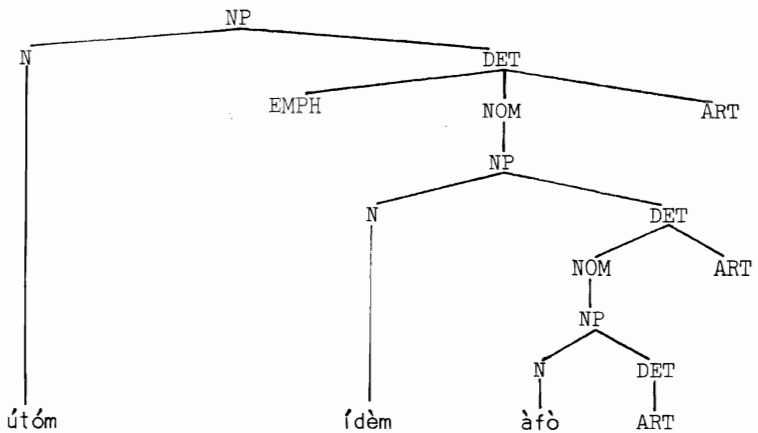
(22) (i) NP → N DET
(ii) DET → (EMPH) (NOM) ART
(iii) NOM → NP

With the above rules, then, both the emphatic and the non-emphatic cases of NP can be accounted for by the selection or non-selection of EMPH respectively in the rule application.

Given the rules in (22) above, a possessive NP with emphasis such as útóm ídèm ǹfò 'your personal job' in (21b) is structured as (23) on the next page.

So far we have been concerned with the base rules that derive possessive NP's. Let us now turn to Possessive Pronominalization, by which, in our definition, possessive pronouns are derived when such pronouns, e.g. ámò in (24) on the next page, have coreferent interpretations.

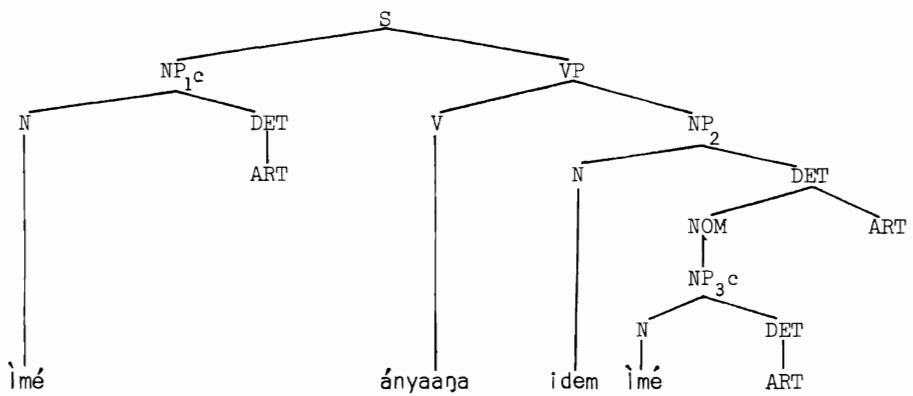
(23)



(24) Ìmé ányaaŋa idem amɔ̀ 'Ime is helping himself'
1 ----1-----

Underlying (24) is (25), omitting irrelevant details.

(25)



We restate, with a slight modification of the 1978 position, how Possessive Pronominalization applies. Given a structure such as (25), the rule applies, provided that

(i) there are two coreferent NP's (NP_1 and NP_3) such that one of the NP's is dominated by a NOM;

(ii) the latter NP, i.e. NP_3 in our example, is immediately preceded by an N;

(iii) the N that immediately precedes the NP dominated by NOM must be the head noun of the DET that dominates the NOM that in turn dominates the NP, i.e. NP_3 in our example.

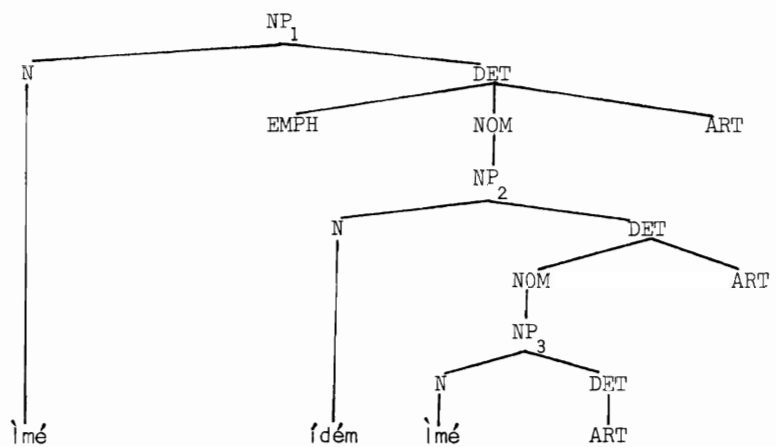
When the rule applies, it will mark the feature [+Pro] and [+Pos] (Possessive) on the NP dominated by NOM. If the NP is already [+Pro], then the rule will simply mark it [+Pos]. In the case of (25), the NP will be realised later as ámɔ̀ , after the necessary phonological rule(s) have applied, given a Chomskyan grammar.

Sometimes the coreferent NP's occur in one complex NP. Consider the following example:

(26) ɪ̀mé ké ɪ́dém ámɔ̀ 'Ime himself'

Clearly ámɔ̀ in (26) refers to ɪme in the example. Given the rules in (22), (26), which is a possessive NP with emphasis, is structured as (27) below:

(27)



Assuming that NP_1 and NP_3 in (27) are coreferential,[3] then Possessive Pronominalization can apply, since conditions (ii) and (iii) for the rule application are also met, and NP_3 will eventually become amɔ .

[3]Here we overlook the problems of what constitutes coreference or identity raised by Jackendoff [1968:5] and others. In any case, if NP_1 and NP_3 cannot be said to be coreferential (which is not to say equal), the N's dominated by these NP's are identical, indeed strictly identical.

To derive ké , which occurs in (26), the surface counterpart of (27), we probably need a ké-INSERTION rule to introduce this particle. Alternatively, and better still, in our opinion, it can be introduced during what is often referred to as "a second lexical pass" which also lexicalizes ART, which in our grammar is "empty" in the base. This is fully discussed in Essien [1974: 76ff.].

So the three conditions stated above are sufficient for the application of Possessive Pronominalization, whether in an S or NP configuration. Given the above possessive rule, how can we handle the ambiguity of the following sentence:

(28) Ìmé ámà átʃgha ìdem (amɔ̀)
1 2 3

a. 'Ime shot himself'
1 3 2

b. 'Ime shot his body', e.g. as opposed to head
1 3 2

Possessive Pronominalization in itself cannot solve this problem, since ʃdém as 'self' or 'body' in the sentence will still have the same underlying structure. That is, whether ʃdém is interpreted as 'self' or 'body' in (28), that sentence is still derived from one underlying source. But that source structure is subject to Possessive Pronominalization. Since Possessive Pronominalization will apply in either case and reduce the structure to (28), that rule cannot solve the ambiguity. But if the ambiguity cannot be solved syntactically by Possessive Pronominalization, it can be solved lexically. This does not need further defence, since we have made the point quite clear that ʃdém is a lexically ambiguous item.

5. Implications

The analysis presented above has certain implications for Ibibio grammar. First, reflexivization as currently formulated does not exist in Ibibio and should be viewed merely as a grammatical device for accounting for reflexive actions in some languages, English, for example. Assuming that all languages can express reflexive actions, then the grammatical device for doing this in Ibibio (and perhaps other languages too in the Niger-Congo family) is Possessive Pronominalization.

Second, the similarity in form between the so-called reflexive pronouns

and the emphatics merely reflects the relationship between the two: they are both traceable to one source, possession. It may well be that the same sort of similarity in form between the reflexive pronouns and the emphatics in English is not accidental, after all.

Third, and very important, our analysis reveals that Possessive Pronominalization is an important aspect of pronominalization in Ibibio, especially as it also acts as a grammatical device for expressing reflexive actions.

REFERENCES

Akmajian, A. and F. Heny. 1975. *An Introduction to the Principles of Transformational Syntax*. Cambridge, MA: M.I.T. Press.

Chomsky, N. 1965. *Aspects of the Theory of Syntax*. Cambridge, MA: M.I.T. Press.

Essien, O.E. 1974. "Pronominalization in Efik." Doctoral thesis, Edinburgh University.

Essien, O.E. 1978. "Possessive pronominalization and the so-called picture nouns in Efik." *Studies in African Linguistics* 9:121-142.

Jackendoff, R. 1968. "An interpretative theory of pronouns and reflexives." Bloomington: Indiana University Linguistics Club.

Jackendoff, R. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge, MA: M.I.T. Press.

Jespersen, O. 1964. *Essentials of English Grammar*. University, AL: University of Alabama Press.

Lees, R.B. and E.S. Klima. 1963. "Rules for English Pronominalization." In D.A. Reibel and S.A. Schane (eds.), *Modern Studies in Transformational Grammar*, pp. 145-159. Englewood Cliffs, NJ: Prentice Hall Inc.

Postal, P. 1966. "On so-called pronouns in English." In R.A. Jacobs and P. S. Rosenbaum (eds.), *Readings in English Transformational Grammar*, pp. 56-87. Waltham, MA: Ginn and Company.

Quirk, R. and S. Greenbaum. 1973. *A University Grammar of English*. London: Longmans.

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ON THE SCOPE OF THE SERIAL VERB CONSTRUCTION* IN YORUBA

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The serial verb construction has been observed in many languages of the world, including Chinese [Li and Thompson 1973, 1978], Malayalam [K.P. Monahan, personal communication], and pidgins and creole languages. Among the languages of Africa, it is accepted to be a characteristic of, though not limited to, the Kwa languages. Various proposals have been made to account for the phenomenon. Some speculate that its existence and productivity is in inverse relation to the functional yield of the inflectional categories in the verb and/or of prepositions in individual languages. The hypothesis on reanalysis of verbs is related to the explanation which takes cognisance of prepositions [Givón 1975]. Although this relatedness is not explicitly pursued in the present work, we present data to show that in Yoruba, and perhaps in other Kwa languages, reanalysis of verbs is ill-motivated as a working hypothesis depending, as it does, solely on cross-linguistic analogy and translation. But more crucially, no transformational account of the SVC finds justification in the data. The SVC is, therefore, not a surface structure phenomenon, at least not in the sense that can be accounted for by deletion transformations described on putative underlying coordinate and embedded sentences proposed to date.

0. Introduction

This paper recognizes the scholarly contribution of many linguist Africanists (notably, Ansre, Awobuluyi, Bamgbọse, Christaller, George, Givón, Hyman,

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*Nick Clements made available to me his important, rigorously well thought out 1973 mimeographed paper which he refused to publish because he did not believe he had enough data. The questions asked in that paper have enabled me to avoid a number of analytic pitfalls. This is not to say that this paper has even begun to answer the most important of his questions. He has also listened patiently to fragmentary discussions of this paper without the benefit of being really familiar with the Yoruba data. He bears no responsibility whatsoever for any inadequacy in this paper. I hope he will accept credit for its merits.

Lord, Schachter, Stahlke, Ward, Westermann) whose works have advanced our awareness of the complexity of the syntactic type referred to as serial verb construction (SVC), particularly the manifestation of this phenomenon in most of the KWA languages. All these studies bear important relevance to the study of the phenomenon in the Yoruba language. A close examination of data from Yoruba leads one to conclude, however, that its scope in that language is much wider than has been hitherto admitted. In particular, and as will be shown below, the data argue that if one eschews translation (say into English), there is little ground for accepting the hypothesis of syntactic reanalysis (as complementizers) for certain verbs which take either sentential or verbal complementation [Lord 1974, 1976; Awobuluyi 1978]. This is so because the data and syntactic analysis, in fact, support their being considered verbs participating in serial verb constructions. Such verbs include pé 'say' and the so-called causative verbs dá , fi , and mú as in (1), (2), (3), and (4):

(1) wọ́n rántí pé àlejò ni owó
they remember say guest (focus) money
'they remember that money/wealth is transient'

(2) oníwàásù dá àwọn ènìyàn rẹ̀ ní ọkàn le
preacher make them people his (prep) heart firm
(lit: 'preacher make the heart of his people firm')
'the preacher/pastor reassured his people'

(3) ọ̀rọ̀ náà kò fi mí ní ara ba ilẹ̀
matter the Neg (Caus) me (prep) body reach ground
(lit. 'the matter does not allow my body to rest easy')
'the matter continues to give me anxiety'

(4) ọ̀rọ̀ Múyìíwá mú mi sẹ̀ ọ̀rẹ́ mi[1]
matter Muyiwa take me offend friend my
'Muyiwa's affair made me offend my friend'

Second, SVC in Yoruba is not classifiable into just same-subject type and

[1]As in these examples, verbs and putative reanalysed verbs are underlined in all illustrative sentences below, except in cases where the verb may not be at issue.

causative type as, again, Lord [1976] has done, observing, as a corollary, that "both same subject and causative readings are possible for *any* serial construction...." [emphasis mine—O.O.O.]. It must be admitted, at the same time, however, that the recognition of these two types already represents an improvement over earlier views, particularly on the semantics of SVC's.

Third, data will be provided which allow only one conclusion, namely, that all verbs in a characteristic SVC series may be best considered as dominated by one VP regardless of the logical relationships deducible among the NP's of the sentence, or of the functional relation between the verbs and the NP's. This conclusion derives from two observations. First, the same syntactic and morphological constraints that apply to single verbs in mono-verbal constructions apply to each series of verbs in a SVC as if to a single functional entity. Second, and of equal significance, no convincing argument can be marshalled for deriving Yoruba SVC's from underlying "coordinate" structures or from structures with embedded sentences. To be sure, there exist near equivalences between "coordinate" structures and structures with embedded sentences on one hand, and SVC's on the other. Problems remain, however, in determining, first just what coordinate structures consist in in the language and second the transformational rules for deriving the desired surface structures, doing so not necessarily without changing meaning, which in virtually all the cases examined appears inevitable, but without proposing unjustifiable transformations and still preserving recoverability.

The following is only a summary of findings arising from on-going inquiry on the serial verb construction in Kwa languages with particular reference to Yoruba.

1. Verbs of Saying

1.1. pé as a verb. Example (5) is a typical diagnostic frame which has led analysts to conclude that pé 'say' and synonymous verbs in a number of languages [Lord 1976] have undergone a reanalysis and that pé is a complementizer of the same category as that in English, que in French, qué in Spanish, dass in German, and so on:

(5) a. Olu sọ pé ẹ wá 'Olu said that you came'
Olu say ( ) you(pl.) come

b. Olú wí pé ẹ wá 'Olu said you came'
Olu say ( ) you(pl.) come

c. Olú rántí pé ẹ wá 'Olu remembered that you came'
Olu remember ( ) you(pl.) come

c. Olú rò pé òun ó bá wa nílé 'Olu thought/expected that he would find us at home'
Olu think ( ) he (Olu) will find us at home

First, consider that when another verb ní 'say' is used as the only verb of the matrix sentence, as in (6), pé need not appear:

(6) Olú ní ẹ wá 'Olu said you came'
Olu say you come

Sentences such as (6) suggest to Lord [1974], surprisingly, only that the cycle of the reanalysis of another verb of saying is underway in Yoruba. Speakers, she argues, resort to the use of ní in order to put a brake on the proliferation of verbs of saying, as in (7) in which each verb except the first has been reanalyzed as complementizer:

(7) wọn sọ wí pé ẹ wá 'they said that you came'
they say say ( ) you come

The explanation, we would like to suggest, lies in other directions, namely that sentences such as (7) are SVC's in which in common Yoruba[2] a string consisting solely of verbs of saying is used for explicitness just as a speaker may or may not choose to employ the SVC for achieving the same effect as in (8):

(8) a. Olú mú owó ta mí lórẹ 'Olu gave me money as a present'
Olu take money strike me (as)gift

b. Olú bùn mi ní owó 'Olu presented me with money'
Olu present me (prep) money

In (8), sentence (a) is a SVC, (b) is not. Both are otherwise constructions involving verbs which take necessarily the prepositional phrase involving

[2]"Common Yoruba" is the variety used for literary and educational purposes. It is a sort of Koiné understood all over the Yoruba speaking area, and serves to facilitate interdialectal communications. Although we refer to it in the rest of this paper as SY for "Standard Yoruba", that appellation by no means implies a systematic normalization.

Awobuluyi's [1972] particle ní .

1.1.1. Thus, one may suggest that in SY the verbs sọ , wí , pé , and ní may be used individually or in a combination of two or more in a sentence without a change of meaning:

(5) a. Olú sọ pé ẹ wá 'Olu said that you came'

b. Olú wí pé ẹ wá 'Olu said that you came'

(9) a. Olú ní pé ẹ wá 'Olu said that you(pl.) came'
Olu say ( ) you came

b. Olú sọ wí pé ẹ wá

c. Olu sọ wí pé ní ẹ wá

Interestingly enough, (10a) and (b) mean exactly the same as each of the foregoing.

(10) a. Olú ní ẹ wá 'Olu said you that you came'
Olu say you come

b. Olú pé ẹ wá 'Olu said that you came'

In view of (10b), we must find an explanation for the supposed reanalysis hypothesis, because if pé is a complementizer and (10b) means the same as (5a), (5b), (9a-c), and (10a), then (10b) has no verb. As we can see, no plausible, properly motivated transformational rule is in sight for deriving (10b) from (10a), from (9c), or from any other of the preceding forms. This is so again because no process, to the best of the present writer's knowledge, deletes the verb of a clause in Yoruba, no matter the functional or derived categorial status of that clause.

1.1.2. Consider again the following facts: in common Yoruba, fọ̀ , sọ , wí , pé , ní are all fairly synonymous, all translatable as 'say', and may be used as in (11):

(11) a. i. Òjó fọ èdé tí n kò gbọ́
Ojo speak language which I **not** hear
'Ojo spoke a language which I did not understand'

ii. Òjó fọ̀ tán, ó pẹ̀hìndà
Ojo speak finish he turn (his) back
'Ojo having spoken, took off'

b. Òjó sọ ìtàn
Ojo tell story
'Ojo told a story'

c. i. Òjó wí ẹjọ́ bí i awẹ́wa
Ojo talk case manner of grumbler
'Ojo complains like a grumbler'

ii. Òjó wí ohun tí a ní kí ó wí
Ojo say thing which we say (INTRO) he say
'Ojo says what we ordered him to say'

d. i. n kò pé n kò lọ
I not 'say' I NEG go
'I did not say I won't go'

ii. wọn pé àwọn ti dé
they say they (perf) come
'they said they had arrived'

e. i. mo ní n kò lọ
I say I neg go
'I say that I do not go'

ii. Òjó ní òun ò lọ
Ojo say he(Ojo) (Neg) go
'Ojo said he (Ojo) did not go'

From the sentences in (11), the verbs in question subcategorize minimally as follows in SY:

fọ̀ : [+ ----(NP)]
sọ : [+ ---- NP]
wí : [+ ---- NP]
pé : [+ ---- S]
ní : [+ ---- S]

This explains why pé and ní may either precede or follow each other when combined. Thus sọ , wí , ní may precede pé as above in (5) and (9), while pé itself may precede ní as in (9c).

1.1.3. Consider also constructions in (12), in which different verbs and even

nominal constructions take pé :

(12) a. Indirect connative constructions

gbìyànjú	'try'
gira	'struggle'
pàṣẹ	'order'
bẹ̀	'beg, implore'
rán(ṣẹ́)	'send, commission'

Olú gbìyànjú pé kí òun bá wa
Olu try ( ) (comp) he(Olu) overtake us
(INTRO)
'Olu tried to overtake us'

b. Value

dára	'(be) good'
yẹ	'(be) fitting'
burú	'(be) bad'
sàn	'(be) better'
wù	'to please'

ó dára pé kí a jọ lọ
it good ( ) (comp) we rally go
(INTRO)
'it is good that we go together'

c. Result

dára	'(be) good'
dùn	'(be) sweet'
burú	'(be) bad'

ó dùn pé a jọ lọ
it sweet ( ) we rally go
'it is sweet that we went together'

d. Saying, reporting, thinking; emotion

rántí	'remember'
bínú	'be annoyed'
rò	'think'
sọ, (ní,wí)	'say'

ọ̀gá bínú pé wọn kò dé lásìkò
boss anger ( ) they Neg arrive on time

'the boss is angry that they did not arrive on time'

e. Comparison

jọ (bí ẹni) 'seem (manner of someone)'

dà (bí ẹni) 'appears (manner of someone)'

i. ó jọ bí ẹni pé òjò fẹ́ẹ́ rọ̀
it seem manner(of) one ( ) rain wants fall

'it looks like it is going to rain'

ii. ó dà bí ẹni pé mo ti pàdé rẹ rí
it appears manner(of) one ( ) I PERF meet you see

'it seems as if I have met you before'

f. Concession

bí ó tilẹ̀ jẹ́ pé ó gùn kò tó o
manner it from ground be ( ) it long NEG reach it

'although it is long it does not reach it'

g. Cause/Reason

nítorí (<ní ti orí) 'on account of', 'for reason of'
on of-head

àsán 'reason'

àsán pé Reagan jẹ́ bàbá rẹ̀ kò jẹ́ kí a simi
reason ( ) Reagan be father his NEG allow (comp) we rest
(INTRO)

'just because Reagan happens to be his father he is getting on our nerves'

In (12a) and (b), pé may be deleted but never kí which introduces the embedded clause of intention. In such constructions, pé , if considered as complementizer, would have no obvious function. In this regard, compare (13), also a connative construction, in which pé serves as the only verb, where the third person singular pronoun obligatorily deletes before the negative marker kò (see Abimbọla and Oyelaran [1975]).

(13) a fi àkàrà je ẹ̀kọ kò pé kí a ní owó
one apply akara eat eko NEG say (comp) one has money

'eating eko with nothing but akara does not guarantee afluence'

Sentence (12e) is explicit about what one might consider as the underlying subject of pé in all cases in which it complements other verbs, namely, ẹnì 'one, someone'. In the case of (12e) and in all similar cases, it is impossible to ascribe anything but the verbal status to pé .

In (12f), ẹnì is presumed deleted between jẹ́ and pé as underlying subject of the clause in which pé is verb. The said clause, ẹnì pé ó gùn 'one says it is long', is complement to jẹ́ which never occurs without a complement.

Sentence (12g) offers a curious case. First, in formal or slow speech, an extra vowel on mid tone is heard following the last vowel of àsán or nítorí and before pé , indicating that what follows functions as genitive NP, and the enitre construction introduced by nítorí and àsán must therefore be considered a sentential PP or an NP with the following structure:

Prep + NP + genitive markers (GM) + NP ....

Thus (14) can be assigned the following structure:

Prep NP GM [pé.....].....
np np

(14) ní torí i pé Olú jẹ́ ọmọ-ọba.....
on of-head of ( ) Olu be child(of) king
'on account of the fact that Olu is a prince'

Now, tí , the relative clause introducer, may be substituted for pé in (14) and (12g) without a change of meaning; but then the genitive marker does not appear, thus underscoring the determiner role of the resulting tí-clause as opposed to the genitive function of the pé-clause.

What role do (12g) and (14) assign pé ?

At first, an account of (12b) and (c) which considers the pé-clause transformationally extraposed or moved to the complement position, from putative underlying structures such as (15) suggests that pé may plausibly be considered a complementizer derived from the reanalyzed verb pé .

