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OBSERVATIONS ON THE IMMEDIATE DOMINANCE CONSTRAINT, TOPICALIZATION, AND RELATIVIZATION[1]

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1. Introduction

In two recent syntactic studies, Tai [1969], and Sanders and Tai [1972], a non-universal Immediate Dominance Constraint (hereafter IDC) on identity deletion is proposed to account for the systematic differences that obtain in the patterns of coordination reduction, topicalization, dislocation and relativization between languages like Chinese and languages like English. These studies in effect subcategorize the languages of the world into two types: (1) immediate dominance languages, and (2) non-immediate dominance languages. Chinese is claimed to be a language of the former type, and English is of the latter type. Sanders and Tai [1972] claim that by assuming that the IDC holds for languages of the Chinese-type, but not for those of the English-type, they can account for "the well-formed coordinations of all languages by means of a single universal principle of coordination reduction," and that they can derive the well-formed topicalizations, dislocations, and relative clause constructions of "all languages by means of the same set of universal principles of Copying, Deletion, and Pronominalization."

The point of this paper is to present a counter-example to the IDC. In particular, it will be shown here that the generalized IDC proposed in Sanders and Tai [1972] makes the wrong prediction about Dzamba and other related Bantu languages. It will then be argued that while the IDC seems to be necessary for an explanation of the systematic differences in the

[1]I am indebted to Talmy Givón, Roger Higgins, and Andreas Koutsoudas for having read and made invaluable comments on earlier drafts of this paper. An abbreviated version of this paper was presented at the Third Conference on African Linguistics held at Indiana University, Bloomington, Indiana, April 1972, under the title: "Immediate Dominance, Topicalization, and Relativization."

patterns of coordination between languages of the Chinese-type and those of the English-type, it is not sufficient for an explanation of their respective patterns of topicalization, dislocation, and relativization.

2. IDC and Coordination Reduction

Ross [1967a,b] proposed two reduction rules to account for the derivation of sentences like b from sentences like a in (1) through (4):

(1) a. Wang drank beer, and Lee drank vodka.
    b. Wang drank beer, and Lee vodka.

(2) a. Wang caught the fish, and Lee sold the fish.
    b. Wang caught and Lee sold the fish.

(3) a. Wang hit the boy, and Wang kicked the girl.
    b. Wang hit the boy and kicked the girl.

(4) a. Wang enjoyed the fish, and Lee enjoyed the fish.
    b. Wang and Lee enjoyed the fish.

Ross called the rule that derives verb-reduced coordinations like (1b) Gapping [1967a], and that which derives object, subject and predicate-reduced coordinations like (2b)-(4b) Conjunction Reduction [1967b].[2] To account for these systematic reductions, Ross [1967a:843] proposed the

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[2] For Ross [1967a], Gapping is a rule that reduces coordinate sentences by deleting identical occurrences of verbs, whereas Conjunction Reduction [Ross 1967b] deletes identical occurrences of noun phrases. Ross differentiates these two rules in that Conjunction Reduction involves regrouping of constituents, while Gapping does not. Tai [1969] and Koutsoudas [1971] have independently argued that this distinction is not necessary for the two rules obey the same directionality principle. Further, Koutsoudas [1971] has shown that (1) if a language has verb-reduced coordinations it must also have object-reduced coordinations, that is, a language will have either both reductions or it will have none; and (2) that given this fact and the lack of cases where rule ordering forces a separation of Gapping from Conjunction Reduction, these two rules must be considered as special cases of the same general rule: Coordinate Deletion. A similar argument is made in Sanders [1970]. Tai [1969] and Koutsoudas's [1971] analyses of these rules are not crucial for this paper. Thus, unless otherwise specified, Gapping and Conjunction Reduction will be understood here in Ross's [1967a] sense.

following directionality principle:

(5) The order in which Gapping operates depends on the order of the elements at the time that the rule applies; if the identical elements are on left branches, Gapping operates forward; if they are on right branches, it operates backwards.

In applying this analysis to languages of the Mandarin-Chinese type, Tai [1969] found that while Conjunction Reduction is allowed under well-defined conditions, Gapping is not allowed at all. Specifically, Tai shows that Mandarin-Chinese allows only subject NP-reduced and VP-reduced coordinations (cf. 7b, 9b), but not verb and object-reduced coordinations as can be seen from the ill-formedness of (6b) and (10b):

(6) a. Wang hit the boy, and Wang kicked the girl.
b. Wang dále nánháizi, Wang tile nyúhaizi.

(7) a. Wang hit the boy and kicked the girl.
b. Wang dále nánháizi, tile nyúhaizi.

( ) a. Wang hit and Lee kicked the boy.
b. *Wang dále, Lee tile nánháizi.

(9) a. Wang and Lee hit the boy.
b. Wang gen Lee dále nánháizi.

(10) a. Wang hit the boy, and Lee, the girl.
b. *Wang dále nánháizi, Lee nyúhaizi.

That subject-reduced and VP-reduced coordinations should be permitted in Chinese is not surprising, for it seems to be the case that all natural languages allow these types of reductions.[3]

Tai [1969] showed that there is a systematic difference between the grammaticality of sentences such as (7) and (9) in both English and Chinese, and the ungrammaticality of the Chinese sentences (8b) and (10b) in contrast to the English (8a) and (10a). To account for this systematic difference,

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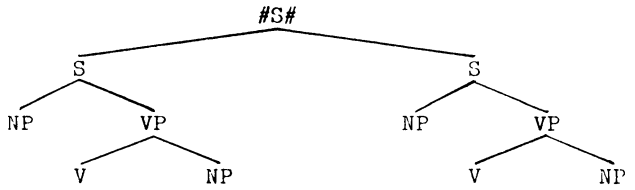
[3] I am indebted to A. Koutsoudas for this observation. As will be shown below the Bantu languages under discussion here allow these reductions also.

Tai [1969:79] proposed the IDC stated in (11):

(11) In a coordinate structure, only constituents which are immediately dominated by conjuncts can undergo identity deletion.

What constraint (11) states is that given a P-marker such as (12),

(12)



a language that allows the deletion of the subject NP's and that of the VP's, but never that of the verbs and object NP's, is an immediate dominance language. In contrast, a language that permits the deletion of any of the four constituents, i.e. subject NP, VP, V, and object NP, is a non-immediate dominance language. Accordingly, Chinese is an immediate dominance language, and English is a non-immediate dominance language.

Tai maintains that the IDC is sufficient and necessary for the differentiation of grammatical from ungrammatical coordinations in a language such as Chinese, and that its application is independent of categorial properties of constituents and/or deep structure case properties. Tai presents in this respect evidence of constructions where certain VP-dominated constituents such as adverbs and object NP's become deletable once they are preposed, e.g. via Adverb Preposing and Passive transformations. These reductions are permitted, Tai points out, precisely because the constituents under consideration become superficially dominated by S.

Both Dzamba and Lingala, two Bantu languages spoken in Zaire, allow verb-reduced as well as object-reduced coordinations. To see this consider, first, the following Dzamba sentences:[4]

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[4]The unstressed initial vowels on noun phrases such as i-ziboke and i-buki function as determiners in Dzamba. A similar phenomenon has been observed in Likila and Luganda. For a discussion of this phenomenon in Dzamba, see Bokamba [1971].

(13) a. oBaba azii i-ziboke, bo oToma azii i-buku.
(Baba got the package, and Tom got the book.)

b. oBaba azii i-ziboke, bo oMusa, i-buku.
(Baba got the package, and Musa, the book.)

(14) a. oBaba atomi i-ziboke, bo oMusa azii i-ziboke.
(Baba sent the package, and Musa got the package.)

b. oBaba atomi bo oMusa azii i-ziboke.
(Baba sent and Musa got the package.)

These sentences illustrate Gapping (13b) and Conjunction Reduction (14b) à la Ross [1967]. More specifically, the sentences in (13) show that for any well-formed sentential coordination with identical verbs (13a), there is a corresponding verb-reduced paraphrase with coordinate subjects (13b). And (14) shows that for any well-formed sentential coordination with identical objects (14a), there is a corresponding object-reduced paraphrase with coordinate subjects (14b).

Now consider in the same respect the following Lingala sentences:

(15) a. Kato alambi lɔsɔ, mpe Lulu alambi nyama.
(Kathy cooked rice, and Lulu cooked meat.)

b. Kato alambi lɔsɔ, mpe Lulu, nyama.
(Kathy cooked rice, and Lulu, meat.)

(16) a. Kato asombi lɔsɔ, mpe Lulu alambi lɔsɔ.
(Kathy bought rice, and Lulu cooked rice.)

b. Kato asombi mpe Lulu alambi lɔsɔ.
(Kathy bought and Lulu cooked rice.)

Just like in Dzamba, these sentences illustrate Gapping (15b) and Conjunction Reduction (16) à la Ross. The sentences in (15) show that for any grammatical sentential coordination with identical verbs in Lingala (15a), there is a corresponding verb-reduced paraphrase with coordinate subjects (15b). Similarly, for any grammatical sentential coordination with identical objects (16a), there is a corresponding object-reduced paraphrase with coordinate subjects (16b).

Further, both Dzamba and Lingala, just like many other natural languages of the world, allow subject-reduced as well as VP-reduced coordinations as can be seen from the Dzamba examples (17b) and (18b), and the Lingala (19b) and (20b):

(17) a. oMama a-nyamol-áki i-nswe, bo oMama aomb-áki ma-mako.
(Mother sold the fish, and mother bought the plantains.)

b. oMama a-nyamol-áki i-nswe bo a-omb-áki ma-mako.
(Mother sold the fish and bought the plantains.)

(18) a. oMusa a-ke-éki o motei, bo oPɔsɔ a-ke-éki o motei.
(Musa went to the market, and Pɔsɔ went to the market.)

b. oMusa n' oPɔsɔ ba-ke-éki o motei.
(Musa and Pɔsɔ went to the market.)

(19) a. Kato a-tɛkis-áki mafuta, mpe Kato a-somb-áki mbisi.
(Kathy sold the oil, and Kathy bought the fish.)

b. Kato a-tɛkis-áki mafuta mpe a-somb-áki mbisi.
(Kathy sold the oil and bought the fish.)

(20) a. Kato a-mon-áki Musa lɛlɔ, mpe Lulu a-mɔn-áki Musa lɛlɔ.
(Kathy saw Musa today, and Lulu saw Musa today.)

b. Kato mpe Lulu ba-mɔn-áki Musa lɛlɔ.
(Kathy and Lulu (they) saw Musa today.)

Clearly, on the basis of the facts given in (13) through (16), Dzamba and Lingala cannot be immediate dominance languages, for immediate dominance languages do not allow verb-reduced nor object-reduced coordinations. Accordingly, Tai's IDC (cf. 11) would, up to this point, correctly group Dzamba and Lingala with English as non-immediate dominance languages.[5] If this is correct, we should expect the patterns of Dislocation and Relativization in Dzamba and Lingala to correlate with those of the

[5]Other Bantu languages not discussed in this paper such as Likila, Lomɔngɔ, and Libinza would also be grouped accordingly, because they allow these reductions.

English-type of languages (i.e. non-immediate dominance). But as it will be shown momentarily, this is not the case.

3. IDC and Copying Rules

Given this systematic correlation between the deletability of verbs and objects in sentential coordinations in non-immediate dominance languages and the non-deletability of the same constituents in immediate dominance languages, Sanders and Tai [1972:169] claim that by extending the IDC from the case of

(21) ... immediate dominance by a conjunct sentence to that of immediate dominance by any sentence which is not the highest sentence of any structure

they can explain a number of additional correlations that seem to obtain between natural languages. Specifically, Sanders and Tai [1972] propose to analyze movement rules as consisting of the set of the following three ordered universal rules:[6]

(22) a. Copying (optional)

$$_S[\ X\ NP\ Y\ ] \longrightarrow\ _S[\ NP\ \#_S[\ X\ NP\ Y\ ]\ \#\ ]$$

b. Deletion (optional)

$$_Z[\ NP\ \#_S[\ X\ NP\ Y\ ]\ \#\ ] \longrightarrow\ _Z[\ NP\ _S[\ X\ Y\ ]\ ]$$

c. Pronominalization (obligatory)

$$_Z[\ NP\ \#_S[\ X\ NP\ Y\ ]\ \#\ ] \longrightarrow\ _Z[\ NP\ _S[\ X\ \overset{NP}{Pro}\ Y\ ]\ ]$$

Sanders and Tai claim that by assuming the non-universal IDC on identity deletion and the extrinsically ordered set of universal rules in (22), they can predict the occurrence and co-occurrence of reduced coordinated, topicalized, dislocated and relative clause constructions in all languages. That is, they predict that immediate dominance languages like Chinese and Lebanese, and non-immediate dominance languages like English, will

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[6] We will argue below that this extrinsic ordering restriction is unnecessary. I am indebted to Talmy Givón for this observation.

behave exactly as in Table I.

Table I

RULES	Immediate Dominance languages	Non-Immediate Dominance lang.
	Chinese/Lebanese	English
Gapping: V, O [7]	-	+
Conj. Reduction	+	+
Topicalization [8]	-	+
Dislocation	+	+
Pronom. reflex in Rel. Cl.	+	-

In other words, Sanders and Tai [1972] maintain that by assuming the rules of (22), the IDC will enable them to predict that (1) Chinese or Lebanese will not have Gapping and Topicalization, but will have Conjunction Reduction, Dislocation, and a pronominal reflex in its relative clauses. And (2) that Deletion (22b) will be blocked by the IDC from applying in the embedded clauses to delete either the subject NP or the object NP. Pronominalization, however, will apply obligatorily and the resulting sentences in Chinese or Lebanese will contain pronominal reflexes in their embedded relative clauses. This, Sanders and Tai argue, explains why relative pronoun reflexes are always found in the embedded clauses of languages such as Chinese and Lebanese as exemplified in (23a) and (24), respectively:

(23) a. Wǒ bei ta dale de nèige nánhǎizi lǎile.
*(The boy that I was hit by him came.)

b. *Wǒ bei dale de nèige nánhǎizi lǎile.
(The boy that I was hit by came.)

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[7] Just for ease of presentation, Gapping is being used here as a rule that reduces both verbs and objects in coordination, and Conjunction Reduction is restricted to subject-reduced coordinations.

[8] Topicalization is being used here as defined by Ross [1967b] as distinct from Dislocation. According to Ross, the former rule is subject to the CNPC, CSC, and SSC, while the latter is not.

(24) a. il walad illi John darab-u izza.
*(The boy that John hit him came.)

b. *il walad illi John darab izza.
(The boy that John hit came.)

As can be seen from the ill-formedness of the Chinese (23b) and that of Lebanese (24b), the retention of the pronominal reflex in the embedded clauses of these languages is required.

Languages of the English-type, however, will have all five rules as shown in Table I, but no pronominal reflex will be retained in the embedded relative clauses of such languages. The ill-formedness of (23a) and (24a) attests to the correctness of this claim thus far. Sanders and Tai [1972] argue that the non-occurrence of pronominal reflexes in the embedded clauses of non-immediate languages like English can be explained by assuming that Deletion (22b) applies obligatorily. Thus in English (23b) and (24b) Deletion has applied obligatorily to delete the second identical occurrence of the boy. Clearly, given that English is a non-immediate dominance language, Deletion (22b) cannot be blocked from deleting the subject of the embedded clause as it was the case in Chinese (23a) and Lebanese (24a). And since Deletion cannot be blocked by the IDC in non-immediate dominance languages like English, it will always be the case, if Sanders and Tai's prediction is correct, that pronominal reflexes of objects will always be absent in the embedded relative clauses of such languages.