(15) a. pé kí a jọ lọ dára 'that we go together is good'
( ) (comp) we rally go good

b. pé a jọ lọ dára 'that we went together is good'
( ) we rally go good

But consider that in SY only NP may function as subject or object, may be conjoined with àti .... àti 'both .... and', may precede or follow the focus marker ni , or may serve as head of a relativè construction. It turns out that sentences are found in each of these positions, and without any sign of nominalization whatsoever, as in the following examples:

(13) a fi àkàrà jẹ ẹ̀kọ]...
NP subj.

(16) a. àti òjò rọ̀ àti òjò kò rọ̀ a ó bá ọba dé ilé
and rain fall and rain NEG fall we will accompany king reach home
'whether it rains or not, we will go all the way to the palace with the king'

b. ọ̀rò yẹn jọ mi lójú ni mo se tètè dé
matter that surprise me in face (FOCUS) I make quickly arrive
'what surprised me was that I arrived quickly'

c. ayọ̀ ọ ìyá mi ni a rà, a kò rà mí
joy GEN mother my (FOCUS) we buy we NEG buy me
'the joy of a free-born child of a slave-mother'

d. gbé ọmọ wáá kí mi owó níí ná ẹni
carry baby come greet me money (it is) spend one
'bring the baby to see me, that costs nothing but money'

e. na ọmọ mi dè mí kò dé inú ọlọ́mọ
beat child my await me NEG reach heart child owner
'no parent can be taken seriously when he says "beat my child when I am away (if he misbehaves)"'

It is not surprising, therefore, that the verb pé , with or without the underlying subject ẹni , may introduce sentences all functioning as NP.

1.2. 'Say' in other dialects. Finally, in a number of other dialects, one of the verbs of saying other than pé is selected to function as pé does in common Yoruba, and the verb so chosen is often used as the only verb with a sentence as complement. Such sentential complements do not normally have introducers which would correspond to *that* in English:

(17) i. ìjẹ̀ṣà: (w)í 'say'
i òun é wàá 'he said he won't come'
say he(will) NEG come

ii.	Ìjàrẹ́:	fọ̀
iii.	Ondo:	fọ̀ fi
iv.	Ìjèbú:	fọ̀ lí (<ní)
v.	Ilè-Olújìí:	fi or i (with f deleted)
vi.	Ekìtì:	sú(hàn) 'say(show)', '-say(to)'
vii.	Ìgbómìnà:	ká ní, (kí a ní) '(comp) we say'

Given that these dialects use these words as the unique verbs in the sentence with sentential complement, it appears compelling not to entertain any suggestion that pé or ní is used other than as another element in a serial verb construction in those cases in which they do not occur as only verb.

2. Causative Construction

Lord [1974] has argued convincingly, we believe, that the Yoruba causative construction is a SVC. But she also claims in the same work, and as cited above, that "both same subject *and* causative readings are possible for *any* serial construction..."(emphasis mine O.O.O.). In this section, further data will be provided to buttress her argument that the causative construction is a SVC and to show that causative construction as SVC covers cases which she herself least suspects or which she denies outright.

On the other hand, data will also be provided to invalidate her suggestion in the above claim, as we understand it, namely, that the causative construction is always and necessarily a SVC in which the NP_2 object of the first verb is also the logical subject of the second verb. Example (4), repeated here, is one such construction:

(4) ọ̀rọ̀ Múyìíwá mú mi sẹ ọ̀rẹ́ mi 'Muyiwa's affair made me offend
matter Muyiwa take me offend friend my my friend'

NP_1 V_1 NP_2 V_2 NP_3

One observation which immediately casts doubts on Lord's claim is that other causative verbs than the five (mú , dá , sọ , fi , and ṣe) listed by Awobuluyi [1972, 1978] and examined by Lord [1974] may be first verbs of a SVC and with identical semantic and syntactic consequences as these five. What is more, the resulting SVC in each case is not always analyzable or paraphrased to show that the object of the first verb is at the same time the logical sub-

ject of the effect verb. Thus in (18), jíjẹ ẹran or ìjẹ ẹran 'the fact of eating the meat', but not ẹran 'meat' alone, is the logical or surface subject of dùn 'to cause to experience pain or loss'.

(18) wọn jẹ ẹran yẹn dùn mí 'they ate the meat and brought me to grief
they eat meat that pain me by so doing'

Nor is it the case that all serial verb constructions in Yoruba can be given a causative reading in any of the senses meant by Lord [1974]. Thus there is no obvious way in which any sentence in (19) can be given the so-called "causative reading":

(19) a. ó ga pin 'he has stopped growing tall'
he/it tall stop

b. ó pọ́n rà 'it has ripened to the point of rotting'
he ripen rot

c. ó sọ̀rọ̀ tán 'he has stopped talking'
he talk finish

d. Bọ́lá ra ẹran jẹ 'Bola buys meat for eating'
Bola buy meat eat

On the other hand, there is a real sense in which most of the so-called splitting verbs (which Lord makes no mention of) are fixed causative SVC's in which either the first "causative"[3] verb or the second (the effect) verb no longer occurs by itself in a sentence, although its meaning can always be deduced from the SVC's in which it participates, particularly when the usage is transitive:

(20) a. pamọ́ 'hide; clean'
paré 'erase'
patì 'abandon'
papọ̀ 'bring together'
padé 'close'
bàjẹ́ 'spoil'

[3]"Causative" is used here strictly to refer to any verb in a string which refers to the event leading to the effect represented in a later verb.

b. awọn alágbàṣe pa iṣẹ́ oko mi tì lálaí parí
they labourers (CAUS) work farm my aside without finishing it
'the labourers abandoned my farm work without finishing it'

Finally, it is not the case that the so-called causative verbs dá , fi , and mú are as restricted as Lord [1974] and Awobuluyi [1978] claim. Lord [1974], for one, claims first that all three, particularly dá , take few verbal complements, co-occur with limited number of nouns, and participate in strictly idiomatic expressions, especially in constructions providing no clue to independent usages. She argues further that fi is grammaticalized and that, besides, it does not inflect, does not take object pronouns, and is semantically generalized. She suggests lastly that mú takes the kí-clause as complement. Let us examine these claims.

With respect to dá , (21) provides a few examples, by no means exhaustive, which call into question the first set of claims:

(21) a. dá ojú tì 'put to shame'
(caus) eye shame

b. dá ẹ̀rù bà 'to strike fear into someone'
(caus) fear strike

c. dá ààbò bò[4] 'to protect'
(caus) protection cover

d. dá ara yá 'to exercise; to cheer up'
(caus) body quick

These expressions are no more idiomatic than non-SVC's in (21e):

e. i. ojú tì mí 'I am ashamed'
eye/face fail me

ii. ẹ̀rù bà mí 'I am afraid'
fear strike me

iii. ara mi yá 'I am in good health'
body my (be) quick

or than similar but otherwise ordinary SVC's in (21f) and dá constructions with prepositional phrase as complement in (21g):

[4]Examples (21a, b, c) are given in Lord [1974].

(21) f. i. mú ẹsè dúró 'to cause to stand firm'
feet stop

ii. dá ẹsè dúró 'to stop'
feet stop

iii. dá sí 'to spare'
exist

iv. dá kojá 'to traverse'
(to) cross

g. i. dá ní àre 'to acquit'
(caus) prep justice

ii. dá ní ẹbọ 'to prescribe sacrifice to'
(caus) prep sacrifice

iii. dá ní oró[5] 'to inflict pain/loss on'

With respect to fi , it is not clear precisely in which sense it can be said to have been grammaticalized. First, it commutes not only with dá , but also with other verbs such as dà , gbé , jẹ́ (kí) , mú , as in (22).

(22) a. dà bò 'use to cover'
turn cover

b. gbé lé 'put upon' (to cause to be upon)
carry (be on) top

c. mú jẹ 'eat up' (to cause to be eaten)
take eat

d. jé (kí) ẹnu kò[6] 'come to an agreement'
make (comp) mouth meet

To the extent that it makes sense to say that the Yoruba verbs inflect, no verb inflects more than fi , dá , or mú in that they take all preverbs

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[5]All constructions of type (g) have proper SVC equivalents:

(a) gbé àre fún/kò 'declare justice in favor of (someone)'
convey justice give/meet

(b) yan ẹbọ fún 'impose sacrifice on (someone)'
choose sacrifice give

(c) mú jẹ oró 'make (someone) suffer pain'
make suffer pain

[6]Examples (22a-d) have the following as fi-introduced equivalents in that order: fi bò , fi lé , fi je , and fi ẹnu kò .

that the first verb in a SVC takes. And fi takes the object pronoun which, as is the case with virtually the totality of Yoruba verbs which take NP object complement, may delete just in case it represents an old piece of information in the discourse (see further below). Since pronouns most often presuppose an earlier anaphoric element in the discourse, it optionally deletes after fi , too. Thus one may have (i) or (ii) of (23a) but always (b).

(23) a. i. fí ẹ́ hàn mí 'show it to me'
(caus) it appear me

ii. fi hàn mí

b. i. mo fi wọ́n sílẹ̀ 'I leave them alone'
I (caus) them to ground

ii. fi wọ́n hàn mí 'show them to me'
make them appear (to)me

With respect to the claim of semantic generalization, fi possesses this attribute to no greater extent than verbs such as gbé and ṣe , as in (24a, b):

(24) a. i. bá wo ni o ṣe rí i?
manner which (Focus) you ( ) see it
'how did you happen to see it?'

ii. bá wo ni o ti rí i?
'how did you happen to see it?'

b. i. ajá mi gbé eegun mì 'my dog swallowed a piece of bone'
dog my ( ) bone swallow

ii. níbo ni o gbé rí i? 'Where did you happen to see it?
where (focus) you ( ) see it

iii. níbo ni o ti rí i? 'Where did you happen to see it?

Ṣe and gbé are normally glossed 'do' and 'dwell' respectively. But in (24) this meaning is lost to each of them, or is at least inappropriate. Moreover, each substitutes with the directional locative ti : thus ṣe in (24ai) and gbé in (24bii) without a change in the meaning of the two sentences concerned. Notice that SVC reading would be considered uniquely appropriate for both ṣe and gbé in (24), and any consideration for the reanalysis hypothesis would be excluded. We hold, therefore, that only unrestricted SVC reading has any

motivation for mú , fi , or dá . This conclusion is made more compelling by cases in which these verbs do not occur as the first in a verbal series, as in (25):

(25) a. ọbá rán mi fi àáké gé igi
king send me use axe cut tree
'the king sent me to cut the tree with axe'

b. ọbá rán mi mú wọn gé igi
king send me make them cut tree
'the king sent me to force them to cut the tree'

c. ọbá rán mi dá àwọn pàràkoyí yẹn dúró
king send me make them caravan that stop
'the king sent me to stop that caravan'

3. Serial Verb Construction Types in Yoruba

In this section we present a non-exhaustive list of SVC types in Yoruba together with the characteristic surface constituent structure and an indication of the functional relations between NP's and VP's. It must be understood that this last bit of information has no bearing whatsoever on the derivation of each type. The term subject of V_x should be read to mean subject of a putative sentence in which the verb number x is the unique verb; *af.* is short for "affix", usually a nominalizer.

ADVERBIAL

(26) a. mo mọ Atinúkẹ́ dé ilé
I know Atinuke reach home
'I know Atinuke intimately'

b. àgbà olófòófó yẹn rò wa ká
elder gossip that tell us (be)abroad
'the old gossip spread rumours about us'

c. wọn jẹ ẹran ẹfọ̀n yẹn dùn mí
they eat meat bushcow that pain me
'their eating that bushcow meat by themselves displeased me'

d. ọ̀kánjúà dá ẹran náà jẹ
greedy(one) (be)alone meat the eat
'the glutton ate the meat alone'

(a-c): $NP_1\ V_1\ NP_2\ V_2\ (NP)_3$
NP_1 subj. V_1; $[_N$af-$V_1]$ subj. V_2; NP_2 obj. V_2

(d): $NP_1\ V_1\ NP_2\ V_2$
NP_1 subj. V_1, V_2; NP_2 obj. V_2

BENEFACTIVE

(27) a. Olú fi òrùka ta mí lóṛẹ
Olu make ring offer me (prep)gift
'Olu made me a gift of a ring'

b. àgbẹ̀ ọka ro oko fún ẹyẹ jẹ
farmer sorghum cultivate field give bird eat
'all grain farmers cultivate to feed birds'

c. bàbá mi ra ẹ̀wù bùn mi
father my buy garment present me
'my father bought me a garment'

d. onísàásù sú ìre fún wa
preacher say blessing give us
'the preacher said a blessing for us'

e. Olú bá mi ra bàtà
Olu act(with)(for) me buy shoe
'Olu bought shoes for/from/with me'
$NP_1\ V_1\ NP_2\ V_2\ NP_3$ (PP)

(a-d): NP_1 subj. V_1, V_2; NP_2 obj. V_1, V_2;
NP_3 beneficiary V_1

(e): NP_1 subj. V_1, V_2, NP_2 obj. V_1, beneficiary V_2;
NP_3 obj. V_2

CAUSATIVE

(28) a. i. àwọn òṣìṣẹ́ pa (caus) iṣẹ́ tì
they workers work fail
'the workers set the task aside'

ii. àwọn òṣìṣẹ́ fi (caus) iṣẹ́ tì

iii. àwọn òṣìṣẹ́ gbé (caus) iṣẹ́ tì ((i) = (ii) = (iii))

(28) b. mo pè é dé ilé
I call him reach home

'I called him home'

c. òtútù ilẹ̀ yìí sọ mí da alárúungun
cold land this turn me become hypochondriac

'the cold weather in this country has made a hypochondriac of me'

NP_1 V_1 NP_2 V_2 (NP_3)
N_1 subj. V_1; NP_2 obj. V_1, subj. V_2, NP_3 obj. V_2

CIRCUMSTANTIAL

(29) a. mo jókòó ka ìwé
I sit down read book

'I sat down while reading'

b. ó bá ẹnu ọ̀nà wọ ilé
he use mouth way enter house

'he entered the house through the door'

c. ọ̀lẹ kò jẹun sùn
sloth NEG eat sleep

'the lazyman did not eat before going to bed'

d. kùrukùru àjànàkú fi òkè se
magnitude elephant make hill do

'the elephant makes a mountain of itself'

NP_1[V_1 (NP_2)] [V (NP_3)]
Pred 1 Pred 2

COMITATIVE

(30) a. Olú bá mi lọ sí Kano
Olu accompany me go to Kano

'Olu went with me to Kano'

b. Ayọ̀ àti Ẹbùn jọ wá sí ilẹ̀ yìí
Ayo and Ebun join together come land this

'Ayo and Ebun came to this country together'

c. àbúrò mi kún mi lọ́wọ́ ko ebè
younger sibling my fill me (prep)hand make heaps

'my younger brother assisted me in making heaps'

$$[_{NP_1}\ NP_i\ (=NP_{ii})]_{NP_1} + V_1\ (NP_2)\ (PP_1)\ V_2\ (NP_3)\ (PP_2)$$

Condition: where NP_1 is complex, NP_2 may be null

COMPLEMENT

(31) a. wọn rò wá pìn
they think us finish

'they think no further good can come out of us'

b. ìyàwó rẹ fi ìṣẹ́ kan rán mi sí ọ
wife your make errand one commit me to you

'your wife gave me a commission for you'

c. adájọ́ so pé ọ̀daràn náà yíò wọ ẹ̀wọ̀n
judge tell say criminal the will enter gaol

'the judge decided that the criminal will go to gaol'

$$NP_1\ V_1\ (NP_2)\ V_2 \left\{ \begin{matrix} NP_3 \\ S \end{matrix} \right\} (PP)$$

COMPARATIVE

(32) a. ọmọ náà gbọ́n ju aṣarun
child the clever pass tsetse fly

'the child is smarter than the tsetse fly'

b. àgbáyun dùn jọ oyin
agbayun sweet resemble honey

'the agbayun is like honey in sweetness'

c. ìṣẹ́ yìí pọ̀ tó ti eni mẹ́fà
work this amount equal that (of)persons six

'this work is up to six persons''

$NP_1\ V_1\ (NP)\ V_2\ NP_2$:

NP_1 subj. V_1; $[_{NP}$ af-V$]_{NP}$ subj. V_2

CONSECUTIVE

(33) a. i. ó wí bẹ́ẹ̀ ṣe bẹ́ẹ̀
he say so do so

'he did exactly as he said'

ii. ó tẹ ìgbẹ́ tẹ ojú ọ̀nà
he tread bush tread path way

'both the bush and the road is path to him'

(33) b. ó nà mí lọ
he hit me go
'he hit me, then left'

c. òjó rọ̀ dá
rain fall stop
'the rain has stopped falling'

$NP_1\ V_1\ (NP_2)\ V_2\ (NP_3)$

INSTRUMENT/MANNER

(34) a. onírìbàjẹ́ ń fi ọwọ́ re imú
bad mannered (PROG) use hand pick nose
'the uncouth person picked his nose with his fingers'

b. wọn fi sùúrú yanjú ọ̀rọ̀ náà
they use patience sort matter the
'they sorted out the affair with patience'

$NP_1\ V_1\ NP_2\ V_2\ NP_3$

LOCATIVE

(35) a. alààárù sọ ẹrù rẹ̀ ka ẹnu ọ̀nà
porter bring down load his rest on mouth way
'the porter brought down his charge in the door way'

b. alágemọ ká ọwọ́ ìjà lé orí
praying mantis fold hand fight "rest-on" head
'the praying mantis always raises his hands ready to fight'

c. alágbe yẹn gbé ẹbọ kọjá mọ́sáláàṣí
mendicant that carry sacrifice pass mosque
'the mendicant has overstepped his bounds'

$NP_1\ V_1\ NP_2\ V_2\ NP_3$:
NP_1 subj. V_1; NP_2 obj. V_1, subj. V_2 [+LOC];
NP_3 ([+LOC]) obj. V_2

PURPOSE

(36) a. onírìnàrè wọ ilé sùn ní aago méta òru
vagabond enter house sleep at clock three a.m.
'the vagabond came home to bed at 3 a.m.'

b. àgbẹ̀ wá ọ̀gẹ̀dẹ̀ sun jẹ nínú oṣù Agà[7]
farmer seek plantain roast eat at month May

'farmers find only plantain to roast and eat in May'

c. a pàdé yanjú ọ̀rọ̀ ìjà wọn
we meet settle matter fight their

'we met to settle their quarrel'

d. mo wá ọ̀rẹ́ mi lọ sí New York
I seek friend my go to New York

'I went to New York to look for my friend'

NP_1 V_1 (NP_2) V_2 (NP_3) PP

RESPECT

(37) a. ọmọge àná yẹn ga wù mí
damsel yesterday that (be) tall please me

'the young woman (of yesterday) pleased me with her height'

b. ọmọge kejì kúrú yẹ ijó
damsel second (be) short fit dance

'the second young woman has the perfect height for dancing'

NP_1 V_1 V_2 NP_2
NP_1 subj. V_1; $[_{NP}$ af-$V_1]$ subj. V_2; NP_2 obj. V_2

RESULT

(38) a. ọlọ́pàá na olè náà bẹ́
police whip thief the bleed

'the police whipped the thief till he bled'

b. ó mu omi yó
he drink water "state"

'he drank water till he was full'

c. ó dúró dáràn
he stayed get-into-trouble

'he got into trouble because he delayed'

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[7] Ọṣu Agà is the month during which new yams are not ready to be harvested, old stores, barns and silos are empty, and fruits are few and scarce. This configuration often falls in the month of May.

(38) d. ó ro oko là
he cultivate field rich

'he became rich farming'

e. ó sunkún sùn
he cry sleep

'he fell asleep crying'

f. ó mu omi ta eyín
he drink water pick tooth

'he picks his teeth because he drank water'

g. i. wọ́n gbé kòtò náà jìn
they dig trench the deep

'they dug the trench deep'

ii. aláró re aṣọ mi dúdú
dyer dyed clothes my black

'the dyer dyed my clothes black'

NP_1 V_1 (NP_2) V_2 (NP_3)

(a),(g): NP_1 subj. V_1; NP_2 subj. V_2

(b-f): NP_1 subj. V_1, V_2; NP_3 obj. V_2

SIMULTANEOUS EVENTS

(39) a. ìrẹ ń mu ọsàn rìn
you(sg) (PROG) suck orange walk

'you eat orange while walking'

b. mo rò ọ́ ro ire
I think(of) you think good(things)

'I entertain only good thoughts for you'

NP_1 V_1 NP_2 V_2 (NP_3)

NP_1 subj. V_1 V_2; NP_2 obj. V_1, NP_3 obj. V_2

MISCELLANEOUS

(40) a. àwọn ara ilẹ yóò jẹ́ wa ṣe
they people below will let us do

'the ancestors/the dead will endow our undertakings with success'

b. i. àwọn alájàpá ti Èkó mú ìdí sẹ̀
they itinerant produce buyers (LOC) Lagos take base found
'the produce buyers set out from Lagos'

ii. wọn ti àfẹ̀júmọ́ mú iṣẹ́ se
they (LOC) dawn take work do
'they set to work right from dawn'

c. wọn na ọmọ náà gbé
they flogged child the (be)without redemption
'they got away with flogging the child'

The foregoing examples show the range of semantic concepts which Yoruba can express by means of the SVC. That is not to say, of course, that any or all of these concepts cannot be expressed by means of other syntactic constructions; and the reality of this possibility has, in our view, given grounds for the plethora of hypotheses on underlying structures for the SVC. It cannot be overemphasized, however, that the above inventory of types does not exhaust possible semantic concepts that may have SVC correlates. Two observations point in this direction of thinking: the first is the existence of the type called "MISCELLANEOUS", for want of proper characterization. It is our opinion that this group can be enlarged almost indefinitely. Second, there is indeed a large number of SVC tokens capable of expressing two or more of the types listed above. Consequently, we are constrained to hold that the range of constructions in (26) to (40) demonstrates that SVC, in Yoruba at least, cannot be meaningfully limited to two types: same subject type and 'causative' type. It will also be observed that the basic surface structures of all the types are similar and can be given canonically as follows:

NP V NP PP V NP PP

Where only the first NP and the verbs may be considered obligatory in the sense that under no circumstances may they be deleted, as we will have occasion to specify below. These facts alone should suggest the futility of attempting to derive SVC in Yoruba from underlying structures, conjoined or embedded.

It turns out, fortunately, that the grammar of Yoruba imposes certain con-

straints and processes on the category, VP, and these same set of constraints and processes apply to any given series of verbs and their complements in a particular SVC, and not independently to any constituent of such a series. We turn to these considerations in section 4.

4. Constraints on Yoruba VP

4.1. The SVC as clause VP. In this section, we present arguments to show that the category VP must be allowed to take VP as complement in a sequence which constitutes a [illegible] VP that is a clause VP.

(41) a. ... Wọn gbà mí láyè láti kó(1) o pọ̀(2) tẹ̀(3)
they accept me space for collect it bring together print
jáde(4) pẹ̀lú [illegible] àwọn aṣíwájú Onímọ̀ Yorùbá
distribute accompany [illegible] forerunners. experts Yoruba
tí a gbà [illegible] [illegible] yìí[8]
(which) we received [illegible] bring together this

TRANSLATION: 'They allowed me to bring it together for purposes of publishing along with those of leading Yoruba scholars which we have received and have brought together in this publication.'

b. Wọn gbà mí láyè láti lọ
they accepted me space for go
'They gave me permission to go.'

In (41a-b), lọ in (41b) is a VP, and in (41a) the series consisting of 1, 2, 3, and 4, along with their complements on one hand and 5, 6, and 7 on the other hand, should each constitute a VP in the same sense.

4.1.1. Subcategorization. The syntactic formatives for modals, negation, aspect, and a modifier [illegible] subcategorize for VP in Yoruba:

ti 'PERFECTIVE'
yóò 'PROSPECTIVE'

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[8]Part of a sentence from the introduction of Oyelaran, *Ìsẹ̀mbáyé àti Èdè Yorùbá*, Ibadan, Nigeria: University Press Limited, in press.

ń(mí)	'PROGRESSIVE'
kò	'NEG'
kúkú	'MODIFIER'
lè	'MODAL'

These formatives bear the contextual feature [+__VP].[9] This means that in any given sentence, wherever a verb phrase is a sentence constituent the result of inserting any formative of the class of those listed above should always result in a grammatical structure. In (41a,b) above, insertion before the three occurrences of the verb gbà only is grammatical. But notice that insertion is not possible before $kó_1$ in (a) or lọ in (b) because both are already nominalized by the prefix àti- and therefore are no longer clause VP's. For a clearer demonstration, consider (42), (35d), and (38b).

(42) a. mo wá ire ìlú mi
I seek good country my
'I seek (the) good of my country'

b. ó mu omí
he drink water
'he drank water'

(35) d. mo wá òrẹ́ mi lọ sí New York
I seek friend my go to New York
'I went to New York to look for my friend'

(38) b. ó mu omi yó
he drink water become satiated
'he drank water till he was full'

If we take ti , kò , and lè , the following cases arise:

(43) a. i. mo ti wá ire ìlú mi 'I have sought the good of my country'
ii. n kó wá ire ìlú mi 'I do not seek the good of my country'
iii. mo lè wá ire ìlú mi 'I can seek the good of my country'

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[9]These classes of formatives are referred to as preverbs by Bamgbọṣe [1966, 1967, 1972] and as "pre-verbal adverbs" by Awobuluyi [1978] and previous publications. Clearly both scholars have classified some formatives as preverbs on the supposed validity of the reanalysis hypothesis. Later

(43) b. i. ó ti mu omí 'he has drunk water'

ii. kò mu omi '(he) does not drink water'

iii. ó lè mu omí 'he can drink water'

c. i. 1. mo ti wá ọ̀rẹ́ mi lọ sí New York

2. *mo ti wá ọ̀rẹ́ mi ti lọ sí New York

3. *mo wá ọ̀rẹ́ mi ti lọ sí New York

'I have gone to New York to look for my friend'

ii. 1. n kò wá ọ̀rẹ́ mi lọ sí New York

2. *n kò wá ọ̀rẹ́ mi kò lọ sí New York

3. *mo wá ọ̀rẹ́ mi kò lọ sí New York

'I did not go to New York to look for my friend'

iii. 1. mo lè wá ọ̀rẹ́ mi lọ sí New York

2. *mo lè wá ọ̀rẹ́ mi lè lọ sí New York

3. *mo wá ọ̀rẹ́ mi lè lọ sí New York

'I can go to New York to look for my friend'

d. i. 1. ó ti mu omi yó

2. *ó ti mu omi ti yó

3. *ó mu omi ti yó

'he has drunk water to satiation' or 'he is drunk on water'

ii. 1. kò mu omi yó

2. *kò mu omi kó yó

3. *ó mu omi kó yó[10]

'he is not drunk on water'

iii. 1. ó lè mu omi yó

2. *ó lè mu omi lè yó

3. *ó mu omi lè yó

'he can be drunk on water'

---

work will have to sift out such formatives which from all account should be verbs. These may include bá and fi considered in the present study.

[10]Before Neg kò and aspectual yóò , mo → n , and ó (3rd sg. Pro.) → Ø . Again, (dii2,3) are each perceptible as two sentences with the 3rd singu-

We therefore reach the conclusion that the only reason that sentences (2) and (3) of (43c,d) are unacceptable is that formatives like ti , kò , and lè may not occur within the *clause* VP. This is confirmed further by the fact that they can occur before both occurrences of the verb gbà in (41a) to give (44) and a perfective meaning (cf. (41a) and translation):

(44) Wọn ti gbà mi láyè láti kó o pọ̀ tẹ̀ jáde pẹ̀lú ti àwọn aṣíwájú onímọ̀ Yorùbá tí a ti gbà kó jọ̀ yìí.

The result (44) is perfectly acceptable because, although both occurrences of gbà are in the same sentence, they belong to different clauses.

4.1.2. Selectional restrictions. If we accept that verbs are marked with features indicating the type of NP they may take as subject or object, verbs like jẹ 'eat' will have the following features: [+animate___]; [___+edible]. This insures that except in poetry, nouns like 'tree', 'sun', and 'wisdom' cannot be subject of a sentence in which jẹ is the main verb; nor, at least in Yoruba, can things like 'oranges' or anything you cannot chew occur as its object.[11] In the same way the verbs below have the following as part of their dictionary entry:

rò	'think; ponder; report'
[+animate___]; [___+abstract]	
pin	'come to an end; bring to an end'
[___-animate]	
mú	'take'
[+animate___]	
wá	'come'
[+mobile___]	

However, when used in the SVC these specifications may change in a way that

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lar pronoun deleted. In this case the affirmative structure will be: ó mu omi ó yó .

[11]Culturally the Yoruba only suck the juice out of citrus, without eating the flesh and pulp.

the new specifications cannot be assigned independently to any of the verbs in the series. Consider sentences (45) and (31a):

(45) ọ̀rọ̀ Sàlá mú mi wá sí ilé
affair Sala take me come to house
'Sala's affair brought me home'

(31) a. wọn rò wá pin
they think us finish
'they think no further good can come out of us'

If taken severally, mú , rò , and pin in (45) and (31a) violate their lexical specifications. But if we accept that the verbal combinations mú ... wá and rò ... pin select the NP they co-occur with as these sentences suggest, we will be in the position to account for a large variety of apparently anomalous co-occurrences observed in SVC's to date. In other words, SVC-defined VP has different selectional restrictions which are not necessarily a function of those of the perceived component verbs and verb phrases.

4.1.3. Deverbalization. In Yoruba, gerundive type nominals are derived from verb phrases by means of the reduplication of the initial consonant of the VP followed by í as in (46):

(46) a. mo lọ sí ilé 'I went home'
I go to house
b. ílọ-sí-ilé 'going home'

Other prefixes for nominalizing the VP include à- , ì- , a- , àì- , as in (47):

(47) a. à-lọ 'out-going/departure'
b. ì-lọ 'the act or manner of going'
c. a-lọ 'the person who goes'
c. àì-lọ sí ilé 'failure to go home'

Apart from the observation that both àì- and the reduplication admit the so-called preverbs which in our analysis must be constituents of the AUX, while à- , ì- , and a- do not, they all impose the same restrictions on the SVC-VP:

(48) a. i. wíwá ọ̀rẹ́ mi lọ sí New York
'going to New York to look for my friend'

ii. àìwá ọ̀rẹ́ mi lọ sí New York
'failure to go to New York to look for my friend'

iii. títi wá ọ̀rẹ́ mi lọ sí New York
'the fact of having gone to New York'

iv. àìti wá ọ̀rẹ́ mi lọ sí New York
'failure to have gone to New York to look for my friend'

v. ìwá ọ̀rẹ́ mi lọ sí New York
'the act of going to New York to look for my friend'

1. *wíwá ọ̀rẹ́ mi lílọ sí New York
2. *wá ọ̀rẹ́ mi lílọ sí New York

b. i. àìmu omi yó
ii. àìlèmu omi yó
iii. mímu omi yó
iv. lílèmu omi yó
v. ìmu omi yó
1. *mu omi àìyó
2. *ìmu omi ìyó
3. *mu omi ìyó

In short, for purposes of gerundive and other VP nominalization processes, the series of verbs in the same clause in a SVC is treated exactly like the VP of a simplex sentence.

4.1.4. Verbal reiteration. For expressing intensity, repetition of an event, or plurality of action, a verb or an entire VP may be repeated. There is no limit to the number of repetitions permissible, but it is usually three or four. Thus, instead of (42b) a speaker may utter (49) for expressing the intensity of effort:

(49) ó mu omi mu omi mu omi 'he really took a long drink'
NP VP VP VP

In the same way, the only manner to express either the intensity or the repetition of the event in (38b) is (50):

(50) ó mumi yó mumi yó mumi yó 'he repeatedly got drunk on water'

Where mumi ← mu omi by means of vowel elision which is a regular process affecting verb-noun combinations.

Reiteration of this sort supports, therefore, the treatment of verbal series within the same clause as a clause VP.

4.1.5. Topicalization and relativization. In Yoruba, distributive nominals are derived from a basic noun by reduplicating everything up to the end of the first lexical root morpheme of the word. Thus we have the following:

(51) a. i. ọ̀ṣẹ̀ 'week'
ii. ọ̀ṣọ̀ọ̀ṣe (ọ̀ṣẹ̀ọ̀ṣẹ̀) 'weekly/every week'

b. i. ọ̀kan 'one'
ii. ọ̀kọ̀ọ̀kan 'one by one'

c. i. ojúmọ́ 'clear' (ojú 'eye'/face (of day) + mọ́)
ii. ojoojúmọ́ (ojúojúmọ) 'everyday'

d. i. ẹgbẹ̀rùún 'one thousand' (igba '200' X ẹ̀rún 'five')
ii. ẹgbẹẹgbẹ̀rùún 'thousands' or 'by the thousand'

Without stretching the analogy, it appears that the treatment of topicalization and relativization in Yoruba does lead one to take verbal series in a SVC as a linguistic (syntactic) unit as the word is in (51), although the process is sensitive to the morpheme structure. Take (43bi,di), for example:

(43) b. i. ó ti mu omi 'he has taken water'
he (perf) drink water

d. i. ó ti mu omi yó 'he has taken water to satiation'
he (perf) drink water become sated

When topicalization or relativization applies to the verb phrase as often happens, we have the following cases:

(52) a. Relativization

i. mímu tí ó ti mu omi

ii. títimu tí ó ti mu omi

'the fact that he drank water'
'his act of drinking water'
'the fact of his having drunk the water'

b. Topic

i. mímu ni ó ti mu omi

ii. títimu ni ó ti mu omi

'the fact is that he has drunk water'
'his accomplishment is his having drunk water'

(53) a. Relativization

i. mímu tí ó ti mu omi yó

ii. títimu tí ó ti mu omi yó

iii. *yíyó tí ó ti mu omi yó

'the fact he has drunk water to satiation'

b. Topic

i. mímu ni ó ti mu omi yó

ii. títimu ni ó ti mu omi yó

iii. *yíyó ni ó ti mu omi yó

'the fact is that he has drunk water to satiation'

Now the acceptability of the títimu version is equally marginal in everyday speech in (52) and in (53). But under no circumstances is it admissible to single out yó for topicalization or relativization just as it is not normally acceptable to reduplicate non-initial root morphemes in words, as in (51). Mímu and títimu represent the first root morpheme (and a prefix) in a clause VP consisting of a verbal series. Since there does not appear to be any exception to this treatment, we are compelled to accept that the process of relativization and topicalization confirms the syntactic treatment of the verbal series in a clause as a single entity.

To see that this is not a mere intellectual exercise, any answer to the question

(54) kí ni ó ṣe? 'What did he do?'
what (focus) he do

in respect of (43bi,di) has only the following possible answers:

(55) a. mímu ni ó mu omi
b. mímu ni ó mu omi yó[12]

4.1.6. Verb phrase modification. The prepositional phrase ní àárọ̀ 'in the morning' modifies the VP mu omi in (56):

(56) ó mu omi ní àárọ̀ 'he drank water in the morning'

If our hypothesis regarding the verbal series is correct, it should make a difference how the PP is bracketed in (56'):

(56') a. ó mu omi yó ní àárọ̀ 'he got drunk on water in the morning'

As is expected, (56')(b) and (c) are unacceptable:

(56') b. *ó [$_{VP}$[$_{VP}$[$_{VP}$ mu omi] [$_{PP}$ ní àárọ̀]] [$_{VP}$ yó]]

c. *ó [$_{VP}$[$_{VP}$ mu omi] [$_{VP}$[$_{VP}$ yó] [$_{PP}$ ní àárọ̀]]]

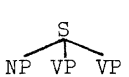
The only acceptable bracketing is (56"):

(56") ó [$_{VP}$ [$_{VP}$ [$_{VP}$ mu omi] [$_{VP}$ yó]] [$_{PP}$ ní àárọ̀] $_{PP}$]$_{VP}$

4.2. Summing up. In our own opinion, all the constraints and processes considered in this section lead to only one postulate, namely, that the phrase structure of Yoruba must include at least the following rewrite rules:

(57) a. VP → VP (PP)
b. VP → V (NP) (PP) (VP)

Now, (57) is empirically different from Lord's [1974] proposal, given here as (58):

(58) 

i.e. S → NP VP VP

[12]Ṣe ni o mu omi yo is also possible, but in this case, the initial ṣe is the usual pro-VP which renders partial or total reduplications unnecessary. Alternatively, the phrases ó mu omi and ó mu omi yó might be given in response with mimu ni understood.

Apart from the typological limitation implied in Lord's explanation,[13] there is another which imposes a maximum of two to her proposed sentence VP's. Since she herself has already reached the justifiable conclusion that SVC in KWA languages cannot be accounted for through transformation described on underlying coordinate or embedded sentences, we suggest further that her phrase-marker (58) cannot account for ordinary sentences such as (59):

(59) Olú rán wa wá iṣu gbé ko ọrẹ́ rẹ padà sí Èkó ní àná
Olu send us seek yam carry meet friend his return to Lagos yesterday
'Olu sent us yesterday to find yams and take them to meet his friend so that he (Olu's friend) can take them with him back to Lagos'

in which all the underlined elements are verbs and the sentence contains no idiomatic constituent whatsoever.

On the basis of the insuperable difficulties encountered in formulating transformational rules which would delete sentence connectives without violating constraints on transformations, Williams [1971] rejects the proposal that SVC derives from underlying coordinate sentences and proposes that the Krio Phrase Structure Grammar must, therefore, include (60):

(60) VP → V (NP) (PP) (VP)

Although (60) is more highly syntactically motivated than (58), it too, cannot account for sentences such as (59). The point must be made particularly that (60) proposes, too, an internal structure of the VP which is not supported even by data from Krio. We believe that (57) accounts adequately for SVC in Krio as in Yoruba. It does, for example, account for the modification of the clause VP just in case it is a SVC, as in (56").

George [1975] rejects Williams' otherwise well motivated proposal on dif-

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[13] In spite of the compelling nature of her argument for the causative SVC, (58) does imply that all SVC's are of the "same subject" type. Compare also Schachter's [1974] more powerful schema

S → NP AUX VP VP*

While this accounts for more than two VP's, it does not admit that all VP's in a given SVC belong to a single sentence constituent, a position which Stahlke [1974] fails to defend successfully, but which is crucially justified by our data.

ferent grounds. Unfortunately, since George's proposal by his own admission cannot account for sentences like (59) without making counterfactual claims, and since he has no suggestion at all for the so-called sequential serialization among others, there is no basis for taking it seriously.

Problems certainly remain which even our own proposal may not be able to account for. Studies in preparation will take up some of these problems. Among them are issues of semantic interpretation of SVC, given (57). For the moment, proposals by Lord [1976] and those by Li and Thompson [1978] remain to be tested. Li and Thompson [1978:241] claim for example

> that speakers infer the appropriate interpretations for such strings on the basis of four types of knowledge, pragmatic factors, certain language-independent principles, and universal linguistic principles.

The present study has, however, a bearing which is worth considering without further delay on the on-going speculation on the direction of syntactic change in languages of the KWA type.[14] Consider sentences in (61):

(61) a. Ayọ̀ gbé ẹ̀wù wọ̀ lọ́ nílé
Ayo carry garment wear go (prep)house
'Ayo put on his garment before leaving home'

b. ajá mi gbé ẹran náà mì tewé tewé
dog my carry meat the swallow leaf and leaf
'my dog swallowed the meat together with the leaves'

Now, (57) proposes two derivations for each of these sentences:

(62) $NP_1\ V_1\ NP_2\ V_2\ NP_3\ (V_3)\ PP$

(63) $NP_1\ V_1\ NP_2\ V_2\ (V_3)\ PP$

Structure (62) assumes that (61a) has an underlying structure in which V_2 has an NP object and presupposes a transformational rule which deletes it. Thus (64) should underly (61).

(64) a. Ayọ̀ gbé ẹ̀wú wọ ẹ̀wú lọ́ nílé
b. ajá mi gbé ẹran mi ẹran tewé tewé

[14] See Hyman [1975], Givón [1970, 1971, 1975, 1979], and Heine [1976, 1980].

Structure (63), on the other hand, claims that the surface structure is virtually identical to the underlying structure and dispenses with transformation altogether. The very possibility of (63) lends credence to the suggestion that clauses like (61a,b) are relics of an earlier SOV word order.

Now, the question is whether there is any synchronic evidence to support the claim of structures like (62) and (64a). The answer is yes, and we have briefly touched upon such pieces of evidence earlier in this paper. Consider the following piece of dialogue between speakers A and B:

(65) a. A: Ṣé ẹ lọ sí ọjà lónìí? 'Did you go to the market today?'
do you go to market today

B: Mo lọ (ọ). 'I went.'
I go

b. A: Kí ni ẹ gbé lọ? 'What did you take (to the market)?'
what (topic) you carry go

B: Iṣu. 'Yam.'
yam

c. A: Ṣe ẹ tà? 'Do you sell?'
do you sell

B: Mo tà. 'I sold.'
I sell

In the answer of (a) the PP's sí ọjà and ní òní are both deleted. In the exchange of (c), the NP iṣu is not realized. Why is this so? The answer lies in a principle in Yoruba which deletes the object of verbs and prepositions just in case they represent old information either in the discourse or in the sentence. This principle accounts for the missing constituents in the answers in (65a,b) and the exchange in (c). It is optional but represents a regular choice in everyday speech.

This same principle appears to account for the deletion, without trace, of relativized as well as topicalized NP's, objects of verbs or prepositions (cf. (66), below). It explains, too, the uselessness of using transitivity as a classificatory criterion for Yoruba verbs, since the objects of virtually all transitive verbs may not surface, just in case they represent old information in the discourse. Now this fact has not always been recognized in its far-reaching effects by analysts. But we are persuaded by the facts of the

language that this is a very productive synchronic process.

(66) a. ó rán mi sí ilé 'he sent me home'
he send me to house

b. Rel: èmi tí ó rán Ø sí ilé 'I whom he sent home'
I (Rel.M) he send to house

c. Rel: ilé tí ó rán mi sí Ø 'the house to which he sent me'
house (Rel.M) he send me to

but

d. Rel: òun tí ó rán mi sí ilé 'he who sent me home'
he (Rel.M) he send me to house

Now, applied to (64a,b), the result is (61a,b), since the second occurrence of èwù and ẹran represents old information in (64). To the extent that this account is correct, (63) may represent a transformationally derived structure which is on the way to being "syntactivized" in a way analogical to the "phonologization" of phonetic alternations. This explains also the tendency for (63) to be more acceptable than (62).

If the lead suggested by the facts of Yoruba is here correctly interpreted, it appears that the scope of the serial verb construction imposes at least a re-examination of the claim that sentences such as those in (61) represent relics of an earlier SOV order in Yoruba and related languages.

REFERENCES

Abimbọla, Wande and Ọlasope O. Oyelaran. 1975. "Consonant elision in Yoruba." *African Language Studies* 16:37-60.

Awobuluyi, O. 1971. "Splitting verb in Yoruba." *Annales de l'Université d'Abidjan*, Série H: Linguistique 1:151-164.

Awobuluyi, O. 1972. "On the classification of Yoruba verbs." In A. Bamgbọṣe (ed.), *The Yoruba Verb Phrase*, pp. 119-134. Ibadan: University of Ibadan Press.

Awobuluyi, O. 1973. "The modifying serial construction: a critique." *Studies in African Linguistics* 4:87-111.

Awobuluyi, O. 1976. "Towards an insertion theory of relativization." *Ife African Languages & Literature Series*, no. 2, forthcoming.

Awobuluyi, O. 1978a. *Essentials of Yoruba Grammar*. Ibadan: Oxford University Press.

Awobuluyi, O. 1978b. "Focus constructions as noun phrases." *Linguistic Analysis* 4:93-114.

Bamgboṣe, Ayo. 1972. "On serial verbs and verbal status." Paper presented at the 10th West African Languages Congress, Legon, Ghana.

Bamgboṣe, Ayo (ed.). 1972. *The Yoruba Verb Phrase*. Ibadan: University of Ibadan Press.

Bamgboṣe, Ayo. 1980. "Issues in the analysis of serial verb constructions." Paper presented at the 14th West African Languages Congress, Cotonou, Republic of Benin.

Bickerton, Derek and Talmy Givón. 1976. "Pidginization and syntactic change: from SXV and VSX to SVX." *Papers from the Parasession on Diachronic Syntax*. Chicago: Chicago Linguistic Society.

Clements, G.N. 1973. "Some syntactic characteristics of 'serial languages'." Mimeo.

Ẹkundayọ, S. Ayọtunde. 1981. "Yoruba serial verb string commutability constraint." Paper presented at the 12th Conference on African Linguistics, Stanford, April 10-12, 1981.

George, Isaac. 1975. "A grammar of Kwa-type verb serialization: its nature and significance in current generative theory." Doctoral dissertation, U.C.L.A.

Givón, Talmy. 1970. "The resolution of gender conflicts in Bantu conjunction: when syntax and semantics clash." *Papers from the Sixth Regional Meeting*, pp. 250-261. Chicago: Chicago Linguistics Society.

Givón, Talmy. 1971. "Historical syntax and synchronic morphology: an archaeologist's field trip." *Papers from the Seventh Regional Meeting*, pp. 394-415. Chicago: Chicago Linguistics Society.

Givón, Talmy. 1975. "Serial verb and syntactic change: Niger-Congo." In Charles N. Li (ed.), *Word Order and Word Order Change*, pp. 47-112. Austin: University of Texas Press.

Givón, Talmy. 1979. "Language typology in Africa: a critical review." *Journal of African Languages and Linguistics* 1:199-224.

Greenberg, J.H. 1966. "Some universals of grammar with particular reference to the order of meaningful elements." In J.H. Greenberg (ed.), *Universals of Language*, 2nd ed., pp. 73-113. Cambridge, Mass: M.I.T. Press.

Heine, Bernd. 1976. *A Typology of African Languages*. Kolner Beitrage zur Afrikanistik, 4. Berlin: Dietrich Reimer.

Heine, Bernd. 1980. "Language typology and linguistic reconstruction: the Niger-Congo case." *Journal of African Languages and Linguistics* 2:95-112.

Hyman, Larry M. 1975. "On the change from SOV to SVO: evidence from Niger-Congo." In Charles N. Li (ed.), pp. 113-148. Austin: University of Texas Press.

Li, Charles N. and Sandra A. Thompson. 1973. "Serial verb constructions in Mandarin Chinese." In Claudia Corum, et al. (eds.), *You Take the High Node and I'll take the Low Node* (Papers from the comparative syntax festival), pp. 96-103. Chicago: Chicago Linguistic Society.

Li, Charles N. and Sandra A. Thompson. 1978. "An exploration of Mandarin Chinese." In Winfred P. Lehmann (ed.), *Syntactic Typology*, pp.217-268. Austin, Texas: University of Texas Press.

Lord, Carol. 1974. "Causative constructions in Yoruba." In W.R. Leben (ed.), *Papers from the Fifth Conference on African Linguistics* (Stanford University, March 29-31, 1979), pp. 195-204. *Studies in African Linguistics*, Supplement 5.