It was established in section 2 that Dzamba and Lingala are non-immediate dominance languages. If the predictions summarized in Table I are correct for a non-immediate dominance language like English, and if the IDC is to be maintained in its generalized version (cf. 21), the same predictions should hold for other non-immediate languages such as Dzamba and Lingala. But as the facts summarized in Table II show, this is not the case here.

According to Sanders and Tai (cf. Table I), there should not be any language such as Dzamba which is non-immediate dominance and yet (1) lacks Topicalization à la Ross [1967b] (as defined in footnote 8), and (2) retains pronominal reflexes in objects in its relative clauses. Specifically Sanders and Tai [1972:181] claim that

(25) ... any language which permits verb and object deletion in sentence coordinations will be a language which also requires the non-occurrence of anaphoric pronominal reflexes of identical objects in its well-formed relative clauses. Conversely, any language which has pronominal reflexes of objects in relatives will be a language which has no well-formed verb or object reductions of sentence coordinations. [Emphasis added, E.B.]

But as Table II shows, however, there are at least two natural languages

Table II

RULES	Immediate Dominance languages	Non-Immediate Dominance languages
	Chinese	Dzamba/Lingala
Gapping: V, O	-	+
Conj. Reduction	+	+
Topicalization	-	-
Dislocation	+	+
Pronom. Reflex in Rel. Cl.	+	+

that violate the IDC. A number of Bantu languages such as Dzamba require a pronominal reflex of objects in the embedded relative clauses for all well-formed relative clause constructions. Consider in this respect, first, the following Dzamba sentences:

(26) a. oMoto ó-lo-tomel-áki i-buku okɛi a-yei.
*(The man who sent the book to us he came.)

b. oMoto ó-lo-tomel-áki i-buku a-yei.
(The man who sent the book to us came.)

(27) a. Ba-bana ba-kài i-buku ʃ-bu-zw-áki bɛ́.
*(The children tore up the book that they found it.)

b. *Ba-bana ba-kài i-buku ʃ-zw-áki bɛ́.
(The children tore up the book that they found.)

(28) a. oPɔsɔ a-zw-áki i-mu-nkanda ʃ-mu-tom-áki Musa.
*(Pɔsɔ received the letter that Musa sent it.)

b. *oPɔsɔ a-zw-áki i-mu-nkanda ʃ-tom-áki Musa.
(Pɔsɔ received the letter that Musa sent.)

These sentences show that the differentiation of the well-formed relative clauses from the ill-formed ones in Dzamba depends on the retention of the anaphoric object pronoun in the embedded clause. More specifically, the pair of sentences in (26) show that the occurrence of a subject anaphoric pronoun in subject relativization in Dzamba is optional. The sentences

of (27) and (28) show, as attested by the ill-formedness of (27b) and (28b), that the occurrence of an object anaphoric pronoun in object relativization in Dzamba is obligatory.

The optional occurrence of a subject anaphoric pronoun in subject relativization, and the obligatory occurrence of an object anaphoric pronoun in object relativization in Dzamba can be explained naturally on both syntactic and semantic grounds if we accept the assumptions that (a) all grammatical agreements are transformationally derived; and (b) that in Dzamba, just like in all other Bantu languages, every verb must agree in class-gender and number with its subject noun phrase. If we accept these assumptions, it would follow that there are no headless relative clauses in Dzamba. Specifically, let us assume that the sentences of (26), for example, are derived from an intermediate structure such as

(29) $_{S_2}$(oMoto $_{S_1}$(omoto a-lo-tomel-áki i-buku)$_{S_1}$ a-yei)$_{S_2}$

'the man the man he-us-sent-to the book he-came'

via relativization of the NP omoto 'man/person' under identity. Relativization can yield another intermediate structure such as

(30) $_{S_2}$(oMoto $_{S_1}$(omoto ó-lo-tomel-áki í-buku)$_{S_1}$ a-yei)$_{S_2}$

to which either Deletion (22b) or Pronominalization (22c) may apply. If Deletion applies, sentence (26b) results; but since Deletion is an optional rule, we may choose not to apply it. If we do so, Pronominalization will obligatorily apply to yield sentence (26a) after the normal embedded subject NP postposing in the embedded clause.[9] Semantically, the deletion of the embedded subject noun in (26b) and the replacement of the regular subject agreement prefix a- for third person singular (human) by the relative pronoun marker ó- involves neither loss of information nor creates ambiguity, because the agreement on the verb of the matrix sentence, viz. a-yei, which refers to omoto takes care of that. Also, the relative marker on the verb of the embedded S refers to the same NP.

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[9] For a discussion of subject postposing phenomena in some Bantu languages see Givón [1972].

The situation is quite different, however, for object relativization for two main reasons. First, Dzamba, unlike Kiswahili and its dialects, disallows resumptive pronouns in the verb for unpreposed object noun phrases. That is, one does not find sentences like (31a) in Dzamba, whereas they are perfectly acceptable in Swahili:

(31) a. *oPɔsɔ a-mu-tom-áki i-mu-nkanda.
*(Pɔsɔ sent it the book.)

b. I-mu-nkanda, oPɔsɔ a-mu-tom-áki.
(The book, Pɔsɔ sent it.)

This being the case, there is no way to identify i-buku 'book' or mu-nkanda 'letter' in the embedded clauses of (27) and (28) as arguments of the predicates lo-zwa 'to find' and lo-toma 'to send' if the appropriate anaphoric object pronouns are not incorporated in those verbs. Second, since object, but not subject, relativization in Dzamba necessarily involves the postposing of the subject of the embedded clause to a position after its verb (cf. Givón [1972]), as well as loss of regular grammatical agreement between the verb and its subject, the obligatory deletion of the object anaphoric pronoun in accordance to Sanders and Tai's [1972] analysis results in ungrammaticality. That is, the verb of the embedded S as in (27b) and (28b) does not exhibit regular agreement with either its superficial subject (i.e. the preceding NP) or its deep subject, the noun immediately following the verb. This anomally results in a loss of information.

The phenomena of lack of regular agreement between the verb of the embedded clause and its subject, and the obligatory postposing of the embedded subject after the verb in object relativization apply only to two of the languages under consideration here, viz. Dzamba and (Standard) Lingala. Swahili, which does not require such operations, still requires the occurrence of object anaphoric pronouns in its embedded clauses as can be seen below:

(32) a. Ki-tabu amba-cho Bakari a-li-ki-ona ki-po hapa.
*(The book which Bakari saw it is here.)

b. Ki-tabu amba-cho a-li-ki-ona Bakari ki-po hapa.
*(The book which Bakari saw it is here.)

c. *Ki-tabu amba-cho Bakari a-li-ona ki-po hapa.
(The book which Bakari saw is here.)

(33) a. Ki-tabu a-li-cho-ki-ona Bakari ki-po hapa.
*(The book which Bakari saw it is here.)

b. *Ki-tabu a-li-cho-ona Bakari ki-po hapa.
(The book which Bakari saw is here.)

As attested by the ungrammaticality of (32c-d) and (33b), these sentences show clearly that in Swahili, whether the embedded subject is postposed or not, the occurrence of the anaphoric object pronoun is required. These facts clearly disconfirm Sanders and Tai's first claim.

The second claim made by Sanders and Tai (cf. Table I) is that a language which requires the occurrence of anaphoric object pronouns in its embedded clauses will also be a language that has no rule of Topicalization; such a language will instead have a rule of Dislocation. This claim is predicated on the assumption that Ross's [1967b:208-44] characterization of Topicalization and Dislocation is correct. In particular, Ross formally differentiates Topicalization from Left Dislocation in that the former is a chopping rule but the latter is not. Chopping rules, according to Ross [1967b], obey the Complex NP Constraint, the Coordinate Structure Constraint, and the Sentential Subject Constraint; whereas feature changing (or non-chopping) rules do not obey these constraints. As long as we assume with the authors the correctness of Ross's characterization of these rules, it will always be the case that languages which require anaphoric object pronouns for their embedded clauses will also be languages with no Topicalization.

But Sanders and Tai's [1972] claims do not stop here. Their third claim, which is related to the above, is that the "set of languages with Topicalization is precisely identical to the set of languages which do not observe the Immediate Dominance Condition," and that this correlation can be explained by the IDC itself (cf. 1972:171). We would like to show in this section that even if we grant Sanders and Tai the basic assumptions they wish to make, their analysis cannot account for the facts of the Bantu languages under consideration here. In particular, given that Dzamba and Lingala are non-immediate dominance languages (cf. section 2),

and assuming the three extrinsically ordered universal rules of Copying (22a), Deletion (22b), and Pronominalization (22c), Sanders and Tai predict that these languages will have both Topicalization and Dislocation à la Ross. That this prediction is incorrect is demonstrated by the ill-formedness of Dzamba (34b) and Lingala (35b):

(34) a. oPɔsɔ a-tom-áki i-mu-nkanda lɔɔme.
(Pɔsɔ sent the letter today.)

b. *I-mu-nkanda, oPɔsɔ a-tom-áki lɔɔme.
(The letter, Pɔsɔ sent today.)

c. I-mu-nkanda, oPɔsɔ a-mu-tom-áki lɔɔme.
(The letter, Pɔsɔ sent it today.)

(35) a. Pɔsɔ a-tind-áki mu-nkanda lɛlɔ.
(Pɔsɔ sent the letter today.)

b. *Mu-nkanda, Pɔsɔ a-tind-áki lɛlɔ.
(The letter, Pɔsɔ sent today.)

c. Mu-nkanda, Pɔsɔ a-mu-tind-áki lɛlɔ.
(The letter, Pɔsɔ sent it today.)

These sentences show that in both Dzamba and Lingala Left Dislocation, but not Topicalization à la Ross, is allowed. According to Sanders and Tai's predictions summarized in Table I, we expect to get both constructions The derivation for these constructions in Dzamba, for instance, would proceed as follows: Copying (and Raising) would apply to (34a) to yeild an intermediate structure such as (36a) to which Deletion would apply to yield (36b):

(36) a. $_S$(imunkanda $_S$(oPɔsɔ atomáki imunkanda lɔɔme)$_S$)$_S$

b. $_S$(imunkanda $_S$(oPɔsɔ atomáki lɔɔme)$_S$)$_S$

Once Deletion (22b) has applied to yield (36b), Pronominalization can no longer apply because its structural description (SD) is no longer met at this point in the derivation. Thus the application of Deletion before Pronominalization as extrinsically ordered by Sanders and Tai [1972:171-72] will always bleed the latter rule, and will also yield ungrammatical sentences in Dzamba as well as in Lingala. Clearly, given that these languages are non-immediate dominance, the IDC cannot be invoked to prevent the

derivation of ungrammatical sentences such as (34b) and (35b) above. Similarly, as long as the rules of (22) are assumed to be extrinsically ordered, there is no way to guarantee the derivation of dislocated sentences like (34c) and (35c) in these languages.

Note that in order to prevent the derivation of ill-formed sentences such as (34b) and (35b), Deletion must be blocked from applying after Copying has applied. There are two possible alternatives for accomplishing this. The first way is to still maintain the extrinsic ordering restriction but invert the order of Deletion (22b) and Pronominalization (22c) so that the latter follows Copying and precedes Deletion as in (37):

(37) a. Copying (optional):

$$_S[\ X\ NP\ Y\ ] \longrightarrow\ _S[\ NP\ \#_S[\ X\ NP\ Y]\ \#]$$

b. Pronominalization (obligatory):

$$_Z[\ NP\ \#_S[\ X\ NP\ Y\ ]\ \#] \longrightarrow\ _Z[\ NP\ _S[\ X\ \begin{matrix}NP\\Pro\end{matrix}\ Y\ ]\ ]$$

c. Deletion (optional):

$$_Z[\ NP\ \#_S[\ X\ NP\ Y\ ]\ \#] \longrightarrow\ _Z[\ NP\ _S[\ X\ Y\ ]\ ]$$

This formulation of the rules has at least two important advantages over that of Sanders and Tai. The first advantage is that Deletion will no longer bleed Pronominalization, and therefore the derivation of dislocated constructions discussed above will always be guaranteed. The only apparent problem the formulation in (37) creates is that Pronominalization will bleed Deletion, and therefore prevents the derivation of topicalized constructions à la Ross. This difficulty, however, can be avoided by allowing Deletion to apply to either an original NP or its anaphoric pronoun; that is, the rule will have to be reformulated as follows:

(38) Revised Deletion Rule (optional):

$$_Z[\ NP\ \#_S[\ X\ \left\{\begin{matrix}NP\\Pro\end{matrix}\right\}\ Y\ ]\ \#] \longrightarrow\ _Z[\ NP\ _S[\ X\ Y\ ]\ ]$$

The second advantage of the formulation in (37) is that it accounts for the obligatory retention of anaphoric object pronouns in the embedded clauses of non-immediate dominance languages such as Dzamba and Lingala. Further, the ordering in (37) seems to be more explanatory than that of

(22) in that it strongly suggests a formal relationship between Dislocation and Topicalization. The relationship suggested here is that the derivation of dislocated sentences in all languages involves the universal rules of Copying (optional) and Pronominalization (obligatory); whereas that of Topicalized sentences involves all three rules: Copying, Pronominalization, and Deletion (optional). The implication here is that topicalized sentences are simply variants, optional ones, of dislocated sentences. This formal relationship is also reflected on the semantic level as we shall argue below.

The other alternative for blocking the application of Deletion before Pronominalization is to assume a theory which allows no extrinsic ordering restrictions such as the one proposed by Koutsoudas, Sanders, and Noll [1974]. Given the Unordered Rules Theory, the application precedence of the three rules of (22) will be determined by universal principles rather than language specific restrictions. For a detailed discussion of this theory the reader should consult the works by Koutsoudas and Sanders cited in the bibliography. But for the purpose of this paper, the principle that is needed to obviate many of the difficulties inherent in the Sanders and Tai formulation is the Obligatory-Optional Precedence:

(39) If on any cycle, the structural descriptions of both an obligatory and an optional rule are met by a given representation, the obligatory rule must apply to this representation.

Given this principle, once Copying (22a) has applied to yield a P-marker that meets the SD of both Deletion (optional) and Pronominalization (obligatory), it will always be the case that the latter rule will have applicational precedence over the former. This mode of application, just like the first alternative suggested above, will guarantee the derivation of dislocated sentences in immediate dominance as well as non-immediate dominance languages. The only change that would be needed here in order to account for all the constructions discussed in this paper is the replacement of Sanders and Tai's original formulation of Deletion (22b) by our rule (38) above.

To summarize, we have shown in this section that Sanders and Tai's formulation of the three rules of Copying, Deletion, and Pronominalization lead to certain internal contradictions, and fail to account for the facts of Dzamba, Lingala, and Swahili. We have suggested two alternative solutions that avoid many of the difficulties inherent in their analysis. These solutions, however, just like Sanders and Tai's proposed set of universal rules (cf. 22), have one weakness to which we see no possible remedy; and that is, there is no principled way to prevent the application of the reformulated Deletion rule (38) after Pronominalization to yield ungrammatical topicalized sentences in Dzamba and Lingala. But since it is not our purpose here to propose a solution to the problem raised by Sanders and Tai's [1972] analysis, we leave this matter to future research.

Up to this point we have assumed with Sanders and Tai that Ross's [1967b] formal characterization of Topicalization as a chopping rule and that of Dislocation as a non-chopping rule is correct. We have assumed further that such a distinction is applicable to the Bantu languages under consideration here. But this latter assumption seems to be unfounded for simply the reason that there is no way to make a meaningful comparison between Topicalization à la Ross and Dislocation in Dzamba, Lingala, and Swahili as long as these languages seem to have only the latter rule, viz. Dislocation. Furthermore, many speakers of the English dialect that allows both of these constructions with whom I have talked feel that topicalized and dislocated sentences are almost synonymous. If this information is correct, we would like to propose that Topicalization with (i.e. Dislocation) and Topicalization without pronominal reflex are instances of the same general rule: Topicalization.

This proposal can be supported on both formal, syntactic, and semantic levels. Dislocated sentences can be formally analyzed in terms of Copying (37a) and Pronominalization (37b); and Topicalization can be analyzed in terms of Copying, Pronominalization, and Deletion (37c). If, however, equivalence or meaning or function must characterize constructions that are said to be derived from each other, then there are grounds for suggesting that neither could dislocated structures be derived via topicalized intermediates, nor could the latter be derived via the former. The

discourse context--and function--of both is strikingly different. To begin with, neither could appear where a topic (NP) is mentioned directly preceding and without other topics involved:

(40) Mary wrote a letter yesterday, and

a. She sent it today (Pronoun)

b. *The letter she sent today (Topicalization)

c. *As to the letter, she sent it today (Dislocation)

In a context where a topic is mentioned across a large gap in discourse, and then other topics are discussed, and then the speaker wants to alert the hearer to his resuming the old topic, dislocation alone is appropriate:

(41) Mary wrote a letter yesterday and meant to send it right away. But then she went out, went to the market, did most of her monthly shopping and bought bread, butter, fish and cabbage. On the way home she saw a bus crash into a motorbike.

a. *She sent it today (Pronoun)

b. *The letter she sent today (Topicalization)

c. Now as to the letter, she sent it today (Dislocation)

The context in which Topicalization is used is highly specific again. A group is established as a topic, and members of that group are to be contrasted. Under these conditions, optionally for the first member of the contrasting set but much more felicitously for the second, topicalization is used:

(42) Mary bought presents for her parents. She bought a knife for her father.

a. For her mother she bought a purse.

b. *She bought her a purse.

c. ?As for her mother, she bought her a purse.

It thus seems that Topicalization has a narrower functional range than Dislocation, which could function either contrastively or non-contrastively.[10] Note, further, that the group need not be topicalized explicitly,

[10] In Dzamba, where a Topicalization rule does not exist, Dislocation performs both functions. In Japanese, similarly, the same device (the case marker -wa) is used for both recall and contrastive Topicalization (see Kuno [1974]). For further discussion of "recall" and "contrastive" Topicalization, see Givón [1975].

but may also be established as contrastive topic implicitly, by inference from the first member:

(43) Mary bought a knife for her mother.
  a. *She bought him a vest.
  b. For her father she bought a vest.
  c. ?As to her father, she bought him a vest.

The two topicalization processes, Topicalization and Dislocation, obviously share features in common. For example, the NP under their scope may be definite or generic, but never referential-indefinite:

(44) a. As to the knife, she gave it to her father.
  b. As to the knives, they're used to cut things with.
  c. *As to a knife, she gave one to her father.
  d. The knife she gave to her father.
  e. Knives she gives him every Christmas.
  f. *A knife she gave to her father.

This restriction suggests that for both constructions some kind of antecedence in discourse is required. That is, they cannot be used for introducing new arguments into discourse. Finally, in languages where objects may be case marked and both Dislocation and Topicalization exist, the first may be easily achieved without preserving the "deep" case marking of the topicalized argument, but the second may not. Thus, consider the following data from Hebrew:[11]

(45) a. Ha-sefer, karati oto etmol. (Dislocation, non-contrastive)
  the-book, I-read it yesterday
  (The book, I read it yesterday.)
  b. *Hasefer, karati etmol. (Dislocation, pronoun missing)
  c. *Et-hasefer, karati oto etmol. (Dislocation, ACC case added)
  d. Et-hasefer karati etmol. (Topicalization, contrastive)
  ACC-the-book I-read yesterday.
  (The book I read yesterday.)
  e. *Et-hasefer karati oto etmol. (Topicalization, pronoun added)
  f. *Hasefer karati etmol. (Topicalization, ACC case missing)

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[11] For the data I am indebted to Talmy Givón [personal communication].

This suggests that in some sense Topicalization is much closer to the underlying structure of 'I'll can John tomorrow,' preserving the object case marking and disallowing a pronominal reflex. While Dislocation is a much more severe "operation", harder to justify as derived from either the underlying sentence (45f) or from the "topicalized" (45d).

Whether one type of analysis or another is adopted, one thing must be clear: languages such as Dzamba, Lingala, and Swahili, just like the immediate dominance languages of Chinese and Lebanese, cannot topicalize nor object relativize without leaving a pronominal reflex of the deleted noun.[12] These correlations cannot be purely accidental.

4. Conclusion

Whether the analysis just suggested is correct or not remains to be seen. What is certain, however, is that Sanders and Tai's generalized immediate dominance constraint has been shown to have failed in an important respect: predictability. In particular, Sanders and Tai [1972: 181-82] predict, first, that a language which allows verb and object-reduced coordinations will also be a language that requires the non-occurrence of anaphoric object pronouns in its well-formed relative clauses. We have just shown that Dzamba and Lingala allow all of these coordination reductions but require the occurrence of pronominal reflexes of objects in their well-formed relative clauses. Second, Sanders and Tai predict that non-immediate dominance languages will have both Topicalization with and Topicalization without pronominal reflex, as opposed to immediate dominance languages such as Chinese and Lebanese which will have only Topicalization with pronominal reflex (i.e. Dislocation). We have also shown that this is untenable for Dzamba and Lingala behave like immediate dominance in this respect by disallowing Topicalization without pronominal reflex.

Clearly, since Dzamba, Lingala, and Swahili behave as non-immediate dominance languages with respect to coordination reduction, and as immediate dominance languages with respect to Topicalization and Relativization, they cannot be called either non-immediate dominance or immediate

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[12] I am indebted to Talmy Givón for this observation.

dominance languages. It follows from this that they constitute a third group of languages that Sanders and Tai's [1972] analysis fails to predict. This being the case, the explanation for the facts of Topicalization and Relativization discussed here must be sought elsewhere.

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IGBO VERB COMPOUNDS AND THE LEXICON[1]

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1. Introduction

In Igbo, a Kwa language spoken in southeastern Nigeria, monosyllabic CV verb stems are usually fairly simple semantically. The polysyllabic verb stems, generally more complex semantically, are usually relatable to a series of simple CV verbs, or verbs plus CV suffixes. For example, the polysyllabic verb

(1) tụ́fụ̀[2] 'throw away, discard, lose'

can be considered a compound made up of the component verbs tụ́ 'throw' and fụ̀ 'be lost'. In general, the compound verb refers to an event; the first component indicates an action, and the second component indicates the goal or result of that action. The first component can be just about any action verb; the second component can be a stative or an action verb, or a suffix. Other than this, the only restriction on verbs eligible for compound formation seems to be the pragmatic one of limiting compounds to representing events conceivable in terms of action and result, given the speaker's intellectual and cultural experience.

It might be expected that this phenomenon can be accounted for in a rather straightforward fashion in terms of a conventional transformational statement deriving the compound from a multi-sentential source.

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[1]I would like to thank Edward Okwu for sharing with me his native speaker's perspectives on Igbo, Sandy Thompson for sharing her ideas about the nature of the lexicon in general and resultative verb compounds in particular, and George Bedell, Talmy Givón, Larry Hyman, J. O. Robinson, and William Welmers for commenting on an earlier treatment.

[2]Dialects of Igbo differ with respect to (among other things) phonological inventory and tone patterns. I have for the most part followed the representation of Central Igbo used in Welmers and Welmers [1968a]. Tone markings are high ´, downstepped high ¹, and low `. Monosyllabic verbs are cited with infinitive tone; since the tone patterns of polysyllabic verbs in the various verb constructions are for the most part predictable from the inherent tones of the individual components, polysyllabic verbs are cited with these inherent tones.

Although I have not seen such a proposal advanced for Igbo, a transformational account has been proposed for a strikingly similar set of words, called resultative verb compounds, in Mandarin Chinese. This approach is considered and rejected by Thompson [1973]; she concludes that productive processes in a language are not necessarily best represented in a grammar as transformational processes, and proposes accounting for resultative verb compounds as two sets, one set derived by lexical rules and one set listed in the lexicon. Carrell's [1970] transformational description of Igbo takes a different approach; the phrase structure rules generate adverbials which are later incorporated into the verb, producing polysyllabic verbs.

I will consider a transformational derivation for Igbo verb compounds; such a derivation is found to be inadequate because of the idiosyncrasies of compounds with respect to their components, and because of the action-result meaning of compounds. Lexical listings for all compounds are proposed, but with combinatory rules in the lexicon to account for the productivity of the compound-formation process. The action-result meaning is represented as integral to the meaning of the compound. A phrase structure account is rejected as inadequate. I will discuss a transformational account in sections 2 and 3, a lexical account in sections 4 and 5, and a phrase structure account in section 6.

2. Deriving Verb-Verb Compounds Transformationally

Since transformations map phrase markers into phrase markers, we can consider the derivation of a verb like (1) tụ́fù 'throw away' as the result of a process combining (2) and (3) to produce (4).

(2) ọ́ tụ̀rụ̀ ákwụ́kwọ́
he throw-TNS[3] paper
'He threw the paper.'

(3) ákwụ́kwọ́ fụ̀rụ̀
paper be-lost-TNS
'The paper got lost.'

[3] TNS here refers to the -rV tense-aspect suffix termed 'factative' by Welmers and Welmers [1968b], having a roughly 'past' meaning.

(4) ọ́ tṵfù̀rù ákwṵ́kwọ́
he throw-away-TNS paper
'He threw away the paper.'

We can come up with a statement representing the process transformationally according to a formulation roughly like (5).

(5) S_1 [NP V TNS NP] CONJ S_2 [NP V TNS] ⟹
ọ́ tṵ́ ákwṵ́kwọ́ ákwṵ́kwọ́ fù
he throw paper paper be-lost
1 2 3 4 5 6 7 8

1 2+7 3 4
ọ́ tṵ́fù TNS ákwṵ́kwọ́
he throw-away paper

Conditions: (i) 3=8
(ii) 4=6

A statement like (5) will give us the desired output for compounds like (1) tṵ́fù 'throw away', as in (4). Here ákwṵ́kwọ́ 'paper' is the understood object of the first verb component tṵ́ 'throw', and ákwṵ́kwọ́ 'paper' is also the understood subject of the second verb component fù 'be lost'. Other compounds with this causative interpretation include (6)-(9).

(6) fṵ̀nyṵ́ fṵ̀ nyṵ́
'blow out' 'blow' 'be off'

(7) cṵ́pṵ̀ cṵ́ pṵ̀
'drive out' 'pursue' 'exit'

(8) tʃwá tʃ wá
'shatter (tr.)' 'hit, beat' 'split open (intr.)'

(9) kwàcʃ kwà cʃ
'push shut' 'push' 'be shut, be blocked'

In a transformational statement deriving sentences with such verb compounds from multi-sentential sources, the identity of the object of S_1 and the subject of S_2 must be stipulated, as in condition (ii) of (5). However, not all sentences with verb compounds have this sort of causative interpretation. For example, a compound like (10)

(10) gbáfù
'run away, escape'

has the components gbá 'run' and fù 'be lost', and, in a sentence like (11), ọ́ 'he' is the understood subject of both components of the compound.

(11) ọ́ gbáfùrù
he run-away-TNS
'He escaped.'

Other compounds with this same-subject interpretation include (12)-(16). In sentences with these compounds, both components of the compound share the same understood subject.

(12)	gáfè 'go across, go past'	:	gá 'go'		fè 'cross, pass over'
(13)	tígbú 'beat to death'	:	tí 'hit, beat'		gbú 'kill'
(14)	búlá 'carry home'	:	bú 'carry'		lá 'go home'
(15)	gbábà 'run into'	:	gbá 'run'		bà 'enter'
(16)	gbápụ̀ 'run out from'	:	gbá 'run'		pụ̀ 'exit'

For same-subject compounds like these, a statement like condition (ii) of (5) is inappropriate; an alternataive condition like '1=6' would be required to allow for the identity of the subjects of S_1 and S_2.

But even with this alternative, a transformational generalization is not always possible because of the unpredictable behavior of many compounds. For example, the compound (12) gáfè 'go across, go past' occurs in (17); its components gá 'go' and fè 'cross, pass' appear in (18) and (19), respectively.

(17) ọ́ gáfèrè ụ́lọ́ ákwụ́kwọ́
he go-past-TNS school
'He went past the school.'

(18) ọ́ gàrà ụ́lọ́ ákwụ́kwọ́
he go-TNS school
'He went to the school.'

(19) *ọ́ fèrè ụ́lọ́ ákwụ́kwọ́
he pass-TNS school
'He passed the school.'

A multi-sentential source for (17) would presumably include (18) and (19), but (19) is not an acceptable Igbo sentence. The verb fè 'cross, pass' can take as objects words glossed as 'bridge', 'boundary', 'us', but not 'school'. Yet the compound gáfè 'go across, go past' can take 'school' as an object. This difference in selectional restrictions (i.e., difference in meaning) between fè as an independent verb and fè as a component of a compound appears to be idiosyncratic.

Similar selectional irregularities are encountered when we attempt to use a generalization like (5) to derive (8) tʃwá 'shatter (tr.)', with components tʃ 'hit, beat' and wá 'split open'. If we give the compound verb in (20) a same-subject interpretation, we find that the plausible underlying sentences, (21) and (22), are not well-formed in Igbo.

(20) ọ́ tʃìwàrà éfέré à
he shatter-TNS plate the
'He shattered the plate.'

(21) *ʔọ́ tʃrì éfέré à
he hit-TNS plate the
'He hit the plate.'

(22) *ọ́ wàrà éfέré à
he split-open-TNS plate the
'He broke the plate.'

A sentence like (21) is odd in Igbo. The verb tʃ 'hit, beat' can be used in sentences glossed literally as 'He hit the man a blow' or 'He hit his hand on the chair,' but (21) is semantically odd in a way that (20) is not; anyone might shatter a plate, but only a lunatic would try to beat a plate. Thus 'plate' can not serve as the object of the independent verb tʃ, but it can serve as the object of a compound having tʃ as a component. This fact reflects a meaning difference between tʃ as an independent verb and tʃ in combination with another verb in a compound.

In sentence (22) the noun éféré 'plate' as an object is unacceptable. The verb wa 'split open' can be transitive in some environments, but not with éféré 'plate' as an object. The situation is improved somewhat if we give the compound a causative interpretation (i.e., interpret it as meeting condition (ii) as stated in (5)); the second underlying sentence would then be (23) instead of (22).

(23) éféré à wàrà
plate the split-open-TNS
'The plate broke.'

But (21) is still not acceptable as a partial source for (20). Meaning differences such as these appear to be idiosyncratic and unpredictable, making transformational generalizations difficult to maintain.

The structural description in (5) was given as S_1 CONJ S_2; this configuration does not occur as a surface structure in Igbo. There is a "consecutive" construction, however, in which the verb of the first sentence sets the tense, and the verb of the second sentence takes a vowel prefix and suffix of predictable quality and tone. For example, the consecutive construction corresponding to (24) and (25) is (26).

(24) ó tìrì nwóké áhụ ọ̀kpọ́
he hit-TNS man that blow
'He hit that man.'

(25) ó gbùrù nwóké áhụ
he kill-TNS man that
'He killed that man.'

(26) ó tìrì nwóké áhụ ọ̀kpọ́, gbúé yà
he hit-TNS man that blow kill-CONSEC him
'He hit that man and killed him.' (He could have killed him by some means other than hitting.)

The sentence with a compound corresponding to (24) and (25) is (27).

(27) ó tìgbùrù nwóké áhụ
he beat-fatally-TNS man that
'He beat that man to death.'

It might be suggested that the consecutive construction (26) could serve as a synchronic source for the compound in (27). However, (26) and (27) differ considerably in meaning. The consecutive construction "expresses an action following another action in sequence, or an action independent of another action" [Welmers and Welmers 1968b:139]. In contrast, the components in a compound verb do not express actions independent of each other. The compound indicates an event; the first component refers to an action, and the second component refers to the goal or result of that action.