Lord, Carol. 1976. "Evidence for syntactic reanalysis: from verb to complementizers in Kwa." *Papers from the Parasession on Diachronic Syntax*, pp. 179-191. Chicago: Chicago Linguistic Society.

Madugu, Isaac S. George. 1981. "Complex verbs in Nupe and Yoruba and the topicality hierarchy." Paper presented at the 12th Conference on African Linguistics, Stanford University, April 10-12, 1981.

Schachter, Paul. 1974. "A non-transformational account of serial verbs." In W.R. Leben (ed.), *Papers from the Fifth Conference on African Linguistics* (Stanford University, March 29-31, 1979), pp. 253-270. *Studies in African Linguistics*, Supplement 5.

Schachter, Paul. 1974. "Serial verbs as verbs: a reply to a reply." In W. R. Leben (ed.), *Papers from the Fifth Conference on African Linguistics* (Stanford University, March 29-31, 1979), pp. 278-282. *Studies in African Linguistics*, Supplement 5.

Stahlke, Herbert F.W. 1974. "Serial verbs as adverbs: a reply to Paul Schachter." In W.R. Leben (ed.), *Papers from the Fifth Conference on African Linguistics* (Stanford University, March 29-31, 1979), pp. 271-277. *Studies in African Linguistics*, Supplement 5.

Williams, Wayne R. 1971. "Serial verb constructions in Krio." In T. Givón (ed.), *Papers from the Second Conference on African Linguistics* (U.C.L.A., March 26-27, 1971), pp. 47-65. *Studies in African Linguistcs*, Supplement 2.

Williams, Marianne Mithuen. 1973. "A case of unmarked subordination in Tuscarora." In Claudia Corum, et al. (eds.), *You Take the High Node and I'll Take the Low Node*, pp. 89-95. Chicago: Chicago Linguistic Society.

Yusuf, Ọrẹ. 1980. "Verb phrase serialization in Yoruba: a transformational approach." MA Dissertation, University of Ife, Dept. of Linguistics.

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A STRENGTH HIERARCHY FOR A MORPHOPHONEMIC PROCESS IN TSWANA[1]

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A pattern of morphophonemic alternation in Tswana, a Southeastern Bantu language, is examined in the light of three models in an attempt to infer its underlying strength hierarchy. In the model derived from Lass and Anderson [1975] no explicit principles can be extracted to account for either the subset of phonemic segments taking part in the pattern or the specific segment alternations which are manifested therein. Based on a second model, Hooper [1976], the limited range of segments which do alternate are interpreted as a consequence of the Intersyllabic Principle. And finally the specific phonemic alternations manifested by the pattern appear to follow from the Inertial Development Principle in Foley [1977]. By thus incorporating Hooper's Intersyllable Principle into the Foley model, a strength hierarchy underlying the alternation principle is postulated.

1. Introduction

Phonological processes subsumed under the traditional labels strengthening and weakening have emerged over the last decade as issues confronting synchronic generative phonology. The feature framework of Chomsky and Halle [1968], for example, was unable to account for a specific strengthening pro-

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cess, namely the root initial strengthening process in Tswana, a Southeastern Bantu language. Subsequent to its brief mention in Chomsky and Halle, the Tswana process has been discussed, as in Sommerstein [1977], only as an anomaly, a complex phenomenon stretching the capacity of the generative theoretical framework. Indeed, this synchronic Tswana process, from the perspective of binary distinctive features, appears to be manifested by a non-structured set of morphophonemic alternations.

Of the two types of phonological process identified by the traditional labels strengthening and weakening, weakening appears to be the most widely attested and most often discussed. Definitions like the following, taken from the general discussion in Hyman [1975:165], illustrate the emphasis on weakening.

> ...a segment X is said to be weaker than a segment Y if Y goes through an X stage on its way to zero. Strengthening refers to the reinforcement of a segment, as when a nongeminate [p] becomes a geminate or double [pp].
>
> ...stronger segments or segment types are more resistant to weakening processes.

These definitions, it is important to note, also emphasize the role of segment strength. The implication seems to be that environmental factors play little, if any, role in conditioning not only the application of a strengthening or weakening process, but the range of phonological segments subject to that process. What follows will flesh out the details of what previously has been identified as an instance of strengthening in Tswana. In particular, it will attempt to demonstrate, first, that the alternation pattern manifesting this process is not composed of random relationships among phonemic segments and, second, that the phonological environment conditioning the process is crucial to understanding the structural nature of these relationships. To begin, I will set forth the synchronic pattern of alternation manifesting the process and identifying its motivating condition. I will then argue that a strength hierarchy underlying this process can be explicated, tentatively, by means of principles under general consideration within the scope of generative theory, but not necessarily distinctive feature theory.

2. Distribution of Alternation Pattern

Cole [1955] has claimed that a pattern of morphophonemic alternation occurring in root initial position in verbal, nominal and adjectival root forms reflects a strengthening process. This alternation pattern is shown in Table I.

Table I: The pattern of morphophonemic alternation in Tswana

1.	b	voiced bilabial stop	p'
2.	f	voiceless bilabial fricative	ph
3.	s	voiceless alveolar fricative	tsh
4.	š	voiceless alveopalatal fricative	tšh
5.	x	voiceless velar fricative	kxh
6.	h	glottal glide	kh
7.	-	(stem initial vowel)	k'
8.	l	alveolar lateral approximant	t'
9.	r	alveolar trill	th
10.	m	bilabial nasal	m
11.	n	alveolar nasal	n
12.	ny	palatal nasal	ny
13.	ng	velar nasal	ng
14.	p'	voiceless bilabial ejective	p'
15.	ph	aspirated voiceless bilabial plosive	ph
16.	t'	voiceless alveolar ejective	t'
17.	th	aspirated voiceless alveolar plosive	th
18.	k'	voiceless velar ejective	k'
19.	kh	aspirated voiceless velar plosive	kh
20.	ts'	voiceless alveolar affricate (ejective)	ts'
21.	tsh	aspirated voiceless alveolar affricate	tsh
22.	dž	voiced alveopalatal affricate	dž
23	tš'	voiceless alveopalatal affricate (ejective)	tš'
24.	tšh	aspirated voiceless alveopalatal affricate	tšh
25.	kxh	aspirated voiceless velar affricate	kxh
26.	tl'	lateralized voiceless alveolar ejective	tl'
27.	tlh	lateralized aspirated alveolar plosive	tlh

As we can see, not all phonemic segments participate in this alternation pattern. Only the segments paired with the numerals 1-9 alternate with other phonemic segments. Furthermore, by comparing the segments in the two columns we notice that those on the left should be considered underlying segments. A p' segment in the right column, for example, does not allow us to predict its alternate in the left column. We can, however, predict the segments which occur in the right column given those in the left. Finally, we should note that the segments not participating in the alternation can be classified as

nasal , affricates and voiceless stops (with their various secondary forms) and that the alternation is not limited to consonants, e.g. the *vowel* > k' *vowel* alternation in Table I, 7.[2]

2.1 Verbal roots. Consider now the manifestation of the Tswana process as it is found in verbal, nominal and finally adjectival root forms. In the class of verb roots, the alternation pattern occurs after a low toned nasal consonant or a high toned high front vowel. The low toned nasal consonant, as Table II shows, marks the first person singular object (1pso) and is homorganic with the root initial segment in four different articulatory positions. Since the present state of research on Tswana does not allow us to choose one of these four surface nasal segments as an underlying form in this or subsequent instances, the underlying nasal in prefixes will be represented by -N- .

Table II: The alternation pattern reflected in verbal root forms adjoined to the first person singular object (1pso) prefix

1.	xòbónà	'to see'	xòmp'ónà	'to see me'
2.	xòfɛ́nyà	'to conquer'	xòmphɛ́nyà	'to conquer me'
3.	xòsɛ́xà	'to cut'	xòntshɛ́xà	'to cut me'
4.	xòšápà	'to thrash'	xònỳtšhápà	'to thrash me'
5.	xòxátà	'to tread on'	xòngkxhátà	'to tread on me'
6.	xòhúmísà	'to enrich'	xòngkhúmísà	'to enrich me'
7.	xòárábà	'to answer'	xòngk'árábà	'to answer me'
8.	xòlómà	'to bite'	xònt'ómà	'to bite me'
9.	xòrátà	'to love'	xònthátà	'to love me'

The alternation pattern also occurs in verb roots in another prefixal environment, the high toned vowel ɪ́ . This vowel, as Table III illustrates, marks the Reflexive.

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[2]Cole [1955] assumes, by positing a glottal stop as the weak alternate of k' , that the alternation manifesting the strengthening process is limited entirely to consonant segments, i.e. ? and k' would alternate. There is no evidence, however, that a glottal stop functions as an underlying or surface phonemic segment in Tswana in the pattern under discussion or in any other phonological pattern. Moreover, a glottal stop is not mentioned at any other point in Cole [1955] or Cole [1962].

Table III: The alternation pattern reflected in verbal root forms adjoined to the Reflexive prefix

1.	xòbónà	'to see'	xòípʼónà	'to see oneself'
2.	xòfísà	'to burn'	xòíphísà	'to burn oneself'
3.	xòséxà	'to cut'	xòítshéxà	'to cut oneself'
4.	xòšápà	'to thrash'	xòítšhápà	'to thrash oneself'
5.	xòxólɛ́xà	'to tie'	xòíkxhólɛ́xà	'to tie oneself'
6.	xòhúmísà	'to enrich'	xòíkhúmísà	'to enrich oneself'
7.	xòárábà	'to answer'	xòíkʼárábà	'to answer oneself'
8.	xòlómà	'to bite'	xòítʼómà	'to bite oneself'
9.	xòrátà	'to love'	xòíthátà	'to love oneself'

The alternation pattern in verb roots, therefore, occurs after prefixes containing a syllabic nasal segment or a high toned high front vowel. To facilitate subsequent discussion, the following definitions will be observed: a strong segment (one in the right column in Table I) is either derived by or not subject to the strengthening process, while a weak segment (one in the left column in Table I) is the source from which a strong segment is derived.

2.2 Nominal roots. Like verbal root forms, nominal roots manifest the alternation pattern in initial position. In general, the pattern occurs when particular prefixes marking both class and number are adjoined to nominal root forms. The alternation pattern is perhaps most clear when the class 11/10 markers, as shown in Table IV, are prefixed to multisyllabic roots.

Table IV: The alternation pattern reflected in multisyllabic nominal root forms adjoined to the class 11/10 prefixes

	SINGULAR		PLURAL
1.	lòbàkà	'time'	dìpʼàkà
2.	lòfúkà	'wing'	dìphúkà
3.	lòsíkà	'vein'	dìtshíkà
4.	lòšèkèdì	'famine'	dìtšhèkèdì
5.	lòxóŋ̀	'piece of firewood'	dìkxhóŋ̀
6.	---	---	---
7.	lòètɔ̀	'journey'	dìkʼètɔ̀
8.	lòlémè	'tongue'	dìtʼémè
9.	lòrákɔ̀	'stone wall'	dìthákɔ̀

The segments which alternate in initial position in nominal roots are identical to those segments which alternate in verb roots. Furthermore, strong segments occur in initial position only when the class 11/10 plural marker dì- is prefixed. The corresponding weak segments occur with the singular

marker.

Consistent with the behavior of multisyllabic roots, monosyllabic root forms to which the class 11/10 singular and plural markers are prefixed manifest the expected pattern of alternation. Strong segments appear when the plural marker is prefixed to a monosyllabic root while the corresponding weak segments appear after the singular marker. Though monosyllabic and multisyllabic root forms both manifest the expected pattern, the class 11/10 plural marker does not maintain a consistent morphophonemic form when prefixed to monosyllabic roots, taking the form dì-N- , as Table V reveals.

Table V: The alternation pattern reflected in monosyllabic nominal root forms adjoined to the class 11/10 prefixes

	SINGULAR		PLURAL
1.	lòbú	'black soil'	dìm̀p'ú
2.	---	---	---
3.	lòsí	'shore, edge'	dìǹtshí
4.	lòšó	'death'	dìnỳtšhó
5.	---	---	---
6.	---	---	---
7.	---	---	---
8.	lòdí	'bark of a thorn tree'	dìǹt'í
9.	lòré	'spear handle'	dìǹthé

The nasal segment in this marker, like the nasal in the lpso marker prefixed to verbal roots, is homorganic with the root initial segment.

The class 11/10 plural marker, so it appears, varies in form when prefixed to nominal roots of different syllable length. Further examination shows that this allomorphic variation is conditioned by the placement of stress on the penultimate syllable of a word. As argued elsewhere [Schaefer 1980], the class 11/10 plural marker, and all other markers manifesting this pattern of allomorphic variation, should be analyzed as including a nasal segment at the underlying level. In derivations involving multisyllabic roots, i.e. those where stress does not fall on the syllabic nasal segment, the nasal is deleted.

In contrast to the effect of class 11/10, the effect of prefixing the class 9/10 markers to nominal roots results in no root initial alternation. The Tswana strengthening process, despite this lack of alternation, is still

apparent. It is made apparent by the fact that weak segments fail to appear in root initial position when the class 9/10 singular and plural markers are prefixed to root forms, except in recently borrowed words. Moreover, the allomorphic behavior of the class 9/10 singular and plural markers parallels that of the class 11/10 plural marker. Forms composed of the class 9/10 markers and multisyllabic roots, as presented in Table VI, do not manifest at the surface level root initial weak segments.

Table VI: The alternation pattern reflected in multisyllabic nominal root forms adjoined to the class 9/10 prefixes

	SINGULAR		PLURAL
1.	p'ótsɔ̀	'question'	dìp'ótsɔ̀
2.	---	---	---
3.	---	---	---
4.	---	---	---
5.	kxhámɛ́lɔ̀	'bucket'	dìkxhámɛ́lɔ̀
6.	khúmɔ̀	'wealth'	---
7.	k'ǐtšɔ̀	'knowledge'	---
8.	t'ɔ̀ɔ̀tšɔ̀	'whetstone'	dìt'ɔ̀ɔ̀tšɔ̀
9.	thìpá	'knife'	dìthìpá

Similarly, forms composed of class 9/10 markers prefixed to monosyllabic roots, shown in Table VII, do not manifest weak segments.

Table VII: The alternation pattern reflected in monosyllabic nominal root forms adjoined to the class 9/10 prefixes

	SINGULAR		PLURAL
1.	m̀p'à	'cane, rod'	dìm̀p'à
2.	---	---	---
3.	ǹtshì	'fly'	dìǹtshì
4.	nỳtšhú	'gizzard'	dìnỳtšhú
5.	---	---	---
6.	---	---	---
7.	ngǩ'ú	'sheep'	dìngǩ'ú
8.	ǹt'á	'louse'	dìǹt'á
9.	ǹthɔ́	'sore, wound'	dìǹthɔ́

However, the class 9/10 plural marker exhibits allomorphic variation identical to the class 11/10 plural marker, being dì-N- before monosyllabic roots and dì- before multisyllabic roots. The presence of only strong segments in root initial position following the class 9/10 plural marker can thus be

attributed to an underlying nasal segment. Following this line of reasoning, the presence of only strong segments in root initial position after the class 9/10 singular marker can also be accounted for. When prefixed to monosyllabic root forms, the class 9/10 singular marker appears as -N- . Given the allomorphic pattern among the plural markers, one would expect this singular marker, when prefixed to multisyllabic forms, to be realized as a zero form, which it is. We can then posit a nasal segment at the underlying level which will condition the presence of only strong segments after all class 9/10 markers. A surface level nasal segment, therefore, precedes each root initial strong segment occurring in monosyllabic noun roots but is apparently deleted in derivations involving multisyllabic root forms.

The lack of root initial weak segments is not the only evidence that the strengthening process has applied to forms containing the class 9/10 markers. Examination of nominalization processes involving multisyllabic roots shows the presence of the familiar alternation pattern. In Table VIII, forms consisting of the class 9/10 singular marker and a nominalized multisyllabic root are paired with the corresponding verbal root forms.

Table VIII: The alternation pattern reflected in the nominalization process affecting multisyllabic root forms as they occur in the class 9/10 singular construction

	INFINITIVE		SINGULAR	
1.	xòbótsà	'to ask'	p'ótšò	'a question'
2.	---	---	---	---
3.	---	---	---	---
4.	---	---	---	---
5.	xòxámà	'to milk'	kxhámɛ́lò	'a bucket'
6.	xòhúmà	'to become rich'	khúmò	'wealth'
7.	xòítsè	'to know'	k'ítšò	'knowledge'
8.	xòlòòtsà	'to sharpen'	t'òòtšò	'a whetsone'
9.	xòrìpà	'to cut, slash'	thìpá	'a knife'

The root initial alternation pattern is apparent. Given this potential evidence from nominalization, the presence of only strong segments in initial position in forms combining the class 9/10 singular marker and a multisyllabic root, appears not fortuitous, but determined. Although the multisyllabic nominalized forms do not reveal the motivation for the exclusive appearance

of strong segments, the presence at the surface level of a nasal segment in the class 9/10 singular marker prefixed to monosyllabic roots does provide, if not the motivating condition, at least a factor which must be accounted for in any comprehensive analysis.

The alternation behavior following class 9/10 and class 11/10 markers up to this point has occurred after the plural marker dì- . A convincing argument that the form dì- is not sufficient to motivate the alternation pattern is shown by the behavior of the class 7/8 plural marker. When either the class 7/8 singular or plural marker is prefixed to a root, as in Table IX, no alternation in root initial position occurs. More important, the class 7/8 plural marker consists of the form dì- .

Table IX: Multisyllabic nominal root forms adjoined to the class 7/8 prefixes

	SINGULAR		PLURAL
1.	sèbétà	'liver'	dìbétè
2.	sèfàlà	'grain bin'	dìfàlà
3.	sèsényì	'destructive person'	dìsényì
4.	sèšúšù	'deaf person'	dìšúšù
5.	sèxódì	'hawk'	dìxódì
6.	sèhúbà	'ant-heap'	dìhúbà
7.	sèòlò	'breast'	dìòlò
8.	sèlépè	'ax'	dìlépè
9.	sèròpè	'thigh'	dìròpè

Morphophonemic alternation in root initial position, therefore, is evident only after prefixes which can be analyzed at the underlying level as manifesting a nasal consonant.

2.3 Adjectival roots. Adjectival root forms in Tswana, just as verbal and nominal roots, manifest the alternation pattern. Adjectival forms observe rules of concord such that each adjectival form is marked to reveal the class and number of the nominal form it modifies. The adjective concord marker showing grammatical agreement with nominal roots marked for class 9/10 singular is é-Ǹ- when prefixed to monosyllabic roots and é- when prefixed to multisyllabic roots. Notice that this pattern of allomorphic variation is similar to that found with nominal forms and, as Table X and Table XI reveal,

the markers exhibit the expected pattern of morphophonemic alternation.

Table X: Multisyllabic nominal root forms adjoined to the class 7/8 prefixes

	STEM		SINGULAR FORM
1.	-bé	'bad'	ém̀p'é
2.	---	---	---
3.	---	---	---
4.	-šá	'new'	éǹytšá
5.	---	---	---
6.	---	---	---
7.	---	---	---
8.	---	---	---
9.	---	---	---

Table XI: The alternation pattern reflected in multisyllabic adjectival root forms adjoined to the class 9/10 singular concord prefix

	STEM		SINGULAR FORM
1.	-bɔ̀tlánà	'small'	épɔ̀tlánà
2.	---	---	---
3.	-sésàné	'slender'	étshésàné
4.	---	---	---
5.	-xólò	'large'	ékxhólò
6.	---	---	---
7.	---	---	---
8.	---	---	---
9.	---	---	---

The plural concord marker, showing agreement with nominal roots marked for class 7/8, 9/10, and 11/10 plural, also exhibits the alternation pattern. As Table XII and Table XIII indicate, the plural concord marker is tsé-dì-Ǹ- when prefixed to monosyllabic roots and tsé-dì- when prefixed to multisyllabic roots.

Table XII: The alternation pattern reflected in multisyllabic adjectival root forms adjoined to the class 7/8, 9/10 and 11/10 plural concord prefix

	STEM		PLURAL FORM
1.	---	---	---
2.	---	---	---
3.	-sésàné	'slender'	tsédìtshésàné
4.	-šwèú	'white (of cattle)'	tsédìtshwèú

	STEM		PLURAL FORM
5.	-xólòxólò	'very old'	tsédìkxhólòxólò
6.	-húbǐdù	'red'	tsédìkhúbǐdù
7.	-wèbù	'roan, grey (of cattle)'	tsédìkwèbù
8.	-léélé	'long'	tsédìtéèlé
9.	---	---	---

Table XIII: The alternation pattern reflected in monosyllabic adjectival root forms adjoined to the class 7/8, 9/10 and 11/10 plural concord prefix

	STEM		PLURAL FORM
1.	-bé	'bad'	tsédìmpé
2.	---	---	---
3.	---	---	---
4.	-šá	'new'	tsédìnỳtšhá
5.	---	---	---
6.	---	---	---
7.	---	---	---
8.	---	---	---
9.	---	---	---

Once again, the placement of stress on the penultimate syllable conditions allomorphic variation in the concord prefix so that nasal consonants precede strong segments occurring in monosyllabic forms but are deleted before strong segments occurring in multisyllabic root forms. Nonetheless, as the behavior of the class 7/8 marker showed, a nasal consonant is the primary motivation for the alternation pattern shown in Table I.

3. Examination of Theoretical Models

Using the above brief discussion as a base, we can describe the root initial alternation pattern in terms of the following rules.

(1) $S \rightarrow \begin{bmatrix} S \\ +\text{Strong} \end{bmatrix} / N.\_\_\_\_$

(2) $S \rightarrow \begin{bmatrix} S \\ +\text{Strong} \end{bmatrix} / [+\text{Reflexive}]\_\_\_\_$

(3) $N \rightarrow \emptyset / \_\_\_\_. (CV)_0C \begin{bmatrix} V \\ +\text{stress} \end{bmatrix} \begin{bmatrix} \\ -\text{verb} \end{bmatrix}$

Rule 1 states that strong segments occur after a syllable boundary preceded by a nasal consonant while Rule 2 states that strong segments also occur after the Reflexive morpheme. Finally, Rule 3 states that the syllabic nasal

is deleted when it precedes the stressed syllable. In the following, attention will be focused on rules 1 and 3, leaving rule 2 for discussion at another time.

Though we have attempted to state the generalizations describing the pattern of morphophonemic alternation in Tswana, a structural framework within which they can be understood has not been established. In particular, whatever structure is hypothesized to underlie the alternation pattern should answer both a general and a specific question. At a general level, it should answer why the members of this subset of phonemic segments, rather than any other, change in strength value. At a more specific level, it should provide a principled account of the alternation relationships manifesting the changes in strength value. In order to answer these questions, three models of strength phenomena will be examined. The model of Lass and Anderson [1975], relying on the historical development of phonological processes in various language families, articulates the notion strength with respect to the segment types manifesting those processes. Changes in strength value are then specified in terms of these segment types. In a second model, Hooper [1976], strength is defined with respect to segment and position values interrelated by a network of syllable-based theoretical mechanisms. A change in strength value in this model is specified as a process of minimal feature change. The more recent model of Foley [1977] articulates a comprehensive strength principle which ties changes in strength value to the interaction of position and segment strength. In the end, a strength hierarchy will be postulated which appears to follow from principles explicitly discussed in Hooper and Foley.

3.1 Lass and Anderson [1975]. The theoretical framework of Lass and Anderson [1975] provides a rationale for the notion strength based on historically reconstructed patterns of sound change. For Lass and Anderson, certain positions within a word are subject to a particular phonological process, or with sufficient time, a sequence of processes. Either at a position adjacent to word boundary or at a position between two vocalic segments within a word, Lass and Anderson note the historical sequence of phonological processes which occur. Most important for our purposes is that arrangement of the segments

manifesting these processes in their historical order gives rise to a hierarchy of segment strength. This hierarchy is viewed by Lass and Anderson as the reflection of a continuum of complex phonetic properties defining the notion segment strength. Strength, accordingly, is equated with resistance to airflow through the vocal tract, and, equally, with reduced output of periodic acoustic energy. It follows that the strongest segment type exhibits both the greatest resistance to airflow through the vocal tract and the least amount of acoustic energy, while the opposite obtains for the weakest segment type. Phonological processes subsumed under the labels strengthening and weakening, therefore, are defined as increases or decreases in value, respectively, on this hierarchy.

A further important aspect of a strengthening or weakening process is its conditioning environment, in particular what Lass and Anderson [1975] call "protection". Protection for a weakening process is defined along the following lines: A weakening environment, which is other than the maximally weak environment for a given process, will tend to alter the manifestation of that process, relative to the maximally weak environment. In the historical development of Proto-Dravidian k , Lass and Anderson indicate that k > x between two vowels (V___V) but that k > g between a nasal consonant and a vowel (N___V). The point to notice is that the maximally weak environment V___V allows the k to weaken more (voiceless fricative being weaker than voiced stop) than the less than maximally weak environment N___V. In this single weakening process, the strength value of one segment type, i.e. nasal, acts to protect another strength value, i.e. voiceless fricative, from being realized. The implication we draw is that segment strength, as delineated on a strength hierarchy, may define not only the alternation values manifesting a process but the value which protects or constrains the range of realizable segments.

Though Lass and Anderson [1975] provide both a rationale for the notion segment strength and an explicit framework within which to view other phonological processes, this framework fails to answer either of the questions set forth at the outset. To see this more clearly, let us examine with respect to the Tswana process the strength hierarchy in Table XIV derived from Lass

and Anderson.[3]

Table XIV: A strength hierarchy following from Lass and Anderson [1975]

vowel	glide	liquid	fricative	affricate/ aspirated stop	voiced stop	voiceless stop
1	2	3	4	5	6	7

A singular omission in this hierarchy, given Lass and Anderson's [1975] notion of protection, is a strength value for the segment type nasal. To ignore the value of nasal relative to other segment types may be to ignore crucial information bearing on the outcome of a strengthening process. Secondly, though the function of syllable boundary in the Tswana process is not entirely clear at this time, the fact that the Lass and Anderson strength hierarchy is determined solely by reference to word boundary, not syllable boundary or possible root boundary, may limit its applicability. As an aside, the failure to consider the conditioning function of syllable boundary may have prevented further explication of the notion protection.

A second deficiency of this hierarchy, at least as far as the Tswana data are concerned, is that it may not be sufficiently complex. For example, the segment type liquid, consisting of l and r, is assigned by the Lass and Anderson [1975] hierarchy to a single value, but its strengthened forms reflect

[3]Lass and Anderson [1975] assume that in the formation of any phonological segment two separate phonetic gestures are involved: a supraglottal gesture of occlusion or approximation and a glottal gesture. They also assume that a voiceless unaspirated stop consists of two temporal phases. As a consequence, they identify two types of phonological process. In the type Opening, a continuant release phase is extended through a series of stages so that a t can be weakened to a glide h. In the type Sonorization, the glottal gesture increases progressively so that a t can weaken to vowel or be deleted. In Tswana both of these process types are incorporated in a single process, e.g. b > p illustrates the Sonorization process and s > tsh illustrates the Opening process. A synthesis of the hierarchies Lass and Anderson base on each of these process types is therefore presented for the single Tswana process.

segment types of different values.[4] That is, r strengthens to th , an increase from value 3 to value 5 in Table XIV, and l strengthens to t , an increase from value 3 to value 7. Though not every segment type in Tswana follows this pattern, some measure must account for this difference in strengthened values. A potential additional strength measure, a secondary strength hierarchy, can be found in Lass [1971]. This secondary hierarchy is based on positional criteria such that strength values are assigned to segments on grounds of place of articulation, velar, alveolar and bilabial in increasing magnitude of strength value. Even with the introduction of a secondary hierarchy, the segment type liquid is problematic, since it has two members and both are assigned to the same place of articulation, alveolar. The strengthening process in Tswana would thus appear to require a more complex hierarchy than either Lass and Anderson [1975] or Lass [1971] would suggest.

Finally, the Lass and Anderson [1975] hierarchy suggests that the changes in strength value manifested by the segment alternations in the Tswana process are arbitrary and inconsistent. The aspirated segment ph , for example, fails to strengthen in Tswana even though a segment with a value higher on the strength hierarchy in Table XIV, the voiced stop b , and a segment assigned a lesser value, h , do strengthen. More generally, the affricated and aspirated forms, assigned a lower strength value than voiced stop, do not function as input at anytime to the Tswana process. But why? Another point to notice is that the strength value of a particular segment at input is not usually consistent with the respective strength values at output. The Tswana glide h , for example, would increase by three values on the hierarchy in Table XIV (value 2 - value 5), but vowel would increase by six (value 1 - value 7). In effect a segment with a higher input value, h , is depreciated with respect to a segment with a lower input value, vowel. The behavior of the segment type liquid, with respect to fricative, provides a parallel case. The problem is that no rationale can be gleaned from Lass and Anderson for this behavior,

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[4]It has been suggested that [l] may be a realization of /d/ since [d] and [l] are allophones. However, [d] occurs only before the high vowels /i/ and /u/ , while [l] occurs before the remaining five vowels. The more limited distribution of [d] thus argues that [d] is a realization

giving the alternation pattern an arbitrary and inconsistent appearance. As an issue of more general standing, the tremendous power inherent in the Lass and Anderson framework should not be overlooked. Since single- and multi-valued increases in strength are countenanced, what is to prevent l from strengthening to kxh ? A principle of restraint seems to be lacking.

3.2 Hooper [1976]. In contrast to Lass and Anderson [1975], Hooper [1976] appears to provide an answer to one of the questions regarding the Tswana strengthening process. The theoretical framework developed by Hooper provides a possible motivation for the change in strength value affecting only a subset of phonemic segments. We can also interpret Hooper's model as providing a more explicit treatment of the Lass and Anderson notion of protection by its explicit treatment of segment strength and position strength. The theoretical mechanisms provided by Hooper, however, fail to answer the other question regarding the Tswana process, the one dealing with the amount of changes each segment undergoes.

Before examining how Hooper [1976] interrelates position and segment strength, it may be well to examine the justification for these two constructs. With respect to position strength, for instance, there appears to be an assymetry in the distribution of phonological processes as they apply to syllable initial and syllable final position. The process whereby glides are realized as fricatives, as in Spanish, typically occurs in syllable initial not syllable final position. In like fashion, processes of consonant deletion typically occur in syllable final, not syllable initial position. It also appears that syllable initial position manifests greater strength value than syllable final position, when one considers the postulated universal structure CV.

In addition to noting an assymetry in the application of certain processes to various syllable positions, Hooper [1976], as others before her, observes that the distribution of segment types to positions within a syllable is non-random. Certain syllable positions are characteristically occupied by certain segment types. Jespersen, as presented in Hooper, asserted that sounds group

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of phonemic /l/.

themselves in a syllable according to a sonority hierarchy, the most sonorant segment occurring at the center and the least sonorant at the margin. Similarly, de Saussure relied on the phonetic dimension of aperture to define a positional structure of the syllable comparable to that of Jespersen.

In order to relate inherent position strength as defined by syllable structure to inherent segment strength, Hooper [1976] advances a network of theoretical mechanisms. The Syllable Structure Condition (SSC) appears to be pivotal in this network. It specifies the segment strength values allowed in various intrasyllable positions. The segment value itself, in line with Hooper's proposed universal strength hierarchy, is assigned by a cover feature to each segment. It also specifies the conditions for syllable boundary placement and motivates processes where strength value is changed. When required by the SSC, Universal Feature Redundancy Rules (UFRR), formulas which make explicit the strength relation between segments on the strength hierarchy, alter the strength value of a segment by changing its feature composition. Governing the feature changing capacity of the UFRR is the Principle of Minimal Feature Change. The final mechanism in Hooper's theoretical framework is the Intersyllable Condition, whose principle function is to control the strength relations of segments in contiguous syllables.

As far as the Tswana strengthening process is concerned, Hooper's [1976] twin constructs of position and segment strength appear to find direct application. These constructs allow the Tswana process to be defined as the outcome of a conflict motivated by the Intersyllable Condition. The Intersyllable Condition requires that the strength value of a syllable initial segment exceed the strength value of the final segment of the preceding syllable. We can then answer the general question introduced at the outset by assuming a conflict exists between inherent positional strength value and inherent segment strength value. That is, a conflict appears to exist between the strength value accorded syllable initial position relative to the preceding syllable final position and the strength value accorded segment types occupying those two positions. The pivotal segment type in this conflict is the class of nasal consonants. We will thus assume that the segment type nasal, in a position which precedes a syllable initial segment, provides an absolute strength

value which the syllable initial segment must exceed.

In line with the above analysis of the Intersyllable Condition and the proposed function of the class nasal, we can construct a strength hierarchy such as that in Table XV.

Table XV: A strength hierarchy following from Hooper [1976]

vowel	glide	liquid	voiced stop	voiceless fricative	nasal	voiceless stop	affricate
1	2	3	4	5	6	7	8

On this hierarchy, special notice should be taken of the value assigned the class nasal, namely a value between the classes voiceless fricative and voiceless stop. The remaining strength value assignments are basically in line with the discussions in Hooper [1976] and Lass and Anderson [1975].

Though the Intersyllable Condition may provide initial understanding of the motivation for the Tswana process, we still must test whether the remainder of Hooper's framework can account for the specific changes in strength value. As an initial test of the Principle of Minimal Feature Change, let us examine the strengthening of the voiced stop, b . As predicted by this principle, bilabial voiced stop is strengthened to the bilabial voiceless ejective, rather than the aspirated bilabial form: the voiceless ejective differs from the voiced stop by only one feature specification, compared to the two feature specifications distinguishing the voiced and voiceless aspirated forms. Table XVI presents the relevant feature specifications for these segments.

Table XVI: Feature specifications for the bilabial stop b and bilabial stop segments with a value greater than nasal

	b	p'	ph
consonantal	+	+	+
sonorant	-	-	-
anterior	+	+	+
coronal	-	-	-
voice	+	-	-
continuant	-	-	-
strident	-	-	-
del rel	-	-	-
tense	-	-	+
lateral	-	-	-

In contrast to its correct prediction with bilabial stop, the Principle

of Minimal Feature Change fails to correctly predict the strengthened alternate for fricatives and liquids, to say nothing of glides and vowels. For example, consider the feature specifications for the fricative s and the compliment set of alveolar segments assigned a value greater than nasal, as shown in Table XVII.

Table XVII: Feature specifications for the alveolar fricative s and alveolar segments with a value greater than nasal

	s	tl'	tlh	t'	th	ts'	tsh
consonantal	+	+	+	+	+	+	+
sonorant	-	-	-	-	-	-	-
anterior	+	+	+	+	+	+	+
coronal	+	+	+	+	+	+	+
voice	-	-	-	-	-	-	-
continuant	+	-	-	-	-	-	-
strident	+	-	-	-	-	+	+
del rel	-	-	-	-	-	+	+
tense	-	-	+	-	+	-	+
lateral	-	+	+	-	-	-	-

Two segments, t and ts , rather than a single segment, differ from s by a minimal number of feature specifications, in this case two. However, neither of these segments is the correct strengthened alternate; the required strengthened alternate, tsh , is distinguished from s by three feature specifications. The Principle of Minimal Feature Change thus fails to predict the strengthened alternate of s .

The class liquid presents a similar case. For the sake of argument, let us restrict discussion to the feature specifications for the liquid segments and the target set of alveolar segment types greater than nasal with which the liquids must alternate, the class of voiceless stops, as in Table XVIII.

Table XVIII: Feature specifications for liquid segments and alveolar stop segments with a value greater than nasal

	l	r	t'	th
consonantal	+	+	+	+
sonorant	+	+	-	-
anterior	+	+	+	+
coronal	+	+	+	+
voice	+	+	-	-
continuant	+	+	-	-

	l	r	t'	th
strident	-	-	-	-
del rel	-	-	-	-
tense	-	-	-	+
lateral	+	-	-	-

The liquid segment r differs from the stop t by three feature specifications and from the aspirated stop th by four, while the other liquid segment, l , differs from the stop t by four specifications and from the aspirated stop th by five. It follows from the Principle of Minimal Feature Change that the strengthened alternate of r should be t . But it follows just as consistently that the strengthened alternate of l should be t also. Contrary to these predictions, the strengthened alternate of r must be th and and the strengthened alternate of l must be t . In order to avoid alternating both liquids with t the Principle of Minimal Feature Change could require that r alternate with t and l alternate with th , since r differs from t by fewer feature specifications than l does. This proposal, however, is directly contrary to the phonological facts in Tswana.

As a final measure to preserve a feature approach to the Tswana strengthening process, a more explicit specification of the particular input and output segments of the process might be formulated. One could provide each segment with a separate cover feature. A Feature Redundancy Rule might then state the strength relations between specific segments, thereby formally relating the input and output segments. There is in this measure, however, no predictive value. It merely states the relationship holding between a pair of segments without explicating the basic principle providing for that relationship.

3.3 Foley [1977]. The major weakness of the approach to the Tswana strengthening process based on Hooper [1976] was its inability to predict the amount of strengthening undergone by each segment. This failure was a consequence of the apparent lack of a comprehensive strength principle. In Foley [1977] a possible comprehensive principle can be identified. Just as Hooper may be interpreted as providing a re-characterization of Lass and Anderson's [1975] notion protection, so Foley can be interpreted as providing a re-characteriz-

ation of the notion Minimal Feature Change.

According to Foley [1977] the internal structure of a phonological process is revealed by the behavior of phonological segments. Phonological processes in turn are governed by principles such as the Inertial Development Principle (IDP). This principle assumes that phonological segments can be ranked in such a way as to reflect their relative inherent strength. In a similar manner, it assumes that the positions occupied by segments within words and syllables can be ranked as to their strength value. In the context of these two assumptions, the IDP stipulates that a process of the type strengthening applies preferentially and most extensively to a strong segment in a strong position. Likewise, the IDP stipulates that a process of the type weakening applies preferentially and most extensively to a weak segment in a weak position. The IDP, hence, specifically addresses itself to the relative order in which segments are subject to a phonological process and to the relative extent segment value will strengthen or weaken.

Foley [1977] advances a number of tests whereby the ranking of position and segment strength can be measured. How does the Tswana process fair under these tests? The position test suggests that the Tswana process does occur in a strong position. As a test of position strength, the applicability of a particular process to a set of positions is assessed. The Tswana process applies only in syllable internal position, which Foley, like Hooper, assumes to have greater strength value than syllable final position.

Under the terms of the second test, the inherent strength value of phonological segments is measured.[5] For this test, the effect of a single process, applying to a particular position, is assessed with respect to a set of segments. Measuring the strength value of segment types in Tswana by this test we find that not all are subject to the strengthening process, voiceless

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[5]A clear test of segment strength is shown in the intervocalic spirantization process as it applied in the Indo-European languages. The process did not apply in a symmetrical pattern to the stop segments b, d and g : g spirantized in some languages, g and d spirantized in other languages, g, d and b spirantized in yet other languages and finally, spirantization failed to occur in some languages.

stop, affricate and nasal, for instance, do not undergo a change in strength value. If the alternation pattern in Tswana does indeed reflect a strengthening process, then what are the strongest segment types, i.e. what is the hierarchy of segment strength underlying the process? Furthermore, within the Foley model, this hierarchy must reflect the IDP, i.e. the strongest segments in a position of strength must strengthen more than weaker segments. Since the process appears to occur only in a strong position, identification of the strongest segment becomes our major task.

In an attempt to infer a strength hierarchy for the Tswana process, let us consider Foley's discussion of depotentiation, the manner in which segments undergo a change in strength value. Two modes of depotentiation are advanced by Foley. Simple promotive depotentiation requires that a segment be strengthened to the next stronger value on a hierarchy, usually an increase of one. The other mode of depotentiation also requires incremental changes in value, but it allows, for example, a segment with the greatest value on a hierarchy to strengthen to a segment with the weakest value. Foley identifies this model as a modular depotentiation.

At the most general level, promotive depotentiation would require the arrangement of segment types such that each segment undergoing change would increase by one value. The resulting hierarchy would appear to juxtapose strong and weak segments, thus questioning whether it is a hierarchy at all. Moreover, it is not clear how this arrangement could be consistent with the IDP. On the other hand, modular depotentiation may be more suitable. Since the forms of voiceless stop, affricate and nasal fail to function as input to the process, but function in the case of voiceless stop and affricate as output, these segment types could be assigned to a low strength value, such as in Table XIX. We might then look to this hierarchy as underlying the Tswana alternation pattern.

Table XIX: An initial strength hierarchy following Foley's [1977] modular depotentiation

affricate	voiceless stop	nasal	vowel	glide	liquid	voiced stop	voiceless fricative →
1	2	3	4	5	6	7	8

Two objections arise from the application of modular depotentiation to the hierarchy in Table XIX. First, this hierarchy reflects no coherent phonological structure. Each of the hierarchies discussed by Foley can be viewed as a structured phonological quality, such as resonance or place of articulation. Secondly, and more important, this hierarchy implies that the strongest segment f would strengthen by one unit while a weaker segment b would strengthen by three units. This clearly violates the IDP, where stronger segments should strengthen more than weaker ones. To remedy this objection by transposing on the hierarchy the segment types voiceless stop and affricate, or voiced stop and voiceless fricative, does little, since the type liquid, still lower on the hierarchy than fricative, would nonetheless increase by four values compared to the increase of two values shown by fricative. The IDP would thus still be violated. As a final point, it is not clear that modular depotentiation would allow any but the highest valued segment on a hierarchy to strengthen to the lowest value.

As another alternative involving modular depotentiation, we could suppose that the Tswana process reflects a resonance hierarchy, as in Table XX.

Table XX: A resonance strength hierarchy following Foley's [1977] modular depotentiation

affricate	voiceless stop	voiceless fricative	voiced stop	liquid	glide	vowel
1	2	3	4	5	6	7

The segment types affricate and voiceless stop are assigned the weakest values on this hierarchy and the segment type vowel the strongest value. The expected position of the type nasal on this hierarchy, between liquid and fricative, is problematic since nasal does not change in value while liquid and fricative do. Assume then for the sake of argument, that nasal is not assigned a value. The resulting hierarchy is still inadequate, as judged by the IDP. It is inadequate since it claims that all strong segments in a strong position weaken. Even outside of this principle, a resonance hierarchy, or variants of it, provide no clue as to why only particular segments in Tswana undergo a change in strength value, and why they change as much as they do.

3.4 Synthesis of Hooper [1976] and Foley [1977]. As a final alternative, the following interpretation based on Foley [1977] is offered. The Inertial Development Principle as advanced by Foley is stated in terms of absolute strengthening, i.e. strong segments in strong positions strengthen before weaker segments and, just as important, strong segments strengthen more than weaker segments. Could it be that the Tswana alternation pattern reflects not a process of absolute strengthening, but one of differential strengthening? That is, is the IDP compatible with the fact that segments with the greatest strength value in strong positions fail to strengthen while segments of lesser value do strengthen? Let us consider the IDP more closely, particularly as it pertains to order and extent of strengthening.

The preferential order of strengthening implicit in the IDP claims that strong segments strengthen before weaker segments. On analysis, what might be called differential strengthening, the strengthening of segments falling below a designated threshold value on a strength hierarchy, is not precluded. (For that matter, the weakening of strong segments in weak positions, as in Foley's discussion of the degemination of Latin kk to Spanish k is not precluded either.) In other words, in the instance of a conflict between segment and position strength, such as that tentatively postulated for Tswana, the IDP is no less applicable. The order of strengthening instead of beginning with the strongest segment on a strength hierarchy, begins with the strongest segment manifesting a value less than the segment type designating the threshold value. For Tswana, this threshold value is assigned to nasal consonants.[6]

As with preferential ordering, the preferential extent of strengthening

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[6]An example cited by Foley [1977] suggests that the strength value of syllable and word initial position may be ordered relative to one another. The Spanish reflex of Latin w is b in word initial position but β in syllable initial position, i.e. Latin wiwo Spanish biβo . Following this example, it might also be suggested that the strength value of syllable and root initial position may be ordered relative to one another, with root initial position being the stronger. The motivation for the Tswana strengthening process might then be sought in the relationship between affixes and roots rather than syllables. At present this stands only as speculation.

required by the IDP does not appear violated under the alternative of differential strengthening. The IDP as stated in Foley [1977] addresses only the absolute conditions governing the extent of strengthening: in strong positions stronger segments strengthen more than weaker segments. Instances of conflict between position and segment strength do not appear precluded. To maintain consistency with the IDP, it is not necessary that the strongest segment on a hierarchy strengthen, only that stronger segments strengthen more than weaker segments.

We have thus arrived at two important principles for inferring the strength hierarchy underlying the alternation pattern in Tswana. The first of these is Foley's [1977] Inertial Development Principle, (interpreted as consistent with differential strengthening) which holds that strong segments in strong positions strengthen more than, and before, weaker segments. The second is Hooper's [1976] Intersyllable Principle, which holds that the strength value of a syllable initial segment must exceed that of the preceding syllable final segment. One way to maintain these two principles, and yet obviate the problems encountered in the preceding discussion of Hooper and Foley, is to recognize that the strength hierarchy underlying the pattern of morphophonemic alternation in Tswana is more complex than anticipated thus far in our discussion. That is, it will be necessary to recognize a more explicit categorization of strength relations in Tswana than we have thus far envisaged. This additional explicitness can be gained by incorporating into the primary hierarchy developed in Hooper, the categorization of strength relations implicit in the secondary and tertiary hierarchies found in Lass [1971] and Foley [1970]. A composite categorization of strength relations for the Tswana process, encompassing primary, secondary and tertiary hierarchies is shown in Table XXI.[7]

We can see in Table XXI that voiceless stop, incorporating aspirated and

[7]The placement of the type voiced stop on this hierarchy is problematic within the other theoretical frameworks discussed herein. Lass and Anderson [1975] and Hooper [1976] seem to suggest that voiced stop is universally stronger than voiceless fricative. The Tswana facts, in combination with Foley's [1977] procedure for determining segment strength, suggest that this may not always be the case.

Table XXI: A hierarchy reflecting the composite categorization of strength relations which underlies the alternation pattern in Tswana[8]

(w)		b	f			p',ph		
	l,r		s		tl', tlh	t',th		ts', tsh
(y)			š				dž,	tš', tšh
h			x			k',kh		kxh
→								
vowel	glide	liquid	voiced stop	voiceless fricative	nasal	lateralized stop	voiceless stop	affricate
1	2	3	4	5	6	7	8	9

unaspirated forms, is assigned a single strength value on the primary hierarchy relative to other segment types. On the secondary hierarchy, articulatory positions at which the segment type voiceless stop, for instance, is manifest are assigned relative strength values, velar being the weakest and bilabial the strongest. Finally, on a tertiary hierarchy within the primary and secondary hierarchies, the unaspirated stop form is assigned a weaker value, relative to aspirated stop. Other segment types are assigned values on these hierarchies in a similar fashion. For example, the segment type liquid is assigned a single value on the primary strength hierarchy and the individual liquid segments are assigned, on the tertiary hierarchy, their respective strength values. Based on Foley [1977], the alveolar trill is assigned a stronger value on this tertiary hierarchy than the lateral liquid.