In sentence (27), with a compound verb, the man's being killed was a direct result of his being hit; in (26), with a consecutive construction, the man's death was not *necessarily* a result of his being hit. Thus any transformational statement deriving (27) from (26) would involve a significant change in meaning. Deriving (27) from (24) and (25) by means of a transformational statement like (5) would involve a similar meaning change, unless the abstract entity CONJ were given semantic content like 'and as a direct result'.[4]

An English speaker, hearing a sentence like 'He hit the man and killed him,' might ordinarily assume that the man's being killed was a result of his being hit; however, it should be noted that the use of a coordinate structure with 'and' by no means *requires* such an assumption on the part of the hearer; the killing could have been carried out by other means. Similarly, an Igbo speaker hearing the consecutive construction in (26) might assume an action-result connection between the hitting and the killing, but the use of this construction does not *require* an action-result interpretation. Such an interpretation on the part of the hearer might be a plausible inference in a given context; however, possible inferences should be differentiated from actual meaning inherent in a grammatical

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[4]When a speaker intends no action-result message for a consecutive construction like (26), to ensure that the listener does not make the wrong inference, the speaker may separate the two clauses with another verb, mésị́, literally 'finish', in the consecutive form translated as 'and then'. For example,

(i) ó tìrì nwóké áhụ̀ ọ̀kpọ́, *mésị́á* gbúé yà
he hit-TNS man that blow finish-CONSEC kill-CONSEC him
'He hit that man, *and then* killed him.'

construction. An Igbo verb compound, as in (27), requires an action-result interpretation; a consecutive construction, as in (26), does not.

It is doubtful that transformational derivations should be employed when they involve such a degree of meaning change. Furthermore, for some compounds there are no corresponding consecutive constructions. That is, corresponding to the compound verb in (17) (repeated here) we might expect a consecutive construction like that in (28), but (28) is unacceptable in Igbo.

(17) ọ́ gàfèrè ụ́lọ́ ákwụ́kwọ́
he go-past-TNS school
'He went past the school.'

(28) ọ́ gàrà ụ́lọ́ ákwụ́kwọ́, fèé yà
he go-TNS school pass-CONSEC it
?'He went to the school and passed it.'

We are unable to justify, then, a transformational derivation of verb compounds from a multi-sentential source or from the consecutive construction in Igbo.

3. Deriving verb-suffix compounds transformationally

In the compounds discussed so far, both components occur elsewhere as independent verbs. However, there are also polysyllabic verbs in which the second component does not occur elsewhere as an independent verb. These verb-suffix compounds behave like the verb-verb compounds, and the occurrence of most suffixes is extensive enough so that a meaning and inherent tone can be assigned. These suffixes are described by Ward [1936], Green [1964], and Welmers [1970], among others. For a number of suffixes there are homophonous verbs, or phonologically similar verbs, with related meanings. This situation poses a problem for the Igbo dictionary-maker. For example, Williamson [1972] notes that in some cases there is great difficulty in determining whether a particular element is a verb or a suffix. For example, she lists the suffix -ká 'apart, asunder', but notes that it is probably better regarded as a specialized meaning of the verb ká 'be torn'. From their form and behavior we can infer that many, if not all, of these suffixes have evolved from verbs historically.

Like verb-verb compounds, the verb-suffix compounds occur with causative and same-subject interpretations. For example, causative verb-suffix compounds include (29)-(33).

(29)	bèkấ	: bè	-kấ
	'cut up'	'cut'	'apart'
(30)	sèkấ	: sè	-kấ
	'tear by pulling'	'pull'	'apart'
(31)	tấkấ	: tấ	-kấ
	'spoil by biting'	'bite'	'apart'
(32)	rʃcấ	: rʃ	-cấ
	'eat up'	'eat'	'be finished'
(33)	tʃlụ̀	: tʃ	-lụ̀
	'bruise'	'hit'	'be spoiled'

The suffix -cấ 'be finished' in (32) is homophonous with the verb cấ 'be ripe, be reddish or light-colored'. The verb and suffix are related semantically; a ripe fruit is in some sense completed or finished. But here the meaning relationship between suffix and homophonous verb is not as direct as in the case of the suffix -kấ 'apart, asunder' and the verb kấ 'be torn'.

The suffix -lụ̀ 'be spoiled' occurs in (33). There is a semantically similar verb lụ́ 'be faulty, be defective', but the suffix and verb are not completely homophonous since the suffix is low tone and the verb is high tone. For many suffixes there is no phonologically similar verb with relatable meaning.

Verb-suffix compounds with same-subject interpretation include (34)-(36).

(34)	nọ̀sʃ̀	: nọ̀	-sʃ̀
	'finish staying'	'be at (a place)'	'finish'
(35)	félárʃ̀	: fé	-lárʃ̀
	'fly away from'	'fly'	'away from'
(36)	kwúgʃdé	: kwú	-gʃdé
	'speak against'	'speak'	'against'

Some suffixes are disyllabic, as illustrated by (35) and (36). Williamson [1972] lists these as disyllabic suffixes, but the history of the suffix -gʃdé 'against' in (36) is suggested by the Onitsha dialect form -jʃdé, the verbs jì 'hold' and dé 'put, place', and the compound jìdé 'hold, grasp'.

Most suffixes appear to be attachable to just about any verb, as long as the resulting meaning combination makes sense. This degree of productivity, plus predictability of meaning of the resulting compound, might suggest that a transformational derivation from a bi-sentential source as outlined in (5) would be appropriate. However, deriving, say, (32) rícá 'eat up', in (37), according to (5), would require as input (38) and (39).

(37) ó rìcàrà únèrè áhù
he eat-up-TNS banana that
'He ate up that banana.'

(38) ó rìrì únèrè áhù
he eat-TNS banana that
'He ate that banana.'

(39) únèrè áhù càrà
banana that be-ripe-TNS
'That banana is ripe.'

But the meaning of -cá as a suffix is 'be completed, be finished'; it does not occur as an independent verb with this meaning. The meaning of cá as an independent verb is 'be ripe'. Deriving a verb-suffix compound transformationally would require us to set up an underlying sentence with a suffix instead of a verb; since such sentences never occur, that degree of abstraction would be difficult to justify. Verb-suffix compounds parallel verb-verb compounds (as noted above, the distinction between verbs and suffixes is not a sharp one). Formation of both types of compound should be accounted for in the same component of the grammar. Therefore, the implausibility of deriving verb-suffix compounds transformationally constitutes one more argument against deriving verb-verb compounds transformationally.

To summarize at this point: the meaning of a verb-verb compound may differ from the combined meanings of its components; this may result in different selectional restrictions on objects. A sentence with a verb-verb compound requires an action-result interpretation for the subparts of the event represented by the components, and in this respect it differs from the consecutive construction and from two simplex sentences in juxtaposition. The meaning discrepancies argue against a transformational derivation. Verb-suffix compounds do not lend themselves to transformational derivation; they are similar to verb-verb compounds and have

probably evolved from them historically.

A few related facts deserve mention. Further meaning differences sometimes result in different strict subcategorization frames for compounds and their components. Sometimes the strict subcategorization and selectional features of the component verbs are retained in the compound. For example, the verb ị̀ụ̀ 'fight' requires an object noun like ọ̀gụ̀ 'fight' or ágha 'battle'. The verb sò 'follow, accompany' takes an object noun, for example, ànyị̀ 'us'. When these two verbs form a compound, both obligatorily retain their objects, as in (40).

(40) há ị̀ụ̀sòrò ànyị̀ ọ̀gụ̀
they fight-agains-TNS us fight
'They fought against us.'

Corresponding to Central Igbo ị̀ụ̀ 'fight' is the Onitsha dialect verb nụ̀ 'fight'. Williamson [1972] lists the Onitsha compound nụ̀sò 'fight against' in three ways--as taking ọ̀gụ̀ 'fight', or ágha 'battle', or neither (the objectless form may be a dialect variant, or even an option within an idiolect). Welmers and Welmers [1968a] list the verb ị̀ụ̀ 'fight' and the compound ị̀ụ̀sị̀ 'fight against' as requiring the object noun ọ̀gụ̀ 'fight', but they list the compounds ị̀ụ̀gìdè 'fight against' and ị̀ụ̀gbú 'defeat in a fight' without it, as in (41) and (42).

(41) ànyị̀ ị̀ụ̀gìdèrè hà
we fight-against-TNS them
'We fought against them.'

(42) Òkóyè ị̀ụ̀gbùrù yà
defeat-in-a-fight-TNS him
'Okoye beat him.'

One informant regards (42) as a marginal usage. The verb ị̀ụ̀ 'fight' always requires an object when it occurs independently; it does not always require an object when it occurs as part of a compound. Historically, it is possible that the objectless versions represent examples of semantic incorporation where the compound verb has acquired the meaning of the object. The verb ị̀ụ̀ 'fight' occurring independently has not participated in this semantic incorporation, and this semantic and syntactic non-equivalence argues further against a transformational derivation.

The verb ịụ́ 'fight' is not an exception in this respect. For example the verb tí 'hit' requires two objects when it occurs alone as in (24) or in a consecutive construction as in (26), but not when it occurs in a compound as in (27) or (20). Another example, the transitive verb gbá, has the basic meaning 'participate in'. It occurs in combination with many different objects. When it occurs with the object noun ọ̀sọ́ 'race, speed', it is translated as 'run'. When it occurs with the object noun égbè 'gun' or ụ́tá 'bow', it is translated as 'shoot'. Thus, we find:

(43) ọ́ gbàrà ọ̀sọ́
he run-TNS race
'He ran.'

(44) ọ́ gbàrà ényì yá égbè n'àghọ́m
he shoot-TNS friend his gun accidentally
'He shot at his friend by accident.'

(45) *ọ́ gbàrà
he participate-in-TNS

The verb gbá occurs in compounds like

(10) gbáfù
'run away'

and

(46) gbágbú
'shoot fatally' (literally, 'shoot-kill')

but in these compounds it does not take the noun objects required above; we find:

(11) ọ́ gbáfùrù
he run-away-TNS
'He escaped.'

(47) *ọ́ gbáfùrù ọ̀sọ́
he run-away-TNS race

(48) ọ́ gbàgbùrù ényì yá n'àghọ́m
he shoot-fatally-TNS friend his accidentally
'He fatally shot his friend by accident.'

The meaning of a compound is not altogether predictable. As these examples illustrate, the strict subcategorization frame of a compound does not always correspond to those of its components. A sentence

containing a verb compound lacks equivalence, at several levels, with sentences containing the compound's component verbs. Derivation by transformational rule is not a viable option.

4. Accounting for Compounds Within the Lexicon

Since Igbo verb compounds are not regular enough for a transformational derivation, they will presumably have to be listed individually in the lexicon. But to merely list each verb compound separately in the lexicon, and stop there, would be to ignore the obvious morphological and semantic/syntactic similarities between a compound and its component verbs; also, the special action-result relationship between the components would go unrecognized. How might these facts be accounted for within the lexicon?

If we apply a proposal by Halle [1973] to the facts of Igbo, the grammar would contain a list of verbs and suffixes; a rule of word formation would produce all potential compounds of the language. Then a "special filter" would add idiosyncratic information such as unpredictable meaning for a given compound. If the lexicon contains a list of CV verbs and suffixes, the morphological shape of most compounds can be derived by simple compound-forming rules. To a certain extent, the semantic/syntactic properties of the resulting compounds can be predicted from a knowledge of the components plus a knowledge of the rules combining them. But Halle's proposal is difficult to evaluate, because his sketch does not spell out just what kinds of information the combining rule may or may not contain, or the nature of the mechanisms inside the filter. Adding a new component to the grammar is a rather large step, particularly when other components of the grammar are capable of fulfilling the functions of such a filter.

Under the general approach proposed by Starosta [1971a, 1971b] and Thompson [1973, 1974], completely productive word-formation processes would be represented by lexical derivation rules. But it appears that many such rules make use of much the same sort of information as "transformational" rules, and the basis for distinguishing between a transformational and a lexical process is not always clear. Compounds with meaning idiosyncrasies would be listed separately in the lexicon, and similar items

would be related through lexical redundancy rules. The form and meaning of Igbo compounds is to a large extent predictable, and the action-result meaning is always present. The process appears to be productive; new words can be formed according to the basic model.[5] We can, following Thompson's formulation, write simple combinatory rules saying that a verb can be combined with a verb (V) or with a suffix (S) to produce a resultative verb compound (RV).

(49) $V + V \rightarrow [V\text{-}V]_{RV}$

(50) $V + S \rightarrow [V\text{-}S]_{RV}$

The RV label on the compound indicates the fact that the second component represents the goal or result of the first component. As noted in section 1, the first component can be just about any action verb, and the second component can represent a state or an action; this is an unsurprising consequence of the meaning relationship between the two components. Also, as pointed out to me by Larry Hyman [personal communication], the fact that an affix can be the second component but not the first component is what one would expect, given the meaning relationship: the second component represents the result, which is semantically secondary to the action represented by the first component. Or, put another way, the element that was less significant semantically became relegated to affix status morphologically.

The actual verbs and suffixes which can join to form compounds according to the combinatory processes (49) and (50) are otherwise limited only by the possible lack of a situation in the speaker's intellectual or cultural experience that would be appropriate to the meaning of the compound. We could add generalizations to (49) and (50). For example, a compound made

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[5] It appears that the only compounds that don't occur are ones that don't make sense in terms of the language-user's experience. However, a few suffixes appear to have quite limited distributions, and it is difficult to determine whether this is due to highly restricted meaning. It is possible that some of these have become non-productive suffixes (cf. -th in English warmth); in this case, the word would be a frozen form. The suffix would no longer be listed in the lexicon, and the words with the suffix would each have separate lexical listings.

up of an action verb followed by a stative verb (or suffix) tends to have a causative interpretation (as in (1), (6)-(9), and (29)-(33)) where the same referent is the object of the first component and also the subject of the second component. But exceptions to this generalization occur (for example, (10)). Another possible generalization is that a compound comprised of two action verbs tends to have a same-subject interpretation (as in (12)-(16), and (46)); but not all same-subject compounds have action verbs (for example, (34)). It is debatable whether such near-generalizations should be built into combinatory rules like (49) and (50) in a synchronic account, although they probably reflect the original principles of compound-formation historically. The speaker, given the meanings of the components and the combinatory rules, probably perceives relations like these through inference based on his understanding of the world he lives in.

According to Thompson [1973], compound verbs in Mandarin Chinese are made up of two parts, the first indicating an action and the second the result of that action. The first component is a verb, and the second component can be a verb or a suffix. Thus, Mandarin verb compounds closely parallel Igbo verb compounds in both form and meaning. In stating combinatory rules for productive formation of resultative verb compounds in Mandarin, Thompson [1974] labels the components as, for example, "action", "state", "motion", "direction", and does not explicitly specify the action-result meaning relationship. Although Mandarin and Igbo compounds are alike in that the second component is understood as being the direct result of the first, she claims that this is not something which is specified by the grammar; rather, it is inferred by the language-user on the basis of his understanding of causes and results in the world he lives in.