Given this tentative hierarchy for Tswana, our focus of interest turns to its compatibility with the Inertial Development Principle. The preferential order of strengthening implied by the IDP requires that the first segment type assigned a value weaker than the differential threshold value, that of the segment type nasal, increase first, followed by successively weaker segments. The extent implication of the IDP likewise requires that a segment strengthen to a value consistent with its initial strength value. That is, the distribution of strength values resulting from the strengthening process should maintain among segments the relative strength status that existed before application of the process. Both of these implications are met in the

[8]Strength relations within a primary and secondary value are indicated by a left to right sequence, with leftmost being the weakest.

hierarchy in Table XXI, where we will see that successively stronger segments, attributed a value less than nasal consonants, alternate with successively stronger segments attributed a value greater than nasal.

Illustration of how the strengthening process in Tswana reflects the IDP now seems in order. Taking the alveolar fricative s as a first example, we note in Table XXI that it is the strongest segment on the alveolar hierarchy with a value less than the value assigned nasal. Consistent with this status on the hierarchy s is strengthened to the greater alveolar value above nasal, that of alveolar affricate. Strengthening to this value by itself does not specify the appropriate strengthened alternate however. To achieve the required alternate, s must be strengthened to a value within alveolar affricate. Consistent with the Inertial Development Principle, s is then strengthened to the greater value within the tertiary hierarchy at alveolar affricate, which, appropriately, is the segment tsh . The strengthened alternates for the remaining fricative segments are assigned in a similar manner.[9]

The strengthened alternates for the segment type liquid also involve a twofold application of the Inertial Development Principle. First of all, the strengthened alternate for the type liquid must be a value at alveolar which is greater than nasal but less than the strengthened alternate of the type fricative alveolar. The type liquid would thus strengthen to the type alveolar voiceless stop. This value by itself is insufficient to specify the required strengthened alternates for liquid segments too. At alveolar voiceless stop, two alternates are possible. Abiding by the IDP, the segment on the tertiary hierarchy at alveolar liquid with the greater value is strengthened to the segment on the tertiary hierarchy at alveolar voiceless stop with

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[9]A further consequence of this hierarchy is that predictions about more complex strengthening processes can be made. For instance, if a language contained both s and z segments, as well as the segments ts and tsh , the predicted strengthened alternate of z would be ts when the alternate of s is tsh . These predictions are being tested in a subsequent paper (Schaefer, in preparation) where a comparative analysis of the strengthening process in the Southeastern Bantu languages is being conducted.

the greater value. Since r is assigned the greater value within the liquid tertiary hierarchy, it would strengthen to th , assigned the greater value within the tertiary hierarchy at alveolar voiceless stop. The segment with the weaker value within the alveolar liquid hierarchy, l , is then strengthened to the weaker value within the alveolar voiceless stop tertiary hierarchy, t .

The segment types glide and vowel can perhaps be considered together. Of the potential set of glides, w and y are allophones of the vowel phonemes /u/ and /i/ , respectively. Since only phonemic segments enter into the Tswana strengthening process, w and y would not be subject to strengthening.

Returning to the only remaining glide, we see that in order to maintain consistency with the IDP its strengthened alternate must be a value greater than nasal. It must also be a value less than that of the strengthened alternate of the type liquid, which was strengthened to alveolar voiceless stop. The glide h would thus strengthen to the velar value at voiceless stop, which on the tertiary hierarchy is weaker than alveolar. There are, however, two values at voiceless stop from which a strengthened alternate can be chosen. Can we assign the appropriate alternate in a principled fashion?

Before considering glide further, let us consider the case of the segment type vowel. Following the IDP, the strengthened alternate of the type vowel must be a value which is greater than the value of nasal, but less than the value assigned to the strengthened alternate of glide. Since glide was initially strengthened to the velar voiceless stop value, vowel must be strengthened to a weaker value. However, there were two values available at velar voiceless stop. In line with the IDP, the segment with the greater value below nasal would strengthen to the segment on the velar voiceless stop hierarchy with the greater value. Since the glide h has a greater value relative to vowel, it would then strengthen to kh . Vowel, the weaker value, would then strengthen to k' , the weaker value at velar voiceless stop.

4. Summary

To summarize, a pattern of morphophonemic alternation in Tswana was ex-

amined in the light of three models in an attempt to infer its underlying strength hierarchy. The hierarchy postulated appears to follow from two principles. The first of these, the Intersyllable Principle of Hooper [1976], in conjunction with a postulated threshold value for the segment type nasal, appears to account for the particular subset of phonemic segments whose change in strength value marks the pattern. A second principle, the Inertial Development Principle of Foley [1977], interpreted as consistent with the notion of differential strengthening, appears to account for the specific amount of strength change undergone by each of the segments in the subset. Though the tentative nature of the preceding must be stressed, it seems that the notion strength may prove fruitful in establishing an initial understanding of other morphophonemic patterns in Tswana and allow us to capture underlying similarities among these patterns. Moreover, within the framework of the tentative hierarchy postulated here, we can extend our analysis to comparable morphophonemic patterns in languages genetically related to Tswana (Schaefer in preparation).

REFERENCES

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

Cole, D.T. 1955. *An Introduction to Tswana Grammar.* Capetown: Longman.

Cole, D.T. and D.M. Mobokalieo. 1962. *A Course in Spoken Tswana.* Washington, D.C.: Department of Health, Education and Welfare.

Foley, J. 1970. "Phonological distinctive features." *Folia Linguistica* 4: 87-92.

Foley, J. 1977. *Foundatios of Theoretical Phonology.* Cambridge, England: Cambridge University Press.

Hooper, J. 1976. *An Introduction to Natural Generative Phonology.* New York: Academic Press.

Hyman, L. 1975. *Phonology: Theory and Analysis.* New York: Holt, Rinehart and Winston.

Lass, R. 1971. "Boundaries as obstruents: Old English voicing assimilation

and universal strength hierarchies." *Journal of Linguistics* 7:15-30.

Lass, R. and J.M. Anderson. 1975. *Old English Phonology*. Cambridge, England: Cambridge University Press.

Schaefer, R.P. 1980. "On the motivation and structure of a strengthening process in Tswana." In P. Hamel and R. Schaefer (eds.), *Kansas Working Papers in Linguistics V,* no. 2, pp. 119-169. Lawrence, Kansas: University of Kansas.

Sommerstein, A.H. 1977. *Modern Phonology*. London: Edward Arnold.

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TONAL PHENOMENA IN KISHAMBAA*

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This paper presents a descriptive study of tonal problems of KiShambaa, a Bantu language of Tanzania. I show here that tonal downstep is not conditioned by a L tone, but occurs regularly between any two H tone autosegments. In the first six sections, I discuss general tonal problems, and in the last three sections, I discuss morphologically governed alternations.

1. Introduction

In 1911, K. Roehl presented a tone-marked grammar of the Bantu language KiShambaa (Shambala), making that language one of the first Bantu languages to have published tonal material. Despite the fact that the study of Shambaa tone had an early birth, very little material has been published leading to a general overview of tonal processes in Shambaa. Van Spaandonck [1967] discusses a tone spreading rule, and Kähler-Meyer [1962] concentrates, for the most part, on the relation between synchronic noun stems and their assumed historical antecedents. Meeussen [1955] discusses a tonal irregularity of the language and relates it historically to vowel length. Nurse [1979], in his sketch of Shambaa, marks tone where known, but does not elaborate on general tonal processes; his study is nevertheless the most useful in surveying verbal constructions. To my knowledge, there is no study which attempts

*Data for this paper was collected during 1981 from David Mndolwa, a native speaker of KiShambaa from Tanga. I owe thanks to him for these data and to Mary Odden for reading and commenting on an earlier draft of this paper. H tone will be transcribed with an acute accent and L with none. Downstep will be marked with an exclamation mark (!), nw will be used to represent ŋw, and gh for the fricative ɣ. Finally, (vf) will be used to indicate that the verb tense is part of the verb-focusing system, and (nf) to indicate that the verb is part of the noun-focusing system.

to give a general overview of the synchronic tonal system. It is therefore my aim in this paper to provide an account of certain tonal problems in Shambaa and at the same time to provide additional data which are not readily available in the published sources.

The data in this paper come from David Mndolwa, a native speaker of the eastern dialect of the language. The language he speaks is different in many ways from that represented in Roehl [1911], the most striking difference between the two dialects or stages of the language being that Roehl's language retains Class 11 (lu-) as a class distinct from Class 14 (u-), whereas in the present language, the two classes have fallen together completely into Class 14 (u-). In tonal matters, there do not seem to be any major differences between the two languages, at least judging from the forms Roehl provides.

2. Phonetic Problems

KiShambaa may be analyzed as having two underlying tones, H and L, somewhat complicated by the existence of tonal downstep. H tones downdrift, so that the pitch level of a H tone after a L tone is lower than a H tone in utterance-initial position. So, the final H tone in á-ta-já 'he's eating (vf)' is lower than the initial H tone. It should also be noted that the level of a H tone in the sequence LH is generally the same as the level of the final H in the sequence HLH. Thus, in comparison to the H tone of the noun tági 'egg', the H tone of the noun ma-tági 'eggs' is lower; that H tone is as low as the final H tone in á-ta-já. In Shambaa, it can therefore be said that H tone drifts down from its ideal ceiling after any L tone; it is not necessary to actually set that ceiling phonetically.[1]

The language also has phonemic downstep, which may occur in a number of environments, including within lexical stems, between morphemes, and across

[1]In some languages, such as Shona and Shambaa, no actual highest H is required for a H to downdrift after a L. On the other hand, in other languages, such as Kenyang, it is necessary for the ceiling to be phonetically set for H tone, so that in Kenyang, the H of LH is the same pitch level as the H of HH; only in the sequence HLH does downdrifting occur.

words.

(1) ngó!tó 'sheep'
mwé-m-!tí 'at the tree'
ázakómá !nyóká 'he killed a snake'

The source of downstep will prove to be rather interesting, since I shall show that it is not necessarily caused by L tones and thus does not result from downdrifting in the classical sense. However, I will eventually show that both downdrift and downstep can be handled by the same rule within a metrical theory of tone features.

It should also be noted that the penultimate syllable of a word is stressed, realized phonetically as a lengthening of the penultimate vowel (but with no perceivable changes in pitch). A lengthened penultimate vowel is shorter than a long vowel, so the unstressed long vowel in ku-kááng-íy-a 'to fry for' is longer than the stressed vowel i . A stressed long vowel becomes even longer, so that the penultimate vowel in áá-ghóók-a 'he is standing' is longer than the unstressed vowel áá .

Lastly, when vowels are adjacent, there is no hiatus between the vowels, so that there is no audible break between the vowels o and e in u-ghoe 'rope'. The sequence V́V, as in áa-kóm-á 'he killed' has a clear falling tone, rather than having a discrete H tone followed by a discrete L tone. I shall therefore treat all vowel sequences as diphthongs, i.e. as members of the same syllable. This decision will be supported further when I discuss the Rise Simplification rule.

3. H tone spreading

The first rule to be discussed is one which spreads a H tone from left to right. This rule operates both within words and across words; I shall first discuss the external application of this rule. In the following examples, the righthand environment contains a single prefix followed by a monosyllabic L toned stem. When the preceding word ends in a H tone, that H tone spreads onto the prefix of the following word.

(2) ma-we 'stones'
i-nu 'this (Cl.9)'
ní má-we 'they are stones'

nyumbá ǐ-nu 'this house'

This Spreading rule will also apply to the initial stem vowel if that vowel is not word-final, as the following examples show.

(3) ŋombe 'cow'
figho 'kidney'
a-kóm-ǐyé ŋ́mbe 'he killed a cow'
a-j-ǐyé fǐgho 'he ate a kidney'

With a longer combination of prefixes and L toned stem vowels, the H tone at the left edge of the sequence will pass through each prefix, up through the stem vowels to the penultimate vowel. The Spreading process stops at the final vowel.

(4) za-wa-ghanga 'of the doctors'
na-ghembe 'with a hoe'
ku-ghosho-a 'to do'
m-kǐá wá-ŋ́mbe 'tail of the cow'
nyumbá zá-wá-ghánga 'house of the doctors'
ni-im-ǐyé ná-ghémbe 'I cultivated with a hoe'
nǐ kú-ghóshó-a 'it is to do'
*nǐ kú-ghóshó-á

There are two ways that one could go about describing this process of H tone spreading. First, one could formulate the rule segmentally to change each L tone feature of the vowel to a H tone, as (5) does.

(5) L → H/H__V

Alternatively, one could formulate the rule as an autosegmental process associating the lefthand H tone onto a vowel (simultaneously disassociating the L tone) as in (6), where T means "any tone".

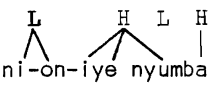
(6) 

Of interest in deciding between these analyses is the fact that Spreading may apply to a L tone which stands immediately before a H tone, and when it does, the underlying sequence HLH surfaces as HH!H.

(7) ma-kúi 'dogs'
nyumbá 'house'
ni-on-íyé má-!kúi 'I saw dogs'
ni-on-íyé nyú!mbá 'I saw the house'

Under the autosegmental approach characterized by (6), the change of HLH to HH!H can be predicted if the disassociated L tone produced by that rule is retained in such a way that it triggers application of the downdrifting rule to the final H tone. Thus, if (8) is the output of Spreading (and the input to downdrifting), the expected pitch-lowering of H after L (albeit a disassociated L) is totally normal.

(8)



On the other hand, with the feature-changing rule (5), it is necessary to assume that the downdrifting rule applies before Spreading, in order that the observed drop in pitch between the penultimate and the final syllables be generated. If Spreading applies before the rule which determines pitch levels for H tones, it will prove impossible to predict lowering of the pitch level of the final H tone in (8).

In its external manifestations, this rule applies, as far as I have been able to determine, with little concern for syntactic boundaries, so that anywhere the structural description of the rule is satisfied, the rule applies. Thus, Spreading applies between verb and direct object, direct object and indirect object, or copula and noun.

(9) ni-m-nkh-íyé ŋómbe nwáná 'I gave the child a cow'
ni-m-nkh-íyé !nwáná ŋómbe id.
ní tú!ní (/ní tuní/) 'it's a knife'

However, there are two general exceptions to the claim that Spreading is syntactically general. First, whenever there is an audible pause between two words, Spreading cannot propagate across that pause. More significantly, this rule also does not apply across the lefthand syntactic bracket separating the verb phrase from the subject noun phrase.

(10) ni-m-nkh-íyé ꜜnwáná, ŋombe 'I gave the child a cow'
*ni-m-nkh-íyé ꜜnwáná, ŋ̀ombe
nwáná [$_{VP}$ a-ʈé-dík-a] 'the child cooked (vf)'
*nwáná [$_{VP}$ á-ꜜʈé-dík-a]
wáná [$_{VP}$ wa-dik-íyé nyáma] 'the children cooked meat'
*wáná [$_{VP}$ wá-dí-ꜜk-íyé nyáma]

Therefore, Spreading must have a syntactic limit on its application preventing the rule from propagating across a VP bracket.

Internal to a word, the Spreading rule can also be motivated, especially within verbs. So, looking at the H toned verb stems in (11), we see that the root-initial lexical H tone spreads throughout the stem up to the penultimate vowel; as discussed before, Spreading does not apply to the word-final vowel.

(11) ku-kááng-a 'to fry'
ku-ʈáhík-a 'to vomit'
ku-fúmbáʈísh-a 'to tie a load securely on the head'
ku-fúmbáʈísh-íy-a 'to tie securely with'
ku-fúmbáʈísh-íy-án-a 'to tie securely for each other'

There is another tonal process with a similar effect, which spreads a H tone onto the final vowel in a CV(C)-V stem.[2] As seen in (12), a H toned verb with the stem shape CV(C)-V has a H tone on the final vowel, as well as on the root-initial vowel.

(12) ku-fú-á 'to wash'
ku-kóm-á 'to kill'
ku-kú-á 'to grow'

In contrast, the final vowel -a is L toned in (11) and in L toned CV(C)-V verbs.

(13) ku-dik-a 'to cook'
ku-hand-a 'to plant'
ku-ʈo-a 'to beat'

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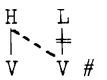
[2]In Kishambaa, and in Bantu in general, the root (-fu-) must be distinguished on various grounds from the stem (-fu-a, fumbaʈish-a) . The final vowel of the stem (-a or -e) is a morpheme, determined by morpho-syntactic considerations, such as "subjunctive", "perfective", etc.

This rule differs from the Spreading rule in that Spreading will not apply to a word-final vowel. I therefore assume the following rule applies to change the final L tone to a H tone.

(14) TONE COPY



Tone Copy will apply before Spreading in order to account for the fact that a penultimate H tone which derives from Spreading does not copy onto the final vowel in ku-táhík-a .

There are a number of exceptions to the Tone Copy rule. For example, as observed by Meeussen [1955] and Kähler-Meyer [1962], a number of verb stems of the synchronic shape CVC-V derive from CVVC-V stems. In the synchronic grammar, the simplest account of these verbs is that they are lexical exceptions to Tone Copy.

(15) ku-lál-a 'to sleep'
ku-tágh-a 'to buy'
ku-vyál-a 'to give birth'
ku-shúk-a 'to hate'

These stems provide additional evidence that the Tone Copy rule is independent of Spreading. Although the stems in (15) are exceptions to Tone Copy, they are unexceptional with regard to Spreading.

(16) ku-tágh-ɪ̲y-a 'to buy for'
ku-tágh-ɪ̲y-á̲n-a 'to buy for each other'
ku-shúk-á̲n-a 'to hate each other'
ku-shúk-ɪ̲ghw-a 'to be hated'

The Spreading rule applies inside of verbs in a number of environments other than the aforementioned cases where the lexical H tone of the root spreads throughout the verb stem. The presence of a H toned subject prefix, tense-aspect prefix, or object prefix in a verb conditions application of Spreading throughout the stem.

(17) ku-shunth-a 'to wash'
ku-chí-shú̲nth-a 'to wash it (Cl.7)'

ku-ghosho-a	'to do'
ku-ví-ghóshó-a	'to do them (Cl.8)'
ku-ghosho-a-ghosho-a	'to do repeatedly'
ku-chí-ghóshó-á-ghóshó-a	'to do it (Cl.7) repeatedly'
ni-za-dik-a	'I have cooked'
ni-za-chí-dík-a	'I have cooked it (Cl.7)'
ni-ťé-dík-a	'I have cooked (vf)'
ni-ťé-ghóshó-a	'I have done (vf)'
u-ni-ghosho-e-a u-ghoe	'you are making me a rope (nf)'
á-ní-ghóshó-é-a u-ghoe	'he is making me a rope (nf)'
u-ngé-ghóshó-a	'you should have done'
ní-ghóshó-e	'I should do'

Spreading can be seen to apply to a L toned object prefix as well (and subsequently to all of the nonfinal L tones of the following root if they, too, are L toned).

(18)	ku-ni-ghosho-e-a	'to do for me'
	ku-ku-ghosho-e-a	'to do for you'
	u-ngé-ní-ghóshó-é-e	'you should have done for me'
	ni-ngé-kú-ghóshó-é-e	'I should have done for you'

Apart from the general restriction that Spreading does not apply to a word-final vowel, the rule must apparently also be restricted morphologically so that it cannot take certain tense-aspect prefixes as input for the rule (although such a prefix may trigger application of Spreading to a following vowel). Thus, in the examples below, a H toned subject prefix does not spread its H tone onto the tense-aspect prefixes -ťa-, -ha- and -za- , although the subject prefix does participate in Spreading in verb roots and object prefixes.

(19)	ní-ťa-dik-a	'I'm cooking (vf)'
	ní-ťa-ghosho-a	'I'm doing (vf)'
	á-za-dik-a	'he has cooked (complete)'
	á-ha-ku-dik-iy-a	'he just cooks for you'

One might approach these facts with the assumption that tense-aspect prefixes never undergo Spreading and reformulate the rule with a categorical

restriction to that effect. Another approach would be to assume that these specific prefixes are exceptions to the most general formulation of rule (6). These prefixes may have originally been compound Verb + Verb constructions and were thus word-final (viz. nǐ-ta # dika), so that the restriction on Spreading is at least explainable diachronically. Synchronically, there is little evidence for a word boundary after these prefixes.[3]

Evidence which would clearly decide in favor of one of these hypotheses would be the existence or nonexistence of other tense-aspect prefixes which undergo Spreading. There is, in fact, some evidence, albeit not incontrovertible, that some tense-aspect prefixes do undergo Spreading. The prefix -a- "present" has a L tone, and after a L toned subject prefix, it remains L toned. However, after a H toned subject prefix, the vowel -a- takes a H tone, which spreads throughout the verb stem.

(20)	na-a-dik-a	'I cook'
	na-a-ku-ghosho-e-a	'I do for you'
	á-a̲-dǐk-a	'he cooks'
	á-a̲-kú-ghóshó-é-a	'he does for you'

The data in (20) would thus constitute an argument that Spreading does in fact apply to tense-aspect prefixes, and that the prefixes -ha-, -za-, and -ta- are anomalous exceptions. The alternative would be to treat the prefixes -ha- et al. as regular and invoke some exceptional rule which applies only to the prefix -a- above. The former solution would seem preferable on theoretical grounds, since that solution only requires that certain morphemes be marked as exceptions to an independently motivated rule, whereas the latter solution requires the addition of an idiosyncratic rule applying to a single prefix.

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[3]The vowel -a- in these prefixes varies according to tense with -e- , so that the prefix -ta- in nǐ-ta-dǐk-a 'I'm cooking (vf)' has the past-tense form -te- as in ni-té-dǐk-a 'I was cooking (vf)'. It is only in this way that these prefixes act as though they were followed by a word boundary. But even with that word boundary, the vowel change a/e is still only diachronically understandable, not synchronically predictable.

There are other data which lend support to the claim that Spreading applies to tense-aspect prefixes. The progressive prefix -ki- always bears a H tone and is always immediately preceded by a H toned subject prefix.

(21) ú-kí-dík-a 'if you cook'
née ú-kí-dík-a 'you were cooking'
née ní-kí-ghóshó-a 'I was doing'
née á-kí-ghóshó-a 'he was doing'

It is impossible for the prefix -ki- to be preceded by a L toned prefix, so there is no direct evidence that this prefix must have an underlying L tone which is changed to a H tone by Spreading. There are, nevertheless, reasons to believe that this prefix takes its H tone from Spreading. As I shall argue later, there is a downstep rule which introduces a downstep between H tone autosegments, so that when a H toned prefix is placed before another H tone, the second H tone is downstepped. If the prefix -ki- had an underlying H tone, we would expect there to be a downstep between the subject prefix and the prefix -ki- , i.e. incorrect *ní!-kí-dík-a . In fact, the only way for there to be two H tones next to each other without an intervening downstep is for the second H tone to *be* the first H tone, spread onto the following vowel by Spreading or Tone Copy. It can thus be seen that there are reasons for believing that Spreading does apply to tense-aspect prefixes and that the prefixes -ha-, -za-, and -ta- are lexical exceptions to Spreading.

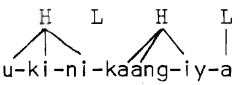
I have shown earlier that when Spreading applies between words to the tone sequence HLH, the surface pattern HH!H results. The same change of HLH to HH!H is found within words when Spreading applies. In the examples below, a L toned object prefix has its tone raised after a H toned prefix when it stands before a H toned verb stem as well as before a L toned verb stem.