I would argue that the specification of the action-result relationship is a necessary part of the meaning of the compound and is not merely an inference based on the speaker's experience. A comparison of the meaning of serial verb constructions in other Kwa languages and Mandarin provides an interesting perspective. Within the Kwa grouping, serial verb constructions are found in many languages but not in Igbo. The action-result meanings expressed by verbs in compounds in Igbo are expressed by verbs

in serial verb constructions in other Kwa languages--for example, Yoruba. In Mandarin we find serial verb constructions in addition to verb compounds. However, serial verb constructions in a language like Yoruba require an action-result interpretation, while in Mandarin the interpretation of serial verb constructions is not specified; in Mandarin they are used in a range of contexts, and possible inferences include consecutive actions, simultaneous actions, alternating actions, or purposive action.[6] In this respect the Mandarin serial verb construction differs from its Kwa counterpart. The action-result interpretation of serial verb constructions in Yoruba must be stated as a part of the grammar, as it must for resultative verb compounds in Igbo and Mandarin. In comparing the three languages, we note that Igbo uses verb compounds for action-result meaning, and consecutive constructions for unspecified meaning relationships; Yoruba uses serial verb constructions for action-result meaning, and so-called coordinate (sì) constructions for unspecified meaning relationships; Mandarin uses verb compounds for action-result meaning, and serial verb constructions for unspecified meaning relationships. This is summarized in chart (51).[7]

(51)

	A action-result interpretation required	B interpretation left to pragmatic inference
Igbo	verb compounds	consecutive constructions
Yoruba	serial verb constructions	coordinate constructions
Mandarin Chinese	verb compounds	serial verb constructions

[6] The requirement of an action-result interpretation for serial verb constructions in Yoruba is discussed in Lord [1974]; the meaning of serial verb constructions in Mandarin is discussed in Li and Thompson [1973].

[7] Yoruba serial verb constructions have same-subject as well as causative readings, as described in Lord [1974]. Both readings occur for all the structures listed in chart (51), except that in Mandarin the causative reading for serial verb constructions has become archaic, according to Li and Thompson [1974].

As chart (51) illustrates, an action-result interpretation is of course by no means universally associated with a given syntactic configuration. For all three languages, the grammar must state this relationship for the constructions in column (A).[8]

We can read (51) as reflecting the fact that it is unlikely that a language will maintain two different syntactic combinations of verbs unless the semantic interpretations associated with each syntactic structure are different. Or, from another point of view, we can say that compounds may have developed and flourished in Mandarin in part because of the need to express explicit action-result relationships, in contrast to the more general (and ambiguous) meaning relationships expressed by serial verb constructions (Li and Thompson [1974] discuss other factors). Comparing

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[8] Elsewhere, Li and Thompson [1974] define causative verb compounds as a sub-class of resultative verb compounds, thus excluding those resultative verb compounds like verb-'finish' in which the meaning is not clearly causative. But among the large number of forms cited in Thompson [1973], there are only a handful for which the action-result interpretation does not seem to fit well. These contain suffixes with modality meanings like 'continue to', 'can', 'succeed in', 'afford to', 'come to', and 'finish'. Suffixes with similar meanings occur in compounds in Igbo, and their meanings are not altogether incompatible with the action-result relationship between the components of other verb compounds. For example, the suffix -cǎ 'be completed' can be glossed as (a) or (b):

(i) ǒ rìcàrà ńnèrè ánù
he eat-finish-TNS banana that

a. 'He ate up that banana', i.e., 'He ate that banana, with the result that the banana is finished.'

b. 'He finished eating that banana', i.e., 'He ate that banana, with the result that his banana-eating is finished.'

The compound rícǎ 'eat up' was formed according to the generalization expressed in rule (50). The sentence can be translated as (a), and from this reading it takes only a slight semantic shift to get the reading (b). In most real-life situations, the need for a distinction between readings (a) and (b) is not crucial. It may well be that the historical development of modality interpretation for -cǎ 'be completed' occurred in just this way, originating with (a) and gradually shifting to (b) (rather than necessarily developing as a verb with an embedded sentence complement). Viewed from this perspective, the compounds with modality meanings are essentially causative as well as resultative, but have undergone a slight semantic shift.

columns (A) and (B) in (51) suggests a similar "reason" for Igbo verb compounds and Yoruba serial verb constructions. There is no evidence to support the view that Igbo verb compounds developed historically from consecutive constructions, as a result of transformation-like movements of elements in sentences. Rather, it is likely that they developed in addition to consecutive constructions, to share the "semantic space" and meet the need for a construction to denote action-result relationships.

Combinatory rules like (49) and (50) make only modest claims. But, importantly, they do provide for the formation of compounds composed of more than one component. For example, the verbs gbú 'cut' and jí 'snap off' are combined according to (49) to produce the compound gbújí 'cut down'. This new compound is a lexical unit, a verb which can itself participate in the formation of new words according to (49) and (50). For example, the verb gbújí 'cut down' can combine with the suffix -cá 'be finished' according to (50) to produce gbújícá 'cut down completely, finish felling'. The verb dà 'fall' plus the suffix -lárí 'away from' produces the compound dàlárí 'fall away from' according to (50), and this verb in turn plus the verb ká 'exceed' produces dàláríká 'fall out of grasp' according to (49). In this way a compound produced by rule (49) or (50) can participate again as a verb in the formation of a new compound according to (49) or (50). Verb compounds of four and five components do exist, but they do not occur frequently.

Rules like (49) and (50) represent how compounds are interpreted by the language-user. The hearer understands a compound in terms of components in an action-result relationship. The rules reflect the hearer's ability to correctly interpret a compound that he has not heard before, as long as he is familiar with the components. For example, if the hearer is familiar with the meanings of (52)-(54), he will probably interpret (55) correctly.

(52)	nú	:	nútù
	'push'		'push down'
(53)	wè	:	wètù
	'take'		'bring down'
(54)	cú		
	'pursue'		

(55) cụ́tù
'drive down'

Also, if he is familiar with (52)-(54) but has not heard (55), it is not surprising that he produces it in an appropriate context. The speaker's production of (55) as a novel (for him) utterance illustrates rule (50) as a generalization about word formation; his understanding of (55) illustrates rule (50) as a generalization about word interpretation.

5. Providing Lexical Entries for Compounds

For some compounds the full meaning of the word is not apparent, even if the hearer is familiar with the individual components and the nature of the action-result relationship underlying compounds as represented in (49) and (50). For example, given the verb components kà 'say' and sà 'answer', along with rule (49), the meaning of the compound

(56) kàsà
'complain to'

is not fully predictable. Similar instances are (57)-(61), in which the meaning of the compound involves slightly more than the combined meaning of the individual components.

(57)	kàsá 'spread information, rumors'		kà 'say'	sá 'spread open'
(58)	cèfù 'forget'	:	cè 'think'	fù 'be lost'
(59)	cọ́tá 'find'	:	cọ́ 'look for'	-tá 'in direction of speaker'
(60)	mégbú 'oppress'	:	mé 'do, make'	gbú 'cut, kill'
(61)	gáhú 'go again, go back'	:	gá 'go'	hú 'bend'

(Examples (56) to (61) are from Igwe and Green [1970].)

Some compounds take on more pronounced idiomatic meanings, such as (62)-(65).

(62)	zụ́gbú 'cheat in marketing'		zụ́ 'buy'	gbú 'cut, kill'
(63)	sògbú 'harass, persecute; worry (intr.)'	:	sò 'follow'	gbú 'cut, kill'

(64)	sɔ̀gbú́ká[9]	: sɔ̀	gbú́	ká	
	'worry to death (intr.)'	'follow'	'cut, kill'	'exceed'	
(65)	tá́ká́sʃ	: tá́	ká	-sʃ	
	'bother'	'bite, chew'	'exceed'	'completely'	

The compound (65) also has a more literal meaning, 'gnaw, eat up'. The hearer may know all the individual morphemes in compounds (56)-(65) as well as the generalizations in rules (49) and (50), yet this will not enable him to correctly interpret these compounds; it will give him part, but not all, of the meaning.

Ward [1936] cites a few two-syllable verbs which do not appear to be relatable to verb or suffix components, for example, (66)-(68).

(66) dɛ́bɛ́
'keep'

(67) gùzɔ̀
'stand still'

(68) gɔ́sʃ
'show'

The components of (66) might be plausibly related to the verbs dɛ́ 'put, place' and bɛ́ 'stop', but for (67) and (68) no such relationships are apparent. The lexical entries for (67) and (68) are not relatable to entries for any component verbs or suffixes which might provide clues as to their meanings. Therefore, remembering the meaning of a verb like (67) or (68) is more taxing than remembering the meaning of, say (56)-(65) when the individual components are already familiar. And, in terms of an overall evaluation metric for the grammar, verbs like (67) and (68) should "cost more".

Models of the lexicon that account for facts like these are proposed

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[9] It can be argued that -gbú́ should be listed as a suffix meaning 'decisively' or 'to an extreme result'; this makes it possible to predict the meanings of (13) tʃɑ́bú́, 'beat to death' and similar compounds meaning 'stone to death', 'stomp to death', 'shoot to death', 'squeeze to death', etc., as well as (63) sɔ̀gbú́, 'harass'. This also accounts for the alternative interpretation of (27) as either 'he beat that man to death' or 'he defeated that man in a fight'. However, idiosyncracies of meaning remain for compounds like (60) mɔ́gbú́ 'oppress' and (62) zʊ́gbú́ 'cheat'.

by Gruber [1967] and by Jackendoff [1974]. Each compound and component would be listed in the lexicon, with complete morphological, syntactic and semantic information. Compounds would be related to their component morphemes by redundancy rules, and the redundant information in the entry for the compound would be recognized and reflected in a lower economy measure. Thus, (13) tʃgbú 'beat to death' is cheaper than (67) gùzò 'stand still', because it is relatable to tʃ 'hit' and gbú 'kill'. Somewhere between these two in terms of cost is (56) kàsà 'complain to', because it is relatable to kà 'say' and sà 'answer', yet its entry must contain the added information that its meaning involves complaining as well as saying and answering.

Clearly, then, independent lexical entries are required for disyllabic verbs like (67) and (68). And the best way to represent the unpredictable semantic content of compounds like (56)-(65) is to include it as part of a separate lexical entry for each compound. Likewise, compounds with unpredictable strict subcategorization frames and selectional restrictions require their own lexical entries. We might choose to list all these compounds in the lexicon and derive all other compounds by means of lexical rules like (49) and (50); this solution would be analogous to that proposed by Thompson and by Starosta. Such a treatment makes a sharp division between the representation of predictable combinations as opposed to that of idiosyncratic combinations; a compound does not have its own lexical entry until it begins to deviate semantically from its components. For Igbo verb compounds the line separating listed compounds from derived ones seems to be fuzzy at best. Once a word is formed, it is immediately subject to use in special ways in special contexts, and the information in its lexical entry is subject to alteration. Among the compounds with lexical listings, at least, there appears to be a continuum: some compounds are more idiosyncratic than others--that is, their listings contain more unpredictable information--and some are totally "frozen". Since separate listings are required for many compounds, why not set up lexical entries for <u>all</u> compounds? The entries for predictable combinations would then differ from the others only in lacking idiosyncratic information. This would be consistent with the description of what appears to be the historical

development of these compounds: formation is by means of rules which may be to some extent transformational, resulting in a fully redundant lexical entry. When the meaning of the compound and that of its components begin to diverge, the entries are no longer equivalent. As the meanings diverge even more, speakers begin to lose sight of the historical relationship, and assimilatory phonological processes are allowed to apply, obscuring the relationship further. The redundancy between the entries diminishes, resulting in polysyllabic verbs with no redundancy relationships to component entries.

The lexicalization process affects vowel harmony in Igbo. Monomorphemic words ordinarily reflect a vowel harmony pattern; the vowels i e o u comprise one set and ị a ọ ụ comprise another (although dialects vary), and all the vowels in a given word will come from one set. When the components of a compound come from different sets, the compound may violate the pattern. Speakers sometimes impose harmony on a compound, resulting in predictable inconsistency among different dialects and sometimes within a single idiolect. For example, Green [1964] notes that when the verb cá 'be ripe' occurs as a suffix meaning 'be completed', it harmonizes with the vowel of the verb in one dialect but not in Ọhụhụ.

It appears that as long as speakers still relate an independent verb and a homophonous suffix semantically, the verb vowel is retained; when speakers lose sight of the semantic relationship, they permit assimilation of the value of the feature that distinguishes the two harmonic sets, and the suffix harmonizes with the preceding component. Again, this is what we would expect, given that the first component is the heavier component semantically in the action-result meaning relationship.

When a component moves from verb to suffix status, the semantic shift probably comes before the phonological assimilation; the shifted semantics are what allows the phonological assimilation to take place. But the process is a gradual one, and an individual speaker sometimes varies in his pronunciation of a given compound, producing both harmonized and non-harmonized versions, the latter in careful speech. The general diachronic development is discernible and reasonable. But a semantic shift is difficult to pinpoint in time, and in a synchronic account the point at which

separate lexical listings are required (for suffixes and for compounds) is fuzzy. At any rate, we would expect to find no violations of vowel harmony in unanalyzable polysyllabic verbs like (67) and (68), and we indeed find none.

6. Generating compounds by phrase structure rules

In Carrell's [1970] transformational description of Igbo, verb suffixes are generated by phrase structure rules; the category AUX is expanded by a branching rule to a number of categories including "meaning modifying suffix" (hereafter MMS). The category MMS is expanded, in turn, to three lexical categories of adverbials, Adv_1, Adv_2, and Adv_3. According to Carrell, these are used frequently to modify or make more precise the basic meaning of a verb. Included in the sample lexicon are

(69) Adv_1: tÁ [+MOTION TOWARDS]
Adv_2: $k^wÁ$ [+REPETITION]
Adv_3: r [+BENEFACTIVE]
cÁ [+COMPLETIVE]
sí [+DISTRIBUTIVE]

Carrell's grammar generates these suffixes as part of AUX, and a transformation later removes them from domination by AUX to domination by the node V, transposing them to a position following the main verb. According to Carrell, as a result, the V is either a simple verb stem, or a verb stem plus any MMS's. She would presumably consider (29)-(33) and (34)-(36) as cases of verb stem plus MMS. Since all the verb stems in Carrell's lexicon are monosyllabic, Carrell leaves unaddressed the question of the source of disyllabic verbs in which the second syllable occurs as an independent verb, as in (6)-(9) and (12)-(16), as well as disyllabic verbs like (66)-(68) which are apparently not analyzable into components. It is possible that she considers what I have called verb-verb compounds to be cases of verb stem plus MMS, but this would require verbs to have parallel lexical listings as MMS's; e.g., ọbú 'kill' occuring alone would be a verb, but as a component of tíọbú 'beat to death' it would be a MMS. Such extensive duplicate listings for verbs would be hard to justify.

In the case of apparent disyllabic verbs like (67) and (68), analysis as verb stem plus MMS would be unmotivated, since the individual syllable components would have no identifiable semantic content.

Since the syntactic behavior of verb-verb compounds parallels that of verb-suffix compounds, a treatment of verb-suffix forms that does not also account satisfactorily for verb-verb forms leaves something to be desired. These verb suffixes are not best represented as elements of phrase structure. Since phrase structure rules define and reflect constituent structure within a sentence, the implication of Carrell's rule is that each MMS is a constituent. However, there is nothing to indicate that this is the case. The verb-suffix combination occurs in sentences as an inseparable unit; nothing else ever occurs between the verb and the suffix. Speakers appear to regard the resulting compound as a word and can give a definition of it. A phrase structure account like Carrell's suggests that the verb stem can optionally occur with one member from one or more of the categories Adv_1, Adv_2, and Adv_3, implying a maximum of four components per V, despite the fact that verbs of five components do exist. In contrast, combinatory rules such as (49) and (50) imply no such inherent limit, since the result is a new V that can be recycled back through the rule. Carrell's phrase structure rule provides for a fixed order of suffixal elements, i.e., members of Adv_1 always precede members of Adv_2, which in turn always precede those of Adv_3. However, this does not seem to be borne out; in fact, Welmers [1970] has demonstrated that the suffix cited by Carrell as Adv_2, $k^{w}\acute{A}$ [+REPETITIVE], in (69), even occurs after certain inflectional suffixes and therefore should be assigned a status apart from other verb suffixes. (The question of acceptable order of suffixes is complicated by apparent variations between speakers of different dialects and within idiolects.)

I would reject, then, an analysis that generates verb compounds by means of phrase structure rules. They involve considerations of word-formation rather than constituent structure.

7. Conclusion

The previous attempt to account for compounds in Igbo within a generative grammar framework, in Carrell [1970], generated verb suffixes

by means of a phrase structure rule and formed compounds by means of a subsequent transformation; such an approach is not adequate to account for the compounding process.

The action-result meaning of Igbo verb compounds distinguishes them semantically from consecutive constructions, and the meaning of a compound has in many cases shifted away from the combined meaning of its components. Because of the special action-result meaning of compounds, plus their many idiosyncrasies, they are not derivable by transformational rule. Listing all compounds in the lexicon enables us to reflect the morphological and semantic relationships between compounds and components in terms of lexical redundancy rules, effecting a lower economy measure for the grammar (as proposed by Gruber [1967] and Jackendoff [1974]). But since the compounding process appears to be productive in Igbo, and new compounds are readily created and understood, the grammar should also account for this capacity of the language-user. This can be done by setting up combinatory rules for compound formation. Jackendoff notes that once a redundancy rule is learned, it can be used generatively, but, as Thompson [1974] points out, such a provision still fails to distinguish productive word-formation processes from non-productive forms. To account for the speaker's productive capacity, a combinatory rule needs to be stated in the grammar.

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THE TONES OF NOUNS IN KIKUYU

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1. Introduction

Kikuyu[1] evidences a tone system that is generally accepted (see Harries [1952]) as being analysable with two underlying level tones. Further studies [Ford 1973 and 1974] have shown that there are certain other interesting characteristics of the system, notably the use of downstep as an intonational phenomenon, certain regular processes of high-tone assimilation and dissimilation, and the largely non-predictable sub-categorising of lexical forms into particular tonal sub-classes. Verb roots form sub-classes of their own (see Sharp's statement in Benson [1964], and section 5 below), but the forms of words used in utterances, including verbs, exemplify a sub-classification that is most fully represented in the case of nouns. This paper will be concerned with this sub-classification and will indicate how it underlies the working of a large part of the tonal phonology of the language. Because there is an intonational[2] overlay to Kikuyu utterances, it will be necessary first to outline some of the intonational processes, in order to establish underlying tonal forms employing a 2-tone

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[1]Financial support for this work from the University of Nairobi is gratefully acknowledged, as well as the informant assistance of many speakers, but especially John Mathenge and Anne Mahihu. The description is based ultimately on Mr. Mathenge's speech, which is typical of the dialect spoken around Nyeri town. The transcription is broad phonetic, with all symbols having their IPA value except for the following individual conventions: y = voiced palatal glide [j]
j = voiced pre-palatal affricate [dʑ]
c = voiceless pre-palatal fricative [ɕ], sometimes affricated [tɕ].

Combinations of nasal + consonant are to be interpreted as pre-nasalized consonants. Tones are marked [ˊ] high; [ˋ] low; [ˇ] rising; [ꜜˊ] downstepped high; and [ꜜˋ] downstepped low.

[2]A distinction is drawn between intonational tone-changes, which are markers of mood (statement/question) and polarity (positive/negative), and tone-changes proper, which are brought about by the immediate tonal context (processes of assimilation and dissimilation).

basic opposition. Nouns differ in their tonal patterns both because of the influence of neighboring tones and because of intonational context. Previous writers have attempted to stabilize these various forms by establishing tonal classes (see, for example, Sharp's work in Benson [1964]), but no real attempt has been made to establish underlying tonal forms to which the various surface realizations can be systematically related.

2. Intonation

Kikuyu regularly reinforces the distinction between positive and negative utterances by introducing tonal differences, especially in utterance-final position. This may be summed up as a lowering of many final high tones in certain negative environments. It so happens that nouns (or other forms) when pronounced in isolation bear what might be termed a negative intonation; when such words are placed in an environment following a positive verb, we find a different tonal pattern:

(1) mɔ̀ɣɛ̀ràníà 'examiner'

(2) né mɔ́ɣɛ̀ràníà 'he's the examiner'

(3) ndiɔ̀nírɛ́ mɔ̀ɣɛ̀ràníà 'I didn't see the examiner'

3. Surface Tones

The following seven tonal classes of noun can be established. In the examples that follow, two forms of each word are provided, one representing the single-word utterance, the other the form after né 'it is/they are'. It will be noticed that the high tone of né causes certain following low tones to be assimilated to high. The significance of the classification itself will be made clear in the subsequent discussion. Loan words are not considered to begin with, but will be discussed and related to the rest of the vocabulary in section 6. As all the tone-change processes operate in a left-to-right direction, it is the value of the final tone in a word that is especially important; the following examples provide the full set of final-tone alternatives for each class.

(4)	class i	ŋgǒ	'firewood'	né ŋgǒ	'it's firewood'
		ɲjòɤóná	'Njuguna'	né ɲjòɤóná	'he's Njuguna'
		ŋgó:ŋgònĭ	'bed-bug'	né ŋgó:ŋgònĭ	'it's a bed-bug'
		keàɤáràrɔ̀	'stile'	né keàɤáràrɔ̀	'it's a stile'
	class ii	kàriòkǐ	'Kariuki'	né kárioǩǐ	'he's Kariuki'
		keàmbèréría	'beginning'	né keámbèréría	'it's the beginning'
		mòcɛ́:ɤɛ̀nĭ	'stinging-plant'	né mócɛ́:ɤɛ̀nĭ	'it's a stinging-plant'
		mwà:nèkǐ	'Mwaniki'	né mwá:nèkǐ	'he's Mwaniki'
	class iii	mòɤɛ̀rànià	'examiner'	né móɤɛ̀ràniá	'he's an examiner'
	class iv	ŋàŋà	'Ng'ang'a'	né ŋàŋá	'he's Ng'ang'a'
	class v	mwà:rèrèrià	'spokesman'	né mwá:rèréría	'he's a spokesman'
	class vi	mò:ŋgáĭ	'Mungai'	né mò:ŋgáǐ	'he's Mungai'
	class vii	mòβàkè	'tobacco-plant	né móβàkě	'it's a tobacco-plant'

Classes i and ii show little difference in their tonal forms in isolation and after né --only the high-tone assimilation being evidenced after né with the class ii forms. In fact, three tones (high, low, and rising) are employed, and further analysis of the rising tone is provided below.

Classes ii-v display the final high-tone lowering which is an intonational marker; compare the following:

(5) ndɔ̀:nĭrɛ́ mwá:rèréría 'I saw the spokesman' [remote past]

(6) ndiɔ̀nǐ!rɛ́ mwá:rèrèrià 'I didn't see the spokesman' [remote past]

Classes vi and vii similarly alternate a low and a rising final tone; class vi, like class iv, does not involve the process of high-tone assimilation after né and the other forms that trigger it.

4. Underlying Tones

The following sub-sections will discuss the analysis of the various ambivalent tones exemplified in (4), and a summary of underlying forms

employing a 2-tone opposition will be given. Further discussion of forms of nominalization and certain processes of tone-change will cause this statement of underlying forms to be slightly modified.

4.1 Classes iii-v. In considering the underlying tonal forms of classes iii-v, it is not possible to predict in any natural way (or in a way that is not tantamount to making such tones high underlyingly), that it is the second or subsequent low tones that become raised. We thus choose the following forms as basic and derive the isolate or negative tones by a general intonational process of final lowering (so-called flattening):

(7) class iii /mɔ̀ɣɛ̀ràn!á/ 'examiner'
iv /ŋàŋá/ 'Ng'ang'a'
v /mwà:rèrɛ́r!á/ 'spokesman'

Further support for these underlying high tones is provided by the fact that in certain environments, when other basic high tones become downstepped after a block-raising process (so called because a block of consecutive low tones is affected, minimum one), these tones too become downstepped:

(8) nɛ́ɣwɔ́ mwá:ɣáh!ŋá átáhɛ́ mà:ɛ́ /mwà:ɣáh!ŋá/ class i
so that weakling draw water
'so that a weakling might draw water'

(9) nɛ́ɣwɔ́ mɔ́ɣɛ́rá!ńa átáhɛ́ mà:ɛ́
'so that an examiner might draw water'

(10) nɛ́ɣwɔ́ ŋá!ŋá átáhɛ́ mà:ɛ́
'so that Ng'ang'a might draw water'

(11) nɛ́ɣwɔ́ mwá:rɛ́!rɛ́r!a átáhɛ́ mà:ɛ́
'so that a spokesman might draw water'

4.2 The rising tone. The remaining classes pose additional problems because many forms exhibit an opposition of three tones. The final rising tones (in isolation) of some members of classes i, ii, vi and vii display a regular form of ambivalence in that they may surface

as either a high, a low, or a rising tone. The rising tone is restricted to utterance-final position and may then be lowered intonationally, as exemplified in the citation forms of class vi and vii nouns. The bahaviour of the final rising tone in classes i and ii regularly differs from that of classes vi and vii, notably in that the intonational final flattening operates on the former in more restricted contexts:

(12) kàrìòkǐ ii) 'Kariuki', but

(13) ɲɔ̀:nǐré kàrìòkǐ 'I saw Kariuki'

(14) mɔ̀βàkè vii) 'tobacco-plant', and

(15) ɲɔ̀:nǐré mɔ̀βàkě 'I saw a tobacco-plant'

When occurring sentence-medially, the reflex of the rising tone (this is a useful temporary label, but should not prejudice our analysis) is regularly a high or a low tone, conditioned in some respects by tonal class (i and ii versus vi and vii), the value of the tone following (high or low), and, to a limited extent, the syntactic context. The process involved is dissimilation, and the reflex of the rise is a low tone before a following low tone, or series of consecutive lows, which then becomes raised to high:

(16) áhɛ̀ìré kárìòkǐ βǐrǐβǐrǐ /kàrìòkǐ/ ii); /βìrìβìrì/ ii)
'he gave the peppers to Kariuki'

(17) áhɛ̀ìré mɔ̀:ŋgáǐ βǐrǐβǐrǐ /mɔ̀:ŋgáǐ/ vi)
'he gave the peppers to Mungai'

Before a following high tone, the reflex of the rising tone is often a high tone which in turn downsteps a following high or series of highs:

(18) áhɛ̀ìré kárìòkǐ ꜜɲjátá /ɲjátá/ i)
'he gave Kariuki a star'

(19) áhɛ̀ìré mɔ̀:ŋgáǐ ꜜɲjátá
'he gave Mungai a star'

In certain contexts (syntactic), however, class vi and vii items maintain

a low tone before a following high tone which remains unchanged. Compare the following:

(20) ii kàrìokí ńé mwè:ɤá 'Kariuki is good'
(21) vi mò:ŋgáì né mwè:ɤá 'Mungai is good'
(22) vii mòβàkè né mwè:ɤá 'the tobacco-plant is good'

In certain other environments, we find that the reflex of the rising tone is regularly a downstepped high tone. This is the case after a raising process when all basic high tones are similarly downstepped. Thus, using the same frame that was employed to diagnose the underlying high tones of classes iii-v, we find:

(23) néɤwɔ́ móβáḱé ... 'so that a tobacco-plant ...'

Again, parallels are readily found in other frames:

(24) áhɛ̀irɛ́ ɲjòɤónà ŋgó /ŋgǒ/ i)
'he gave Njuguna some firewood'

(25) áhɛ̀irɛ́ ɲjòɤónà móβáḱé /mòβàkě/ vii)
'he gave Njuguna a tobacco-plant'

(26) áhɛ̀irɛ́ ɲjòɤónà kéŋáɲ́í /kèŋàŋí/ v)
'he gave Njuguna a crocodile'

Further comment on the alternation of the final tone of ɲjòɤónà -- a fact which is also relevant to the analysis of the rising tones-- is provided in 4.3 following.

On the basis of the evidence above, we analyze the surface rising tone as an underlying high tone, but one which must be marked unstable. In this way, we can account most economically for the data, since all downstepped high tones can be derived by a single process from underlying high tones. We are also able to maintain an underlying 2-tone (high/low) opposition, though by using a non-tonal diacritic feature like [± unstable], we are thus suggesting that the language makes more restricted use of certain varieties of high tone which are only evidenced utterance-finally (compare also the data in section 4.3

following).[3]

4.3 Another unstable high tone. Examples (24)-(26) exemplify another form of ambivalence in the alternation of a final high and low tone in ɲjòɣóná, which is a class i noun. When a class i or ii item ends in two consecutive high tones, the final high tone becomes unstable in certain contexts and will drop to low before a following low or series of consecutiee lows, which are in turn raised to high. Before following high tones, the final high tone of these words is unchanged, though the following high or series of consecutive highs is downstepped. This is an exact parallel to the process of high-tone dissimilation discussed in respect of rising tones above.

(27) áhɛ̀ˈiré ɲjòɣónà βírίβírί /ɲjòɣóná/ i); /βìrìβìrì/ ii)
'he gave the peppers to Njuguna'
áhɛ̀ˈiré ɲjòɣóná ˈmároa /máróa/ i)
'he gave the millet-beer to Njuguna'

It is suggested that the same diacritic feature [unstable] be used to distinguish this type of unstable high tone. These forms never surface as a rising tone and can be kept distinct from those that do in being phonologically predictable.

4.4 Summary of underlying forms. Class i and ii forms with stable high and low tones can be judged to bear them underlyingly, and the set of underlying tones for the various noun types can be summarized by the following examples (where [u] = [unstable]):

(29) class i /ŋgó/ [+u] 'firewood'
/ɲjòɣóná/ [+u]-predictable 'Njuguna'
/ŋgó:ŋgònί/ 'bed-bug'
/kèaɣáràrɔ̀/ 'stile'

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[3] Bennett [1974] sees the surface rising tone as an underlying falling tone. His comments are unfortunate in relying on diachronic evidence to the exclusion of synchronic data (basically, he feels that it is a falling tone because the reflex in a neighboring language is often a falling tone, and because he hypothesizes that the historical origin might have been the coalescence of two tones through the loss of a syllable). Whatever the supposed origin of this tone, we see it as a high tone (though of a special type) because it behaves too obviously like other high tones in Kikuyu.

ii /kàrìokí/ 'Kariuki'
[+u]

/kèambèrérìá/ 'beginning'
[+u] - predictable

/mòcɛ́:ɣɛ̀nì/ 'stinging-plant'

/mwà:nèkì/ 'Mwaniki'

iii /mòɣɛ̀rànìá/ 'examiner'

iv /ŋàŋá/ 'Ng'ang'a'

v /mwà:rèrérìá/ 'spokesman'

vi /mò:ŋgáí/ 'Mungai'
[+u]

vii /mòβàké/ 'tobacco-plant'
[+u]

Subsequent discussion and analysis will lead us to modify the above scheme slightly; section 7 will make explicit the status of the classification itself in respect of the non-predictable information required for the correct specification of the surface tones.