(22) ni-té-kú-!kááng-íy-a 'I fried for you (vf)'
a-té-ní-!ón-á 'he saw me (vf)'
á-kú-!kááng-íy-a nyama 'he's frying you meat'
á-á-kú-!kááng-íy-a 'he's frying for you'
née ú-kí-ní-!kááng-íy-a 'you were cooking for me'

As pointed out in the discussion of Spreading across word boundaries, the change of HLH to HH!H could be explained in one of two ways. Either the

downdrifting rule applies before Spreading, or else the floating L tone seen in (23) triggers downdrifting, which then applies after Spreading.

(23)



A third possibility is available, which I shall discuss below.

4. Downstepping

It is a general fact of Shambaa grammar that whenever two independent H tones are brought together, a downstep appears between the two, independent of the application of Spreading or the presence of any underlying L tones. It can be seen in the examples in (24) that a downstep develops every time a H tone final word is followed by a H tone initial word.

(24)

nwáná	'child'
dú	'only'
kúi	'dog'
ngó!tó	'sheep'
ſ-za-fá	'it died (Cl.9)'
nwáná !dú	'only a child'
á-za-kóm-á !dú !ngó!tó	'he just killed a sheep'
á-za-kóm-á !ngó!tó	'he killed a sheep'
ngó!tó !ſ-za-fá	'the sheep died'
ní !kúi	'it is a dog'

Thus, between words, a H tone is downstepped after both H tones and L tones. Without going into great detail about the correct formulation of the downstepping rule, one might account for these data by inserting a downstep between H tones in separate words, as in (25).[4]

(25) $\emptyset \rightarrow {}^{!}/H\#\_\_H$

But this process is in fact more general; it also applies inside of words. So, when a H toned object prefix stands after a H toned subject pre-

[4]One might still wish to connect downstep with downdrift here by claiming that all of these words begin with a floating L tone. Of course, this would mean that every word which begins with a H tone 'actually' begins with a floating L tone. But even that solution will not work—in isolation, these initial H tones are not downdrifted (see section 2).

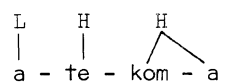
fix, a downstep appears between the two H tones.

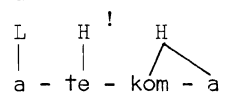
(26) á-!wá-ghóshó-é-a u-ghoe 'he's making them a rope'
/á-wá-ghoshoea/
á-á-!wá-ghóshó-é-a 'he's doing for them'
ú-!wá-lól-e 'you should look at them'

Similarly, when a H toned tense-aspect prefix precedes a H toned root or a H toned object prefix, the two underlying H tones are separated by a surface downstep.

(27) a-té-!kóm-á 'he killed (vf)'
ni-té-!wá-dík-íy-a 'I cooked for them (vf)'
ná-!á-!kàáng-a 'I had fried'
a-ngé-!já 'he should have cooked'
a-ngé-!wá-dík-íy-a 'he should have cooked for them'

The change of (28a) to (28b) can be accounted for very easily by generalising the Downstep rule (25) to apply between any two H tone autosegments, internally or externally.

(28) a.


b.


The Downstep rule can actually be generalised in two ways. First, it can be generalised so that it applies within words as well as between words. Following the suggestions made in Odden [1981] regarding boundaries and phrase-level rules, I will assume that the Downstepping rule applies at all syntactic levels and that the word boundary should therefore be removed. Secondly, the Downstepping rule can be generalised so that it accounts for phonetic downdrifting as well as downstepping simply by eliminating the lefthand H tone environment.

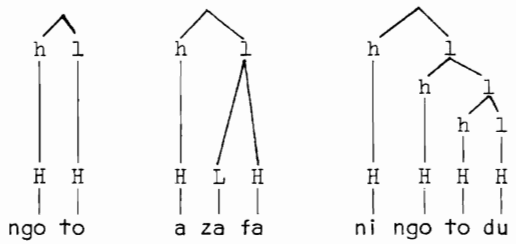
Clements [1981] proposes a metrical theory of tone register which assigns metrical tree structure to tonal autosegments and allows downdrift and downstep (inter alia; see Odden [1982a]) to be read off of labeled trees. The rule which Clements proposes for the classical downdrifting process can be

modified for Shambaa so that the rule applies not just to a H tone after a L, but to any H tone. Thus, the rules for constructing tone-register trees in Shambaa will be those in (29).

(29) Every H tone forms the right branch of a maximal n-ary branching tree. Any remaining tones are gathered into an n-ary branching tree. Sequences of trees constructed by these rules are gathered into right-branching binary trees labeled [h,l].

With this tree-construction rule, the forms ngó!tó 'sheep', ázafá 'he has died' and ní !ngó!tó !dú 'it is only a sheep' will have the tree structures in (30).

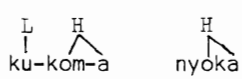
(30)



The capital letters *H, L* stand for tonal autosegments and the small letters *h, l* stand for the labels of the tone-register tree. These trees are interpreted as follows: starting at the top, the tone-register of the sequence dominated by *h* is higher than the sequence dominated by *l*. Thus, the H tone of du above is at the lowest level because it is dominated by the greatest number of *l*'s.

I will assume here that when a word has two consecutive phonetic H tones with no intervening downstep as in ku-kóm-á 'to kill' or nyóká 'snake' there is a single H tone autosegment associated with multiple vowels. That is, I assume the following representations for ku-kóm-á and nyóká .

(31)

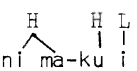


In the case of verbs it is quite easy to justify the representation in (31), since it clearly derives from application of Tone Copy (or Spreading in the case of the multiple H tones of ku-táhík-a 'to vomit'). I assume that

the noun nyóká has the underlying form nyóka[5] and that it too undergoes Tone Copy, although there are no morphologically-induced alternations in tone for this noun as there are for verbs. Still, there are very few nouns with the tonal shape HL (including kúi 'dog' and ŧwíga 'giraffe'), and I treat these nouns as exceptions to Tone Copy (as the verbal stems -lál- 'sleep' and -ŧágh- 'buy' are). Notice that if the nouns kúi and ŧwíga are not treated as exceptions to Tone Copy, Tone Copy must be complicated anyway so that it applies only to verbs; otherwise, we would indeed expect all HL nouns to undergo Tone Copy. So, apart from any considerations of downstepping, it is still necessary to treat HL nouns as exceptions to Tone Copy.

Given this revised account of downstepping and downdrifting, we may reconsider just what the facts of downstepping show about the formulation of Spreading. I argued earlier that the best way to account for the fact that HLH becomes HH!H by application of Spreading is to treat Spreading as a rule disassociating a L tone and spreading the association of a H tone from the left. It was argued that the resultant floating L tone was needed to trigger the downdrifting rule. But, since we know that a downstep is also brought about between any two independent H tones, the floating L is not needed to trigger the downdrifting rule. Rather, a downstep is automatically predicted by applying the tree-construction rule (29) to the configuration in (32), which derives from underlying ní ma-kúi 'they are dogs' by Spreading.

(32)



But this configuration is possible only if the Spreading rule is in fact a rule spreading the association of a H tone rather than a rule changing a L feature value to a H feature value. So, the analysis of Spreading as a spreading of one H tone to many vowels is vindicated, albeit for a different reason than was proposed earlier.

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[5]Note that there is an underlying contrast between two adjacent H tones in ngó!tó and one H in nyóká (/ngótó/ versus /nyóka/). The Obligatory Contour Principle (OCP) proposed in Leben [1978] predicts that such a contrast would be impossible, since the two adjacent identical H tones of /ngótó/ should be reduced to one. This tonal contrast in KiShambaa thus refutes the OCP, even as revised in Odden [1980], where it is proposed that the OCP is

5. Tone Absorption

As I have just argued, whenever two H tones come together within or between words, a downstep appears between the tones. The rule is easiest to demonstrate when each H tone stands in a separate morpheme, and in the above examples, the rule was motivated with various combinations of object prefix, subject prefix, H toned verb root, and tense-aspect prefix. Lacking in these combinations was a H toned verb root and a H toned object prefix. Indeed, as predicted, when a H toned object prefix stands before a monosyllabic H toned root, the two independent H tone autosegments are separated by a downstep, as predicted.

(33) nǐ- kǐ -!ʼchǐ -!ʼjá 'I was eating it (Cl.7)'
I -Prog-it(7)-eat

a - ngé -!ʼchǐ -!ʼjá 'he should have eaten it (Cl.7)'
he-should-it(7)-eat

ku-chǐ -!ʼjá 'to eat it (Cl.7)'
to-it(7)-eat

ni- té -!ʼǐ -!ʼnywá 'I drank it (Cl.9)'
I -past-it(9)-drink

However, if a H toned object prefix stands before a H toned verb stem of two or more syllables, no downstep appears between the two underlying H tone autosegments.

(34) nǐ-kǐ-!ʼchǐ-kóm-á 'I was killing it (Cl.7)'

a-ngé-!ʼchǐ-kóm-á 'he should have killed it (Cl.7)'

ku-wá-kóm-á 'to kill them'

ni-té-!ʼǐ-kááng-ǐy-a 'I fried with it (Cl.9)'

These data represent the only case where two distinct underlying H tone autosegments can be brought together without a downstep appearing between them.

One approach to this problem would be to place some sort of restriction on the rule constructing the tone-register trees discussed in (29). Those rules might be restricted so that the H tone of the object prefix does not form a right branch if it is followed by the H tone of a verb root, providing

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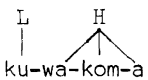
only valid for lexical entries. We can now see that the OCP is not even universally valid for the lexicon.

that the verb root is not monosyllabic. However, I can see no way to state this "generalisation" in the tree-construction rule with less than brute force.

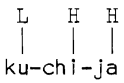
The second approach, the one which I will take here, is to assume that no downstep appears between the H tones in question because on the surface the two H tones have in fact been merged, so that they are represented as a single H tone autosegment associated with two vowels. That is, I assume that the form ku-wá-kóm-á has the representation in (35), in which no downstep could appear.

(35)



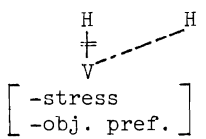
In contrast, ku-chí-!já would have the representation in (36).

(36)



The question now arises with this approach how the contrasting structures in (35) and (36) arise from underlying forms in which the object prefix and verb root clearly have separate H tones. To achieve the proper contrasts, we require the addition of a H tone Absorption rule such as (37) which eliminates the H tone of the object prefix and assigns it the H tone of the verb root, providing that the object prefix is unstressed.

(37)



The Tone Absorption approach has the advantage that it is more easily statable than a restriction on the downdrifting rule, and indeed it is not clear that appropriate restrictions on downdrifting can be concocted. The Tone Absorption hypothesis also predicts that the tone of the underlying H toned object prefix will share the fate of the underlying H tone of the verb root. Thus, any rule which lowers the H tone of the verb root should also lower the absorbed H tone of the object prefix. This prediction will be verified in the last section, where I discuss a Lowering rule, which indeed lowers the H tone of both the root and the object prefix in precisely the environments

where Tone Absorption applies.

6. Rise Simplification

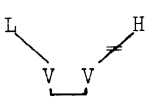
As observed in the first section, vowel sequences are not separated by any hiatus, so that the sequence ai sounds more like a monosyllabic diphthong than a sequence of separate vowels. As was also observed earlier, when vowels combine to form a single syllable, level H, level L, H-to-L falling, and H-to-!H falling tones are possible. Conspicuously missing in this inventory are rising tones--there are virtually none in the language. This phonetic gap can be explained by a rule changing rising tones to level L tones. Such a rule can be easily motivated by phonological alternations. For example, there are a number of verb stems which are H toned and vowel-initial. When no prefix precedes the stem, as in the imperative, the initial vowel has a H tone, as expected. When the verb is preceded by the L toned infinitive prefix, the prefix vowel appears as w , with compensatory lengthening of the following vowel. But that vowel does not have the predicted rising tone (the L component from the infinitive prefix and the H component from the verb root); rather, it has a level L tone. Yet, the final vowel of the infinitive is H toned, indicating that the lexical H tone is not lost totally.

(38)

ón-á	'see!'
ʃmb-á	'sing!'
ʃnkh-á	'give!'
ʃt-á	'go!'
kw-oon-á	'to see'
kw-iimb-á	'to sing'
kw-iinkh-á	'to give'
kw-iit-á	'to go'

Assuming a rule to simplify rising tones to level L tones, the expected forms *kwoóná and *kwiítá can be changed to the correct phonetic forms by applying (39).

(39)



Additional motivation comes from verbal forms where a L toned prefix stands before a H toned vowel initial root, as shown in (40).

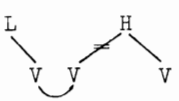
(40)	ku-kw-oon-á	/ku-ku-ón-á/	'to see you'
	ku-ni-on-á	/ku-ni-ón-á/	'to see me'
	ku-mw-oon-á	/ku-mu-ón-á/	'to see him'
	ku-tí-ón-á	/ku-tí-ón-á/	'to see us'
	á-ta-inkh-á	/á-ta-ínkh-á/	'he's giving (vf)'
	á-ta-imb-á	/á-ta-ímb-á/	'he's singing (vf)'
	ni-on-íyé nyáma	/ni-ón-íyé/	'I saw meat'

The Rise Simplification rule does not simplify every rising tone; for example, certain vowel-initial verbs are exceptions to Tone Copy and also retain their root-initial H tone in (41), yielding a rising tone on the surface.

(41)	kw-oót-a	'to dream'
	kw-iík-a	'to put'
	kw-eét-a	'to bring'
	ku-úz-a	'to ask'

This connection between failure of Tone Copy and failure of Rise Simplification can be explained by revising Rise Simplification, so that it can only apply to a H tone which is associated with at least one vowel after it, as specified in (42).

(42)



The Rise Simplification rule can also help us to understand the (otherwise inexplicable) behavior of the completive prefix -i- . As seen in (43), the prefix is phonetically L toned after a L toned subject prefix.

(43)	ni-i-kááng-e	'I've fried'
	ni-i-kóm-íyé	'I've killed'
	ni-i-wá-kóm-íye	'I've killed them'

However, this prefix is anomalous in that a L toned verb after it has a phonetic H tone (spread throughout all of the nonfinal vowels of the stem), without any apparent cause.

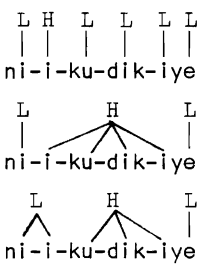
(44)	ni-i-ghóshó-e	'I've done'
	ni-i-díík-íye	'I've cooked'
	ni-i-ghúúk-e	'I've run'

Moreover, a L toned object prefix is also H toned after the completive prefix -i- .

(45) ni-i-kú-dík-íye 'I've cooked for you'
ni-i-kú-ón-íye 'I've seen you'

Now the H tone of the object prefix and the root could be explained by applying Spreading, if there were a H toned prefix before the stem. But how is this relevant to the phonetically L toned prefix -i- ? If the prefix is basically H toned, it may both condition Spreading and then itself undergo Rise Simplification. Assuming that the prefix -i- has an underlying H tone, the derivation of the phonetic form ni-i-kú-dík-íye from underlying ni-í-ku-dik-iye is given in (46).

(46)



If this analysis of the completive prefix were correct, then when the prefix -í- is preceded by a H toned subject prefix, Rise Simplification will be inapplicable and, because of the downdrifting rule, the tones of the subject prefix and the completive prefix should be separated by a downstep. This prediction is verified in (47).

(47) á-!í-dík-íye 'he has cooked'
á-!í-kóm-íye 'he has killed'
á-!í-!wá-kóm-íye 'he has killed them'

7. Focus Retraction

Up to this point, I have discussed the general tonological principles of Shambaa, which apply to all categories of words. There is a tonal rule which is limited in its application to one verb tense, the present noun-focal tense. As seen below, the final vowel of the H toned verb stem is, in bisyllabic stems, phonetically L toned (where, due to the Tone Copy rule, we would expect it to be H toned).

(48) ni-kóm-a nyóká 'I'm killing a snake (nf)'
ni-ón-a nyóká 'I see a snake (nf)'
á-ꜝón-a nyóká 'he sees a snake (nf)'

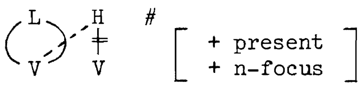
The apparent failure of Tone Copy to apply could be handled in one of two ways. Either one could directly restrict the rule so that it simply does not apply in this tense, or else one could add another rule to the grammar lowering the final H tone. In (49), the only H tone of a monosyllabic root is deleted in word-final position in this tense.

(49) á-ja nkhándé 'he's eating food (nf)'
á-ꜝí-ja nkhándé 'he's eating the food (nf)'
á-ꜝwá-ja wáná 'he's eating the children (nf)'

So, to accomodate the loss of the root H tone in (49), we need to formulate a final lowering rule; a restriction on Tone Copy is insufficient. However, more data show that the H tone in final position is not totally lost, since if a monosyllabic verb is preceded by a basically L toned prefix, such as the subject prefix ni- or the object prefix m- , that prefix takes the word-final root H tone.

(50) ní-ja nkhándé 'I'm eating food (nf)'
ni-ḿ-ja nwáná 'I'm eating the child (nf)'

These data then suggest that the rule lowering the final H tone in this tense will, if possible, preserve the final H tone by shifting it to the left.

(51)


8. Imposed H Tone

The next categorially limited tonal alternation is found in a number of different morphological constructions, both nominal and verbal, and involves the addition of a string of H tones to the stem. I shall refer to this tonal pattern as the "imposed H" pattern. This pattern can be illustrated with examples of the perfective; it can be seen here that the stem-medial vowels of L toned roots bear H tone. These H tones are, so far, totally unpredictable, but worse yet, they cannot derive by applying Spreading to some H tone at the lefthand edge of the verb stem, since Spreading will not apply to a word-final

vowel, whereas these forms all have word-final H tones.

(52) ni-dik-íyé nyáma 'I cooked meat'
ni-ku-ghoshó-é-yé ú-ghóe 'I made you a rope'
ni-kááng-é nyáma 'I fried meat'
ni-jí-yé nyáma 'I ate meat'

A similar pattern is encountered in the "way of doing" nominalisation formed by suffixing -ie to a stem and putting the resulting noun in Class 4 (with the prefix mi-).

(53) mi-kóm-éé 'way of killing'
mi-zwík-íé 'way of dressing'
mi-tágh-íé 'way of buying'
mi-kááng-íé 'way of frying'
mi-ghoshó-éé 'way of doing'

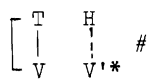
The imperative also uses this imposed H tone pattern.

(54) ghoshó-á 'do!'
dik-á 'cook!'
kóm-á 'kill!'
tágh-á 'buy!'
kááng-á 'fry!'
fúmbátísh-á 'tie a load securely!'

The question then arises how this tone pattern is to be described. One thing is clear, namely that this tone pattern cannot follow automatically from rules already motivated (Spreading or Tone Copy), since otherwise, the stem tone patterns of the imperative and the infinitive would be identical, an incorrect result. We may therefore assume that associated with the imperative (and the other imposed H tone constructions) is a tone which is mapped onto the verb stem. There is no evidence in the grammar that the imposed pattern is the result of mapping two or more H tone autosegments (in addition to the lexical tone), so I assume that the imposed pattern is a reflection of a single H tone. The question then arises how and where this tone is associated with the stem.

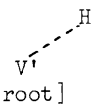
One way to associate the imposed H tone with the stem vowels is to assume a rule which associates this tone with all vowels of the stem simultaneously;

such a rule might look like (55).

(55) 

This rule has the merit of being straightforward, in that it gives the phonetic form directly. However, the rule also applies simultaneously to an unbounded string of vowels, and there is little evidence that linguistic theory needs to include such rules.

An alternative approach is to assume that the imposed H tone is mapped first onto the final stem vowel and is then spread backwards through the stem by the following rule.

(56) 

Ordinarily, a verb root does not contain any H tone after the root-initial syllable. The Leftward Spreading rule will only apply to those syllables in the stem which have no underlying tones and not to the initial syllable which has the lexical tone of the root.

The only possible difficulty which might be anticipated with the Leftward Spreading analysis is that there might be nouns of the tonal shape LLH, where we might expect Leftward Spreading to have applied. As far as I know, there are no nouns with the stem tone pattern LLH, although further research may show that this pattern is possible. If such nouns do appear, the Leftward Spreading rule could still be maintained by assuming that in such nouns each syllable has an underlying tone, so that there are no toneless syllables for the final H tone to associate with.

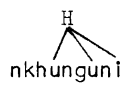
Interestingly, there are a number of nouns with H tones on all syllables, including on the final syllable, which might be derived by applying Leftward Spreading to an underlying HLH pattern.

(57) nthúmbíí 'monkey'
nkhámbákú 'bull'
nkhéngéwá 'pigeon'
nkhúngúní 'bedbug'

If nkhúngúní has the underlying form nkhúnguní , Leftward Spreading would

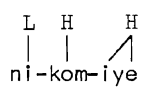
apply to give this noun the same pattern as that found in the nominalisation mikáángíé , which derives from underlying mikáangíé . It will clearly be impossible to account for the final H tone in the nouns in (57) by applying the (Rightward) Spreading rule to an underlying form such as nkhúnguni , since the final vowel could not take a H tone by Spreading. The only alternative to that outlined above is to represent these nouns as having a H tone lexically associated with all of the stem vowels; such representations as those in (58) are not otherwise needed in the lexicon.

(58)



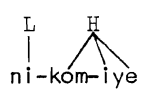
One interesting problem with the imposed H tone pattern in H toned stems is the fact that, although the tone of the stem is apparently composed of two separate H tone autosegments (the root H tone and the imposed H tone), no downstep occurs where the two H tones meet. So, we would expect the mapping and Leftward Spreading rules to yield a structure like that in (59), to which downstepping should apply.

(59)



One explanation for the failure of a downstep to appear here is that the Tone Absorption rule (37) applies to convert (59) into (60).

(60)

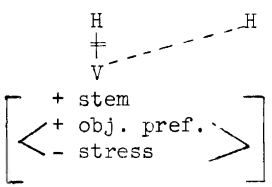


As discussed in the fifth section, Tone Absorption applies between the H tone of the object prefix and the H tone of the root. One might object to the position that this same rule can in fact apply within a root, since the rule was stated to apply to the tone of an object prefix. This then requires us to reevaluate the reasons for this specific restriction. Tone Absorption must be restricted so that the H tone of the subject prefix á- or the tense-aspect prefix -tέ- is not absorbed by the H tone of the root; instead, a downstep appears, as predicted.

(61) á-!kóm-a nyóka 'he's killing a snake (nf)'
a-tέ-!kóm-á 'he killed (vf)'

However, it is common in many Bantu languages for the object prefix and the root to form a tighter phonological and morphological unit than, say, the subject prefix and the stem. For example, in the mora-counting verbal tone assignment rules in Kimatuumbi [Odden 1982b], the object prefix must be treated as part of the stem. So, if the object prefix in Shambaa is treated as part of the stem, the Tone Absorption rule can apply to both the object prefix and to the imposed H tone, since both are in the stem, whereas the subject prefix and the tense-aspect prefix are not in the stem. However, it is still necessary to differentiate between application of Tone Absorption to the imposed H tone and to the object prefix; the [-stress] condition is required for the application of the rule to the object prefix (ni-tέ-ꜜchíꜜjá 'I ate it (vf)'), but not when the imposed H and the root H are combined in the imperative kóm-á 'kill!'

(62)



As I shall argue immediately below, there is also evidence that the root and imposed H tones fuse into a single tone; when one is lost, so is the other.