5. Nominalizations

There are twelve ways of deriving nouns in Kikuyu, mostly from verbs, and, as noted in Barlow's [1960] discussion, at least three can be used freely in making new words from almost any verb. The tonal patterns of derived nouns are interesting to compare with the classification established so far, in that they make clear certain relationships between particular sub-classes. It can be demonstrated that certain of the tone classes may be paired together in that nouns formed from vowel-initial stems, so that the noun prefix coalesces with the stem-initial vowel to form a single surface syllable, regularly belong to one class, while those derived from consonant-initial roots regularly belong to the other. The classes that are related in this way are as follows:

(30)

vowel-initial	consonant-initial
i	ii
iv	v
v	iii

The first opposition is evidenced in several forms of nominalization, including the following:

(31)	mòðà:kì	ii	'player'	ðá:kà	'play'
	mòrɔ̀rì	ii	'watcher'	rɔ̀rǎ	'watch'
	mòtàhí	ii	'drawer'	táhà	'draw (water etc.)'
	mwà:nékì	i	'hanger'	ànékà	'hang up'

The second and third oppositions affect verbs of certain sub-classes only. Verb roots are sub-classified on the basis of both their imperative singular positive forms and their infinitive tones. The scheme is as follows:

(32)		Imperative	Infinitive	Gloss
	class 1a	tɛ̌ / tɛ́	ɤòtɛ̌	'throw away'
	1b	táhà	ɤòtàhá	'draw (water)'
	1b	βù:ndʃòìa	kòβù:ndʃòìa	'teach'
	1b	cùrácúrà	ɤòcùrácùrà	'prowl about'
	class 2a	ðá:kà	ɤòðà:kà	'play'
	2a	βì:ndórà	kòβì:ndòrà	'turn'
	2a	cà:mbʃcókà	ɤòcà:mbʃcòkà	'lose quality'
	2b	rɔ̀rǎ	kòrɔ̀rà	'watch'

Nouns derived from verbs of classes 1a, 1b, and 2a with consonant-initial roots fall into tone-class v, when forming the mo- -erɛ 'way of ...' nominalization; those derived from vowel-initial roots are class iv:

(33)	mòβì:ndóránéré	v	'way of turning'	βì:ndórà	'turn'
	mòβù:ndʃòánérìɛ́	v	'way of teaching'	βù:ndʃòìa	'teach'
	mwì:nánéré	iv	'way of singing/ dancing'	ʃnà	'sing/dance'

Nouns of this type derived from class 2b roots with consonant-initial stems fall into tone-class iii, while those from vowel-initial roots are class v:

(34)	mòɤòrànéré	iii	'way of buying'	ɤòrǎ	2b	'buy'
	mwà:ránérìɛ	v	'way of speaking'	àrìǎ	2b	'speak'

Nouns of class iii are, in fact, relatively few in number, since all those so far noted are examples of particular kinds of nominalization derived from consonant-initial verb roots of class 2b.

Several ways of deriving nouns treat forms from causative class 2b roots differently in assigning them to tone-class vii:

(35)	mɔ̀βɪ̀:ndɔ́rɔ́ɔ	v	'one turned'	βɪ̀:ndɔ́rà	2a	'turn'
	mɔ̀βàrɪ́a	vii	'one who notches'	βàrɪ̌a	2b	'notch'
	mwà:rɪ́ɔ	vii	'one spoken to'	àrɪ̌a	2b	'speak'

It is to be noted that no special class is used for forms from vowel-initial roots. Classes i, iv, and vi are related in the sense that their initial low tones are not subject to tone-raising by the process of high-tone assimilation that block-raises low tones to the level of a preceding high tone; with few exceptions, membership consists of items that have the initial tone pattern Low + High (if the initial tone is low), and which have initial syllables which represent the coalescence of any of three forms of prefix (V-, CV-, or N-prefix) with a vowel-initial root. Among the few exceptions are the following personal names:

(36)	ɲjàɔ́	ii	'Njau'
	ɲjɛ̀rɪ̀	ii	'Njeri'

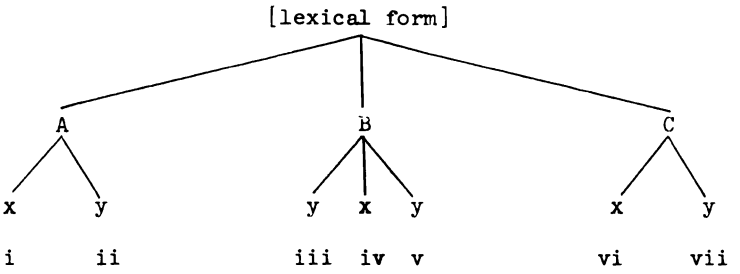
Class vi is particular in not entering into the scheme of derived forms, and to date only eleven members have been noted: five place-names, one personal name, and five loan-words.

Vowel-initial syllables in nouns will all assimilate to a preceding high tone, but those of classes ii and vii (which are subject to initial-tone-raising) are kept distinct by an additional raising of the syllable following the vocalic prefix:

(37)	isolation			raised	
	ɪ̀βʊ̀rɪ̀	i	'umbrella'	nɛ́ ɪ̀βʊ̀rɪ̀	'it's an umbrella'
	ɪ̀ɤɛ̀ɤɔ	ii	'tooth'	nɛ́ ɪ̀ɤɛ́ɤɔ	'it's a tooth'
	ɪ̀βʊ̀rɪ̀a	vii	'looting'	nɛ́ ɪ̀βʊ́rɪ̌a	'it's looting'

The classification, together with the internal relationships made clear from the analysis of derived nouns, may be summarized as follows:

(38)



Key:

A. forms with either low, stable high or one of two types of unstable high final tone

B. forms with final high tone(s) that may be lowered intonationally

C. forms with unstable high final tones which may be lowered intonationally

x. no initial-low-tone-raising potential

y. with initial-low-tone-raising potential

There are, however, several factors which indicate that the above system of relationships should be modified to indicate that classes i and ii are viewed as a unit that opposes classes iii-vii as another. We have already seen that the final unstable high tone of classes vi and vii distinguishes itself from that of classes i and ii so that certain tone-change rules will require such a statement of class-restriction for their correct operation. We note, too, that the final high tones of classes iii-vii are related in undergoing the process of flattening. With the operation of the two processes of high-tone assimilation (single low-tone-raising and block-low-tone-raising), we regularly find situations in which items of classes i and ii with final high tones trigger the rule of block-raising, while items of classes iii-vii involve the rule of single-raising. In the following examples, an item of class i or ii ending in a final low tone causes downstepping of both high and low tones across the boundary (subject + verb); class i or ii items ending in a high (stable

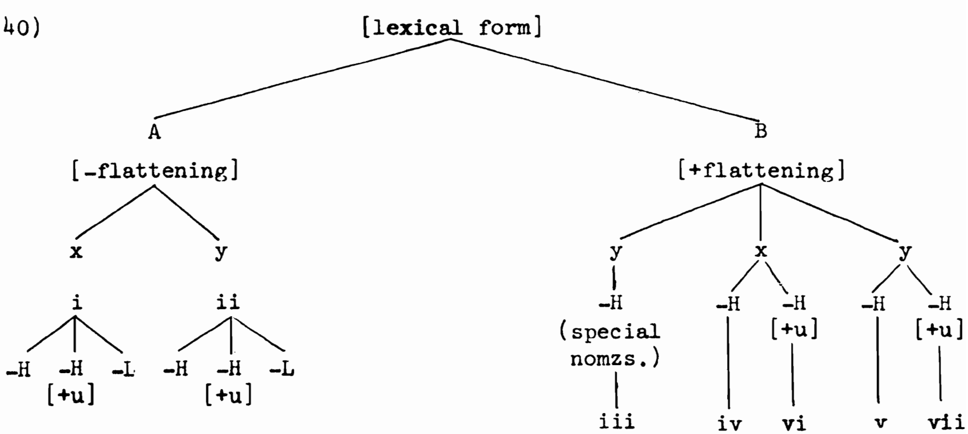
or unstable) tone involve the process of block-raising, with compensatory downstepping of basic high tones that immediately follow the raising process; class iii-vii items involve only the process of single-raising with no downstepping:

(39)

	mwà:ɣáhìɲá	ɔ́ꜝnírɛ́	'a weakling saw'	/ɔ̀nírɛ́/, /mwà:ɣáhìɲá/	i
	ɲjòɣóná	ɔ́ꜝnírɛ́	'Njuguna saw'	/ɲjòɣóná/	i
	wà:ɣó:ðì	ꜝɔ̀nírɛ́	'Waguthi saw'	/wà:ɣó:ðì/	i
	kàŋɛ̀rí	ɔ́ꜝnírɛ́	'Kang'eri saw'	/kàŋɛ̀rí/	ii
	kàrìòkì	ɔ́ꜝnírɛ́	'Kariuki saw'	/kàrìòkí/ [+u]	ii
	mwà:nèkì	ꜝɔ̀nírɛ́	'Mwaniki saw'	/mwà:nèkì/	ii
	mòɣɛ̀rànía	ɔ́nírɛ́	'the examiner saw'	/mòɣɛ̀rànía/	iii
	ŋàŋá	ɔ́nírɛ́	'Ng'ang'a saw'	/ŋàŋá/	iv
	ɣàkìrí	ɔ́nírɛ́	'Gakiri saw'	/ɣàkìrí/	v
	mò:ŋgáì	ɔ́nírɛ́	'Mungai saw'	/mò:ŋgáí/	vi
	mwà:ŋgì	ɔ́nírɛ́	'Mwangi saw'	/mwà:ŋgí/	vii

On the basis of this evidence, the influence of which is pervasive, we modify (38) as follows:

(40)



where the rule of intonational flattening applies to forms B but not A; where y forms have initial tones that are sensitive, if low, to the single-raising assimilation process, while x forms cannot be so raised; and where -H(igh) and -L(ow) represent the forms of final tone evidenced in that class.

6. The Tonal Forms of Loan-words

It is interesting to compare the tonal forms of loan-words and see how they have been assimilated into the system of tonal sub-classification that has been described so far in relation to the native nominal vocabulary. We find that loans can be readily assigned to each of the basic classes, except class iii. We note that there are some general tendencies, in that many Swahili loans belong to classes vi and vii, and that many English loans are placed in classes iv and v, but there are many exceptions. We thus conclude that the general sub-classification is non-predictable for membership except for derived nouns.

Examples of loan-words and their tonal classes:

(41)	class i	mwà:rímó	'teacher'		
		βí:ǒfí	'P.C.' (Provincial Commissioner)		
		βítá	'war'		
		càúrǐ	'affair'		
	class ii	βítá	'Peter'	mà:ndàréná	'Magdalene'
		βírfβɔ	'Philip'	ǐǒàβɛ́tá	'Elizabeth'
		màrfǎ	'Mary'	βíβírìá	'Bible'
		mɔ̀βf:rǎ	'ball'	mɔ̀βícf	'cook'
	class iv	rúβàǒf	'Rufus'	βà:ŋgfrf	'bangle'
		ɲjɔ́ɔ̀ɛ̀βú	'Joseph'	f:ɲjínf	'engine'
		ǒàmɔ́:màtá	'thermometer'		
		ndɛ̀mɔ́:kírǎǒé	'democracy'		
	class v	rɔ̀ké:cɔ̀nf	'location'		
		kɛ̀βà:ŋgá	'large panga'		
		βàré:ǒírámú	'pyrethrum'		

class vi	hánâ	'Anne'		
	àɲjɛ́:ndâ	'agenda'		
	ɪcâ:nɪ	'tea-plant'		
	βó:tɪ	'vote'		
	òβú:òɪ	'nonsense'		
class vii	kàβùté:nɪ	'captain'	mbɪ̀ôâ:ré	'curry-powder'
	βùràná	'sweater'	kèβɔ̀kɔ́	'leather-whip'
	mòcâ:râ	'wages'		
	ndàβòrò:ndɪɪ	'the P.W.D.' (Public Works Department)		

It will be noticed that the pitch-accent of many of the English and Swahili forms is represented in Kikuyu by a long high tone.

7. Conclusion

Given the large number of derived nouns in Kikuyu, including three open derivational classes, it seems likely that the system of tonal sub-classification evolved around the different forms evidenced derivationally. It is in this area that the functional load of tone is highest, serving to distinguish several minimal oppositions, for example,

(42)	mwà:rɪ̀ɔ	ii	'way of speaking'
	mwà:rɪɔ́	vii	'one spoken to'

Probably because of the dominance of derived forms numerically and their relatively rigid tonal scheme, Kikuyu speakers rarely disagree on the tonal pattern, while with loan-words there can be several forms current at the same time and well-tolerated.

The following is a summary of the non-predictable tonal information required for the various forms discussed.

1. The marked high value /′/ of the single tonal opposition must be specified.
2. If the final tone of the word is high, the marked positive value of the diacritic rule-feature [±flattening] will be specified.
3. Except for those items unmarked for the feature [±flattening] which end in two consecutive high tones (and which have a predictably unstable final high tone), the marked positive value of the diacritic feature

[±unstable] must be specified.

4. Those items which have a vowel-initial root or nasal prefix such that the prefix coalesces with the initial syllable of the root, and which have an initial tone pattern low + high, will be assumed automatically to block the assimilation rule of single-raising; all other forms will be assumed to undergo this rule. All exceptions will therefore be marked for one or the other value of the rule-feature [±single-raising]. This rule can only apply to those forms with initial low tones.

In (43) below examples of underlying forms are listed; reference may be made to the earlier summary in (29):

(43)	/ŋgó/ [+u]	'firewood'	
	/ɲjoɾóná/	'Njuguna'	
	/ŋgó:ŋgonʃ/	'bed-bug'	
	/keaɾárarɔ/	'stile'	
	/kariokʃ/ [+u]	'Kariuki'	
	/keamberériá/	'beginning'	
	/mocɛ́:ɾɛnʃ/	'stinging-plant'	
	/mwa:neki/	'Mwaniki'	
	/moɾɛraniá/	'examiner'	[+flattening]
	/ŋaŋá/	'Ng'ang'a'	[+flattening]
	/mwa:rerériá/	'spokesman'	[+flattening]
	/mo:ŋgáʃ/ [+u]	'Mungai'	[+flattening]
	/moβaké/ [+u]	'tobacco-plant'	[+flattening]

The tonal processes involved in deriving the surface tones can be summarized as follows:

(44) a. High-tone assimilation:
  i. single-low-tone-raising
  ii. block-low-tone-raising
  b. Dissimilation with unstable high tones.

c. Rising-tone realization.

d. Intonational final-high-tone-lowering (= flattening).

e. Forms of downstepping:

   i. after block-tone-raising (applies to high tones only)

   ii. intonational, both across syntactic boundaries and utterance finally, reinforcing mood (statement, command and direct question) and polarity (positive, negative) distinctions: this affects both high and low tones.

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GENERATIONAL LANGUAGE SHIFT AND LINGUISTIC DIVERSITY MEASURES: A KENYA CASE[1]

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1. Introduction

Geographical regions of the world may show linguistic distributions of great diversity (such as, for example, the state of California for American Indian languages, the Jos Plateau in Nigeria, the highlands of Papua-New Guinea, etc.) or of relative uniformity (such as the contemporary United States or Japan) or these regions may lie somewhere in-between, as Greenberg [1956:109] suggests. Diversity may of course obtain both individually and intra-individually. Greenberg [1956] and later Lieberson [1964] have developed quantitative measures to "... render such impressions more objective, allow the comparing of disparate geographical areas, and eventually to correlate varying degrees of linguistic diversity with political, economic, geographic, historic, and other non-linguistic factors" [Greenberg:109]. Greenberg proposed eight measures of linguistic diversity which were designed to determine the possibilities of communication within a delimited area. These measures permit us to quantify diversity along a continuum which ranges from a situation where no code is shared by any two persons to the opposite situation where all persons share a common code.

Greenberg's references are primarily to the linguistic diversity of spatially delimited populations, however as Lieberson points out, such measures may be applied to "any socially meaningful population delineated

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[1]Delivered at the Fifth Conference on African Linguistics, Stanford University, March 29-31, 1974. Support for this research was generously provided by the National Institute of Mental Health and the National Science Foundation for the duration of the year of 1971 spent in the Republic of Kenya. Through personal contact and prior research in sociolinguistics, Professors Joseph H. Greenberg and Charles A. Ferguson were of invaluable assistance in providing the impetus for this paper.

on a non-areal basis" [1964:526]. In the present paper, we will look at the question of multilingualism by a comparison of successive generations using some of the quantitative measures elaborated by Greenberg.