9. Lowering

Shambaa has one rule that lowers tones. That rule only applies in the subjunctive, and apart from the phonological specification which identifies the last H tone in the stem, the rule has no phonological conditions. In the subjunctive, I shall show, the last H tone of the stem is lowered (and that H tone may, of course, be associated with a number of vowels). The motivation for this rule is, for the most part, that such a rule helps to explain apparent restrictions on Spreading and Tone Copy.

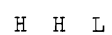
The tone pattern found in L toned verbs in the subjunctive is, at least for the data below, exactly what we would predict on the basis of the rule already motivated; the H tone of the subject prefix spreads throughout the stem to all of the vowels except the last one.

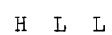
(63) nǐ-dǐk-e 'I should cook'
nǐ-ghóshó-e 'I should do'
ne nǐ-zúw-e 'I will skin (soon)'
sé !ǹǐ-ghóshó-e 'I won't do (soon)'

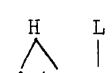
Unexpectedly, the Tone Copy rule fails to apply in (C)VC-V H toned verbs in the subjunctive.

(64) nǐ-kóm-e 'I should kill'
nǐ-ón-e 'I should see'
ne nǐ-ít-e 'I will go (soon)'
sé !ǹǐ-ít-e 'I won't go (soon)'
néze nǐ-kóm-e 'I will kill (later)'

There are two ways that one could explain the fact that the root H tone has not spread to the final vowel by Tone Copy. One could either stipulate that the rule is blocked in the subjunctive, or else one could assume that the H tone of the stem -kóm- is lowered in the forms in (64) and that the root-internal H tone there derives by application of Spreading (conditioned by the H toned subject prefix). I shall refer to the former hypothesis as the Restriction hypothesis and the latter as the Lowering hypothesis. Under the Lowering hypothesis, a derivation such as (65) is assumed.

(65)

ni-kom-e underlying


ni-kom-e Lowering


ni-kom-e Spreading

The Lowering hypothesis also explains another anomaly of the forms in (64), namely that no downstep appears between the subject prefix and the root, so that ú-kóm-e 'you should kill' contrasts in this respect with á-!kóm-a nyóká 'he's killing a snake (nf)'. If the root-initial H tone in ú-kóm-e results from spreading the prefixal H tone to the root, no downstep would be expected. The Restriction hypothesis requires, on the other hand, the stipulation that downstepping fails to apply in the subjunctive, and in fact this

restriction cannot be maintained so generally, as we shall see below, with multiple examples of downstepped H tones in the subjunctive.

I therefore propose the following Lowering rule to account for lowering of the stem H tone in the subjunctive.

(66) $\underset{[+root]}{H} \rightarrow L / \_\_\_\#$ subjunctive

When a subjunctive verb has an object prefix, a different tone pattern is found. As seen below with L toned verbs, the initial stem vowel has a H tone (derived from a L tone by spreading the H tone of the object prefix, which may itself derive from spreading of the H of the subject prefix). However, all of the stem-medial vowels have L tones.

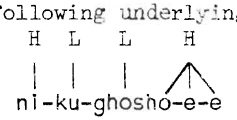
(67)

néze ní-kú-lóì-e	'I will see you'
néze ní-kú-ghósho-e-e	'I will do for you'
ní-kú-dík-iy-e	'I should cook for you'
ne ní-!wá-dík-iy-e	'I will cook for them (soon)'
sé !ní-!wá-ghósho-e-e	'I will not do for them (soon)'

Since Spreading applies to both the L toned object prefix -ku- and the initial stem syllable, it would be impossible to maintain that Spreading does not apply in the subjunctive when an object prefix is present. Rather, the restriction on Spreading must be limited (directly or derivatively) so that only stem-internal application of Spreading is blocked. The rule might be directly restricted by reformulating Spreading so that it does not apply to a non-initial stem vowel in the subjunctive if an object prefix is present. But such a restriction would be quite cumbersome to actually state in the Spreading rule, and as we shall see, there is reason to believe that another explanation is available for this apparent restriction on Spreading.

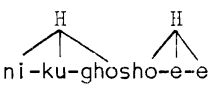
We may hypothesize that when the subjunctive has an object prefix, the imposed H tone is added to the stem, so that the form ní-kú-ghósho-e-e has the following underlying form.

(68)



One way to prevent the H tone of the subject prefix from spreading throughout the stem is to assume that Spreading applies to the above structure, and

yields (69).

(69) 

After the Spreading rule applies, some rule will lower the final H tone which is associated with all of the non-initial stem vowels, giving the correct phonetic form ní-kú-ghósho-e-e 'I should do for you'. But we already have a rule which lowers a stem H tone in the subjunctive, Lowering (66). With the assumption that the imposed H tone is added to a subjunctive stem with an object prefix, there is an explanation for the apparent failure of Spreading to apply inside of these L toned verb stems.

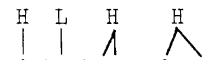
In addition to explaining the blockage of Spreading inside of the stem, we can also see more directly that the Lowering rule does in fact totally eliminate the H tone of H toned verb roots. As seen below, when the H toned root is preceded by an object prefix, the entire root is L toned, and Spreading stops at the initial vowel of the verb.

(70) ní-kú-kaang-iy-e 'I should fry for you'
ní-kú-kom-e 'I should kill for you'
ne ní-kú-fumbatish-e 'I will tie you securely (soon)'
sé !ní-kú-kom-e 'I will not kill you (soon)'
séze ní-kú-kaang-iy-e 'I won't fry for you'

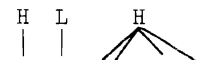
How are we to explain the loss of the root H tone in (70), as well as the failure of Spreading to apply into the verb stem? Assuming as I have that the imposed H tone is added to the stem, the Tone Absorption rule should combine the root H tone and the imposed H tone into a single H. The Spreading rule will spread the H of the subject prefix to the object prefix, but no further. Then the Lowering rule applies to the stem H, giving the phonetic form, as shown in the derivation below.

(71)

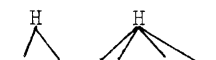
underlying



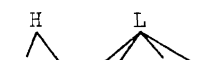
Leftward Spread



Absorption



Spreading



Lowering

Thus, the hypothesis that the subjunctive with object prefix has an imposed H tone explains the loss of the lexical H tone as well as the failure of Spreading to apply to any of the vowels of the verb root.

In the above examples, a L toned object prefix has been used. When the object prefix is H toned, we would expect that its tone would be absorbed into the root H tone (which also incorporates the root H tone and the imposed H tone). And, true to prediction, when an object prefix is H toned underlyingly, it undergoes Lowering along with the root and imposed H tones.

(72) né ní-wa-kaang-iy-e 'I will fry for them (soon)'
sé !ní-chi-teiy-e 'I won't know it (soon)'
séze ní-wa-kaang-iy-e 'I won't fry for them'
ní-wa-kom-e 'I should kill them'

We thus have the paradoxical situation that, when the underlying form has more H tones, there are fewer H tones on the surface.

Given the Tone Absorption rule as previously postulated, the fact that the H tone of the object prefix is lowered when the root H tone is lowered is automatically predicted, because the present analysis claims that the two H tones are the *same* H tone. In turn, these data give support to the claim that the Tone Absorption rule does combine the root H tone and the object prefix H tone; not only does downstepping fail to apply between the object prefix and the H toned verb root, but just in case the root H tone is lowered

(in the subjunctive), the H tone of the object prefix is also lowered.

Moreover, as predicted, when an object prefix is stressed in the subjunctive, it cannot undergo Tone Absorption, and therefore should not (and does not) undergo Lowering when the H tone of the verb root does.

(73) ní-ˈchí-je 'I should eat it (Cl.7)'
ní-ˈchí-nywe 'I should drink it (Cl.7)'

The derivation of the form ní-ˈchí-je is given below.

(74)
```
 H   H  H
 |   |  |
ni-chi-je          underlying
   NA              Absorption
 H   H  L
 |   |  |
ni-chi-je          Lowering
ní-ˈchí-je         downdrifting
```

There is in fact more direct evidence that the imposed H tone is added in the subjunctive when an object prefix is present. The Lowering rule generally wipes out the imposed H tone, but, in the far-future positive form of the subjunctive in a H toned root, the Lowering rule exceptionally fails to apply. Note, in contrast, that Lowering applies to all L toned verbs, to all far-future negative verbs, and to all near-future positive verbs. In (75) we see that the final and medial vowels of the stem are H toned, just as typically happens with the imposed pattern in other tenses where Lowering does not apply.

(75) néze ní-kú-ˈkááng-íy-é 'I will fry for you'
néze ní-kú-ˈkóm-é 'I will kill for you'
néze ní-ˈwá-kááng-íy-é 'I will fry for them'
néze ní-ˈwá-kóm-é 'I will kill them'

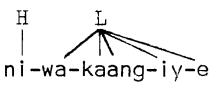
So, just in case Lowering fails to apply, the entire stem is H toned, including the final vowel.

There is one remaining problem which requires discussion before leaving the tone of the subjunctive. I have just argued that the imposed H tone is added to stems with an object prefix, that Absorption applies before Lowering, and that Spreading applies before Lowering in order to explain the fact that none of the stem-medial vowels in ní-kú-kaang-iy-e 'I should fry for you'

have H tone. On the other hand, to explain the fact that Spreading does apply to the stem-medial vowels in nǐ-kâáng-ǐy-e or nǐ-kǒm-e , we have to assume that Spreading applies before Lowering. An ordering paradox appears to be at hand; when the imposed H tone is added to the stem, Spreading must precede Lowering, and when the imposed H tone is not added, Lowering precedes Spreading.

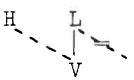
There is, fortunately, another explanation for why the stem-internal L tones in the form nǐ-kú-kaang-iy-e do not undergo Spreading. We may first assume that Spreading applies after Lowering (as it must for nǐ-kǒm-e 'I should kill') and that the Spreading rule is restricted so that it only applies to a L tone associated with a single vowel; with this restriction, Spreading could not apply to nǐ-wa-kaang-iy-e , since the L tone is associated with multiple vowels, as shown in (76).

(76)



The only source for a L tone associated with multiple vowels is in fact from application of Lowering to the imposed H tone, and it is precisely in the case where imposed H tone is lowered that Spreading is violated on the surface. Thus, Spreading must be reformulated as in (77).

(77)



The apparent ordering paradox between Lowering and Spreading can therefore be resolved by ordering Lowering before Spreading, but also restricting Spreading so that it only applies to a L tone associated with a single vowel.

10. Conclusions

I have surveyed a number of different tonal alternations in Shambaa, some of which cut across all categories, and some of which apply only in certain verb tenses. The discussions have been carried out within an autosegmental framework, and indeed, it is hard to see how some of these problems could be resolved in a segmental theory of tone—in particular, a segmental approach to tone could not provide any explanation of the limitation on Spreading seen above and could not handle downdrifting at all easily.

Beyond providing an example of how the autosegmental model can provide an enlightening account for Shambaa tone, this study also brings out facts of Shambaa which are of some comparative and historical interest. For example, I have argued here that Tone Copy and Tone Spreading must be accounted for by spreading the association of a H tone, since on general grounds, we would expect separate H tone autosegments to be separated on the surface by a downstep. So, Shambaa may furnish important evidence bearing on the original form of Spreading in other Bantu languages, where there may be no evidence to argue for a feature-changing versus association-spreading approach to Spreading.

The analysis given here for the imposed H tone in the subjunctive has comparative value as well. Meeussen (1976) reconstructs for Proto-Bantu a tone pattern for the subjunctive with object prefix where the final and medial vowels of the root have a H tone. No such surface pattern is seen in Shambaa ní-wa-kaang-iy-e 'I should fry for them', but as I have argued here, the underlying form ní-wá-kááng-íy-é is precisely what Meeussen reconstructs for Proto-Bantu.

Finally, this study gives us information about Shambaa which may be valuable in understanding the subgroupings within Bantu. In particular, the Tone Absorption rule is not limited to Shambaa, but also apparently is found in the neighboring language KiPare. However, in the southern dialect of KiPare, the surface evidence for Absorption is of a different character than in Shambaa; in KiPare, the Absorption rule is necessary to prevent the object prefix from lowering the H tone of the verb root (where, otherwise, a H tone immediately after a H tone is always lowered). Based only on surface data, one would not suspect that the two languages share the same rule.

REFERENCES

Clements, G.N. 1981. "The hierarchical representation of tone features." In G.N. Clements (ed.) *Harvard Studies in Phonology*, vol. 2, pp. 50-

107. Bloomington, IN: Indiana University Linguistics Club.

Kähler-Meyer, E. 1962. "Studien zur Tonalen Struktur der Bantusprachen; Shambala." *Afrika und Übersee* 46:1-43.

Leben, W.R. 1978. "The representation of tone." In V.A. Fromkin (ed.), *Tone: A Linguistic Survey*, pp. 177-220. New York: Academic Press.

Meeussen, A. 1955. "Tonalunterschiede als Reflexe von Quantitätsunterschieden in Shambala." In J. Lukas (ed.), *Afrikanistische Studien*, pp. 154-156. Berlin: Akademie Verlag.

Meeussen, A. 1967. "Bantu grammatical reconstructions." *Annales, Musée Royal de l'Afrique Centrale, Série in-8^0, Sciences Humaines*, n. 61, pp. 79-122. Tervuren: Musée Royal de l'Afrique Centrale.

Nurse, D. 1979. "Description of sample Bantu languages of Tanzania." *African Languages* 5(1).

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

Odden, D. 1981. "Problems in tone assignment in Shona." Doctoral dissertation, University of Illinois.

Odden, D. 1982a. "A metrical account of pitch level." MS, Yale University.

Odden, D. 1982b. "An accentual approach to tone in Kimatuumbi." Paper presented at the 13th Conference on African Linguistics, Montreal.

Roehl, K. 1911. *Versuch einer Systematischen Grammatik der Shambalasprache*. Abhandlungen des Hamburgischen Kolonialinstituts, 2.

Van Spaandonck, M. 1967. *Morfotonologische Analyse in Bantutalen*. Gent: Academisch Proefschrift.

NOTES AND QUERIES

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

Contributions to "Notes and Queries" should be less than 1000 words, including examples. No footnotes should be used, but references may be listed at the end.

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EXISTENCE AND POSSESSION IN BISA

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John Hutchison argues [1980] that what have been considered as several different homophonous particles in Kanuri should be rather analysed as a single morpheme, an associative postposition. Part of the argumentation is designed "to show how a single morpheme...could carry out all the functions" (p.350) involved, in order to help justify the "proposed unity of the seemingly incongruous spectrum of functions" (p.351). One group of these functions involves the predication of existence (in the universe, or at a specific time and place) upon a single nominal argument, or predication of the possession or characterization of one argument by another. While this section of Hutchison's paper (3.1, pp. 325ff) may not be the most controversial part of his proposals, it might be of interest to consider the linking of these particular functions, though expressed by different grammatical means, in Bisa.

Bisa is a language of the southeastern subgroup of Mande [Prost 1953] spoken in Upper Volta and northeastern Ghana. It has a considerable number of verb-less clauses, both in terms of types and in terms of tokens in running text (some 20% in my sample; cf. Naden [1970:106]). These express identification, classification/role, location:

(1)	Identification		Gi n dog copula-particle	'It's a dog'
(2)	Classification/Role	a)	Mɔɔ gaasiba ibii n I friend thou cop-pt.	'You are my friend'
		b)	Tiikya awɔ n teacher he cop-pt.	'He is a teacher'
(3)	Location		Ibii Fransii-w sɔ thou France -in also 'You, too, are in French territory'	

There is also, however, a very frequently used pair of existential/locative verbs ŧa 'to exist, be in...' and ba 'not to exist, not to be in...'. These are almost invariably followed by the clitic postposition/adverb of location, which is -w following a vowel (as in (3) above), and -o following a consonant. With ba , which is intrinsically negative, there appears the clause-final negative particle -y (~ -i) . Basic usage of these items can be seen in the common greetings (see also Naden [1980]):

(4) A: Laafi ta -w ge? B: Laafi ta -w
health exist-in eh health exist-in
'Are you well?' 'Yes'

(5) A: Mii -si ba - w-i ge? B: Mii -si ba - w-i
trouble-any not exist-in-neg eh trouble-any not exist-in-neg
'No trouble?' 'No trouble'

These verbs may predicate absolute existence ('in the universe'), as clearly in the oft-heard fatalistic formula:

(6) Wusu ta - w 'God exists'
God exist-in

They may also predicate localized or available existence:

(7) Fɔbile ba - w-i 'There is no food (here, at the moment)'
food not exist-in-neg

The verbs are often also used with a locative adjunct to predicate existence or location in a particular place:

(8) Gwaa ta naa -w 'There's a man here'
man exist this-at

(9) A ba naa - w-i 'He isn't here'
he not exist this-at-neg

(10) A ta m par -o 'He is at my house'
he exist I house-at

Possession is expressed by predicating the existence of a NP with the possessor as pre-posed associative modifier:

(11) Mɔɔ lu ta - w 'I have a wife'
I wife exist-in (or 'My wife is here/is alive')

cf. Mɔɔ lu bor naa -w 'My wife came here'
I wife came this-at

(12) A fɔ -si ba - w-i 'He has nothing'
his thing-any not exist-in-neg

The choice of 'possessed' NPs of other semantic classes yields a number of other meanings equally exemplified in Hutchison's Kanuri examples:

(13) A gwili ta-w 'It is heavy' (gwili 'weight')

(14) Mɔɔ nɔ ta-w 'I am hungry' (nɔ 'belly')

(15) A gweli ta-w 'She is pretty' (gweli 'beauty')

The associative pronoun can be deleted if it is adequately determined by discourse or pragmatic context:

(16) Nyintiim ba-w-i 'I (you/he/she...) have insomnia' (nyintiim 'sleep')

(17) Paŋa ta-w 'He (it/you...) is strong' (paŋa 'strength')

The postposition/adverbial relator particles in Bisa collocate with verbs in a way very comparable with the English 'phrasal verb' patterns. The basic argument order is S-(O)-V-(R) where R is a relator phrase functioning as indirect object, the exact semantic status of this constituent depending on the verb selected and on the obligatory or optional co-presence of the direct (pre-verb) object. These structures furnish an alternative way to use the existential verb to predicate possession (this form is only used in the positive): the possessor is subject of the clause and the possessed is in the R place (ta and ba are never found with pre-verb DO)--a reversal of the more common approach of which the classic example is the Latin est mihi 'there is unto me' possessive:

(18) A ta busoo n guta 'He has lots of money'
he exist money with big

In my data, this form is the normal one (and is largely restricted to cases) where something additional follows the basic core of the clause, like the guta of (18) which is equally analysable as an adverb modifying the whole predicate or as a heavy-shifted modifier from the R constituent (busoo guta 'much money').[1]

Finally, there is a small group of verbs with a S-(O)-V-(R)-C frame where C is a complement predicated upon the subject: 'become' and 'make into' are the sort of concepts involved. This frame is used by ta in one common construction where a dummy 'it' is the subject, the complement is an experience, and the experiencer is at R:

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[1]I use the term 'heavy shift' in this and related cases because the adjective (or numeral, relative, quantifier, second part of coordination) normally follows the Noun Head of the NP which is Subject or Topic (or, in some cases, Object; Clause order is invariably SOV) but is moved to the right so as to follow the predicate, so normally to clause-final position--i.e. complex NPs in leftward positions tend to be split so that the modifiers can be end-shifted.

(19) A ta mɔɔ ma nyinta 'I'm happy'
it exist me for sweet

Thus in Bisa, as in Kanuri, we see a link between the expression of existential, possessive, and characterizing/experiential predicates. That this is by no means inevitable may be seen by considering the Gur languages by which Bisa is surrounded (Mooré, Gurma, Kusaal, Mampruli) which have a verb for 'to have' which takes a straight direct object of the thing possessed and contrasts lexically with the existential/locative verb which parallels many of the other functions of Bisa ta/ba . The Bisa 'my...exists' seems to be a fairly unusual way of expressing possession.

REFERENCES

Hutchison, John P. 1980. "The Kanuri associative postposition: a case for subordination." *Studies in African Linguistics* 11:321-355.

Naden, Anthony J. 1970. *The Syntax and Semantics of Bisa.* (mimeo) Merstham, Surrey: SIL(UK).

Naden, Tony. 1980. "How to greet in Bisa." *Journal of Pragmatics* 4:137-146.

Prost, André, R.P. 1953. *Les langues mandé-sud du groupe mana-busa.* Dakar: IFAN (Mémoire No. 26).

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LANGUAGE RESOURCE PROJECT

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The African Studies Center at Michigan State University has been awarded a grant from the U.S. Department of Education for the production of a handbook of human, institutional and material resources for the teaching and learning of African languages. Because of the existence of over 2000 languages now being spoken in Africa, this investigation has been restricted to the 82 highest priority languages established in a 4-tier ranking by the 1979 meeting of Africanist linguists and area specialists representing the major African studies centers in the U.S. (See Wiley, David and David Dwyer, compilers, *African Language Instruction in the United States: Directions and Priorities for the 1980s*, East Lansing, Michigan: Michigan State University, African Studies Center, 1980.)

As a first step in this project we are assembling for each of the languages listed below a list of individuals throughout the world who are actively engaged in scholarly studies in the language, whether teaching, linguistic research, preparing language materials or producing literature.

All scholars interested in being included or who have recommendations for inclusion should write to David Dwyer, Language Resource Project Director, or Kay Irish, Administrative Assistant, c/o African Studies Center, Room 100 International Center, Michigan State University, East Lansing, Michigan, 48824. Please include the following: name and title (where relevant), correspondence address, language(s) appearing on the list for which the scholar has experience. Those responding will then be contacted for further information.

Group A Languages (Highest Priority)

Akan (Twi/Asante/Akuapem/Fante), Amharic, Arabic, Chewa/Nyanja, Fula (Fulfulde/Peulh/Fulani), Hausa, Igbo, Kongo, Malagasy, Mandingo (Bambara/Mandinka/Dyula), Ngala (Lingala), Oromo (Galla), Ruanda/Rundi (Kinyarwanda/Kirundi), Sango, Shona, Somali, Sotho/Tswana, Swahili, Tigrinya, Umbundu, Wolof, Xhosa/Zulu/Swazi (Ndebele), Yoruba.

Group B Languages (Second Priority)

Anyi/Baule, Bamileke, Bemba, Berber (Tamazight/Tamacheq/Kabylle), Chokwe/Lunda, Efik/Ibibio, Ewe/Mina/Fon, Ganda (Luganda), Gbaya, Kalenjin (Nandi/Kipsigis), Kamba (Kikamba), Kanuri, Kikuyu, Krio/Pidgin (Cluster), Luba (Chiluba), Luhya, Luo (Acholi/Lango), Makua (includes Lomwe), Mbundu (Kimbundu), Mende/Bandi/Loko, Mongo/Nkundo, More/Mossi, Nubian, Senufo, Songhai, Sukuma/Nyamwezi, Tiv, Tsonga (Shitsonga/Ronga or Shironga/Tswa or Shitswa), Yao/Makonde (Bulu), Zande (Azande).

Group C Languages (Third Priority)

Dinka (Agar/Bor/Padang), Edo (Bini), Gogo (Chigogo), Gurage, Hehe, Idoma, Igbira, Ijo, Kpelle, Kru/Bassa, Lozi (Silozi), Maasai, Mauritanian Creole, Meru, Nama (Damara), Nuer, Nupe, Nyakusa, Nyoro, Sara, Serere/Sine (Serer), Sidamo, Soninke, Suppire, Susu, Temne, Tumbuka (Chitumbuka), Turkana/Teso, Venda.

Group D Languages (Lowest Priority)

All remaining languages.