2. The Population

The Mijikenda (Swahili 'nine villages') live in an area of over 5,000 square miles along the Kenya coast and the immediate hinterland. These people speak nine contiguous mutually intelligible dialects. They number about 300,000. The Giriama form the most populous component of the Mijikenda, numbering over 160,000. The Northern Giriama, on whom this discussion of multilingualism is focused, practice a variety of forms of cultivation ranging from subsistence swidden to cash crop agriculture on government settlement schemes. This research was conducted in the Gede Settlement Scheme, located between Mombasa and Malindi on the Kenya coast. The population there is primarily Northern Giriama (representing about 75% of the total) with an admixture of other Mijikenda peoples, the Cushitic Waata Galla, upcountry peoples such as the Bantu Kikuyu, Kamba, Luhya and Nilotic Luo. The Giriama dominate the area of the settlement scheme culturally, if not linguistically.

Adjacent to the settlement scheme are nucleated Swahili villages. The Swahili sometimes settle within Mijikenda population areas, occupying positions either as tradesmen or less frequently, as farmers in single or extended family compounds.

The following pattern of multilingualism characterizes the population of the settlement scheme. Most Mijikenda men speak Swahili in addition to the vernacular language. The typical variety of Mijikenda Swahili is fluent but obviously non-native to a native speaker. Among the women, monolingualism in the vernacular is still not uncommon, but an increasing number of them are becoming more than incipiently bilingual[2] in this

[2]Diebold [1964:504] offers the following definition of minimal bilingual skill: "contact with possible models in a second language and the ability to use these in the environment of the native language." In the Mijikenda case, "possible models" may include not only native speakers, but also speakers of Swahili as a second language, who may deliberately assist coethnics in acquiring limited proficiency in a non-native language.

language. The Waata follow a pattern similar to the Mijikenda but they are fluent in their own vernacular as well. Upcountry people of different ethnic groups tend to follow a similar pattern in their language repertoires. They are usually less fluent than Mijikenda in Swahili, but more so than their coethnics at home. Primary school graduates among the above groups may also speak English. A typical member of an upcountry ethnic group living on the coast speaks better English than does a typical Mijikenda. A possible reason for this is the occupational status of upcountry groups, employment in the 'European' hotels. Their occupational status is in turn a function of educational attainment which may in turn be a product of their ability to achieve a high level of proficiency in English, the medium of the instruction in the school system.

With regard to interintelligibility among Mijikenda dialects, my own observations of cross-ethnic group communication indicate that intelligibility is high. Members of these groups claimed a lesser degree of interintelligibility than their language behavior indicated. Interintellibibility appeared to be positively correlated with lexicostatistical estimates of subgrouping.[3] Because language variety was considered an important marker of ethnic membership and group solidarity, such a claim about mutual intelligibility might have been predicted.

As a result of increased exposure to education and increased contact with outside cultures among these people, there has been a significant change in the type of multilingualism prevalent on the settlement scheme. This change has been in the direction of expanded individual language repertoire.

Exposure to the formal education process began historically with the advent of colonialism in East Africa in the late nineteenth century. The impact of the European-style school system and what was perceived by most Mijikenda as 'its language' (Swahili/Giriama: Kizungu 'European language, i.e. English') became deeply entrenched in the cultural and linguistic

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[3]For lexicostatistical evidence and comparative word lists on the subgrouping of these dialects, cf. Sedlak [1975].

milieu of the masses of the Mijikenda only after the introduction of universal education following the achievement of political independence by the Republic of Kenya. Since the medium of instruction for the primary schools even at the village level was English for the most part, this factor contributed to the development of a population multilingual to various degrees. Before the coming of the British, it is likely that the great majority of the Mijikenda were monolingual. The few who were bilingual acted as cultural intermediaries with neighboring ethnic groups such as the coastal Swahili and Pokomo, or the upcountry Kamba, Taita and Taveta (all Bantu peoples) in trading relationships.

With the advent of the British came another factor which contributed to the expansion of individual language repertoire. Subpopulations of present-day Kenya became increasingly mobile as a result of new economic and political configurations imposed by the colonial system. This juxtaposition of a great number of Niger-Congo Bantu, Nilotic and Cushitic speakers produced a need for a channel of communication among these groups. Because Swahili was already rooted firmly on the coast and had served this function even before the entrance of the British, it took on a greater role. English was at that time and, for the most part, is today, a language of the elite, in spite of its spread through the school system.

Seventy-five individuals were selected from the total settlement scheme population of 16,000. These seventy-five individuals were representative of the settlement scheme population ethnically, linguistically, and economically, insofar as this was possible.

3. Expanded Repertoire

The influence of both the English language and the Swahili language factors has resulted in an increase in the mean number of languages spoken by the present generation compared to that of their parents' generation. An index of claimed language repertoire referring to this mean number for the respondents' generation (cf. (1) below = 2.72) exceeds that for the parents' generation (cf. (2) below = 1.69) by a factor of 1.03, the real increase in the number of languages in the average repertoire of the respondents. Parents' generation will be defined as the set of respondents'

putative fathers and biological mothers.[4] The index of claimed language repertoire will be defined as the mean number of languages spoken by each generation. For the respondents' generation it is simply the summation of languages spoken by each respondent, divided by the total number of respondents:

$$(1)\quad \text{RESPONDENTS' INDEX} = \frac{\Sigma_1^n\ (R)}{n} = 2.72$$

For the parents' generation, the computation of this index is somewhat more complicated: the summation of the number of languages claimed by the respondent to be present in the repertoire of each parent (F + M) divided by two. This results in an average for one parent. This average is then multiplied by a correction factor of 1.46. The result is divided by n, 75, the total number of respondents:

$$(2)\quad \text{PARENTS' INDEX} = \frac{\Sigma_1^n\ (\frac{F+M}{2} \cdot 1.46)}{n} = 1.69$$

The correction factor of 1.46 represents a weighting to compensate for under-reporting of parents' language repertoire by the respondents. This adjustment is reflected in (2). Table 1 shows the contrast in the language repertoires of the parents as reported by the respondents versus their language repertoires as they themselves reported it. The derivation of the correction factor is also shown here.

In the course of the interview, respondents were required to provide less information on the repertoires of their parents than on their own repertoires. Informal discussions with several of the parents of the respondents to the survey brought the following pattern to light. Some respondents failed to report either Swahili, the lingua franca, or another vernacular as components of their parents' repertoires.

Swahili was often omitted by respondents since it was almost universally a component of their own repertoires and therefore could be assumed to be a component of their parents' repertoires. Swahili, in fact,

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[4] This excludes the father's co-wives, whose mother tongues and language repertoires may have differed from the languages and language repertoires of the respondents' biological mothers.

Table 1

PARENTS' LANGUAGE REPERTOIRE

	Respondent's Report		Parent's Self-report	
Respondent	A	B	C	D
1	G	G	G<u>S</u>	G
31	DKm	G	DKm	G
41	S	S	S	S<u>A</u>
53	Km	Km	Km<u>Ki</u>	Km<u>Ki</u>
56	W	W	W<u>GS</u>	W
59	G	G	G	G
Total	13		19	

$$\text{CORRECTION FACTOR} = \frac{19}{13} = 1.46$$

Column

A = father's language repertoire: respondent's report

B = mother's language repertoire: respondent's report

C = father's language repertoire: self-report

D = mother's language repertoire: self-report

(underlining = languages not reported by children)

Language Key

A = Omani Arabic

D = Duruma

G = Giriama

Ki = Kikuyu

Km = Kamba

S = Swahili

W = Waata

was less widely known by the parents and was less often a component of the parents' repertoire.

Other vernaculars were also frequently omitted by respondents because the period of acquisition and use by the parent may have come and gone before the respondent was old enough to notice. Vernacular languages acquired were usually those of large ethnic segments of the Kenya population, such as the Kikuyu, the Kamba or the Luo. According to the respondents who had learned vernaculars other than their own, the following conditions of the contact situation favored acquisition. These are listed in order of importance: most of the other participants in the contact situation spoke a vernacular different from that of the respondent; the contact was intense and over a period of at least months; most of the other members of the group spoke limited Swahili; the respondent spoke limited Swahili. Other conditions may also have contributed to producing a situation favorable to the acquisition of other vernaculars, but the above were the primary ones proposed in the respondents' 'ethnosociology of language.'

The typical repertoire of the parents' generation consists of vernacular and Swahili, while that of the respondents' generation consists of vernacular, Swahili, and possibly English, rather than a second African language. Swahili, if known, is acquired largely through contact with native speakers, while English, if known, is acquired almost solely through the Kenya school system where it is the medium of instruction and there is no contact with native speakers.

4. Greenberg's Diversity Measures

Greenberg has proposed a number of language diversity measures which may be of value in the analysis of the sociology of the language situation in this Mijikenda community and in the analysis of expanded individual repertoire.

The simplest model proposed by Greenberg is called the monolingual nonweighted method, and is referred to as method A. It can be described as follows: "If from a given area we choose two members of the population at random, the probability that these two individuals speak the same language can be considered a measure of its linguistic diversity. If everyone

speaks the same language, the probability that two such individuals speak the same language is obviously 1, or certainty. If each individual speaks a different language, the probability is zero. Since we are measuring diversity rather than uniformity, this measure may be subtracted from 1, so that our index will vary from 0, indicating the least diversity, to 1, indicating the greatest" [1956:109].

The total probability of selecting two speakers of the same language is the sum of the probabilities of such an event for each individual language M, N, O, etc. The probability for each of these is m^2, n^2, o^2, etc., where m is the proportion of speakers of M to the total population, etc. Summing up, the formula becomes:

(3) Method A = $1 - \Sigma_i (i^2)$

Method A is referred to as a monolingual method, because the compilation of each implies counting each individual as a speaker of a single language. This method, then, would reflect only mother tongue complexity within the multilingual society and not the fact that the language repertoires of individual speakers have expanded. Presumably, modifications could be made in each of the methods which would allow them to account for this fact.

Greenberg [1956:111] suggests that this method may be altered by the adoption of a split personality method, in which a speaker of two languages would be counted as two speakers, a speaker of three languages as three speakers, etc. For the 75 individuals now living in the Gede Settlement Scheme in Coastal Kenya and for 75 of their parents who have their origins in the same area, let us examine the results using Method C, the split personality method. This method is not weighted for linguistic similarity. For the childrens' generation, C = .766 and for the parents' generation, C = .460. Using this method, the probability that any member of the children's generation speaks the same language as any other member is .766 and the probability that any member of the parents' generation speaks the same language as any other member is .460.

However, if we look at the actual language repertoires of the successive generations, it will be seen that these probabilities may perhaps indicate

something other than diversity. In the case of the children's generation, 75 individuals speak a total of 21 different languages. Of these 75 individuals, 69 or 92% speak Giriama. Using Method C, counting each language of each individual as one unit, there are then 204 individuals. In the case of the parents' generation, 75 individuals were reported to have spoken only 11 languages. Of these 75 individuals, 63 or 84% of them spoke Giriama. Counting each language of each individual as one unit for this group, 127.02 (87 x correction factor of 1.46) individuals result. Knowing that the majority of both groups speak Giriama in addition to other possible languages, it is clear that the higher diversity figure for the childrens' generation must be due to the addition of other languages to their repertoires. This is indeed the case. Method A would show only mother tongue diversity and would therefore more accurately represent this aspect of the situation.

An additional measure, H, perhaps more accurately reflects the true sociolinguistic situation. This is the index of communication, the probability that if two members of the population are chosen at random, they will have at least one language in common. "This measure is obtained by first dividing the population into proportions of speakers of any one language only or any particular combination of languages and then calculating the products of each pair ..." [Greenberg 1956:112]. Products of pairs with at least one language in common are multiplied by 1; products of pairs with no language in common are multiplied by zero. The summation of the products yields the index of communication, which is approximately the same for both children's and parents' generations in the Kenya data.

Certain inferences might be drawn from a comparison of the index of communication and the split personality method across generations regarding redundancy of communicative form to perform a communicative function. For the moment, we shall assume that any communicative function may be filled by any communicative form, although we know that in the real social world this is not the case. Swahili and English, while expanding the repertoire of communicative forms, often compete to perform a communicative function necessarily filled by one or the other. For example,

in the home setting, two lower-level government officials (location chief and traffic bureau police lieutenant) may be discussing national politics. Because both of these officials received at least a secondary education, English may be used. Because both are also coastal people and are relatively fluent in Swahili, this language may also be used. In fact, code-switching is a characteristic feature of this setting; the switch is often triggered by the use of an English loan word in Swahili or vice versa. In the home setting, language choice for national politics may be random. The same two government personnel conversing on the same topic at the chief's office would most likely prefer Swahili. In this setting, the choice of Swahili, the lugha ya taifa, 'national language' over English, the lugha ya wageni, 'foreign language', suggests national political allegiance, while choice of English in this setting may connote at worst disloyalty, or at least Anglophilia.[5]

5. Discussion

In a multilingual situation such as that of the Gede Settlement Scheme, redundancy of communicative form is reflected in a high value for Measure C, a result using the split personality method, for the respondents' generation, with the index of communication remaining constant or nearly equivalent with that of the parents' generation. Efficiency of communicative form is reflected in the lower value of Measure C for the parents' generation, with the index of communication remaining constant or nearly equivalent with that of the respondents' generation.

At first sight, it appears that a similar value for the index of communication across generations has no disadvantages in terms of decreasing the actual communication potential. On closer analysis, a case could also be made for fragmentation of communication potential in a setting like the Gede Settlement Scheme where individual language repertoires have expanded. Certain topics, for example, may require a specific code, and thus exclude those without access to this code. In an earlier, more monolingual generation,

[5]The competition for similar functional slots by Swahili and English in Uganda is discussed in extenso in Scotton [1972].

such may not have been the case. Thus the spread of two competing linguae francae (albeit the socioeconomic groups who have access to these two may not entirely overlap) within such a geographically delimited area which already has a high index of communication may be of questionable value. Only when the extension of the geographic and linguistic bounds is considered will an increase in the index of communication (Greenberg's H, the probability that any two speakers share one common language) become relevant and apparent.

Perhaps more satisfying from the point of view of the multilingual situation which we observed would be the application of Greenberg's Measure G, the random speaker-hearer method. This measure attacks the problem of the spread of a lingua franca, since it is the probability that "if one individual is chosen from the population who if polylingual (or multilingual), is equally likely to speak any of his languages, then a second member of the population will be able to understand him." By simple observation of the mother tongue percentages mentioned above for our data, it is obvious without calculation that this factor would be high.[6]

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[6] In the discussion period following the presentation of this paper, C. A. Ferguson suggested that the analysis of linguistic diversity measures might now be developed and expanded to look at language situations in multilingual societies from a finer-grained and more discrete perspective. Diversity measures which would look at the allocation of linguistic codes according to roles of speakers, participants, topic, setting, etc., could be established. The establishment of ideal speaker-hearer folk categories might also be proposed in such an analysis.

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A SURVEY OF KRU DIALECTS[1]

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1. Introduction

In April and May of 1974 a linguistic survey of what has been called the Kru language was undertaken as a joint project by the Liberian Ministry of Education and The Institute for Liberian Languages. Our purposes were several: 1) to determine the number of Kru dialects and their locations, 2) to determine the nature of their interrelationships, and 3) to gain an understanding of the relationships between Kru and the languages adjacent to it.

Kru is an English term applied to a complex of clans and dialects which divide themselves linguistically into two major subunits: Klaɐ and Tajuosɔ̃. Although there may well be social and political reasons for grouping Klaɐ with Tajuosɔ̃, there is little linguistic justification for it; less so, in fact, than for grouping Tajuosɔ̃ with Cɛdɛpɐ, a dialect

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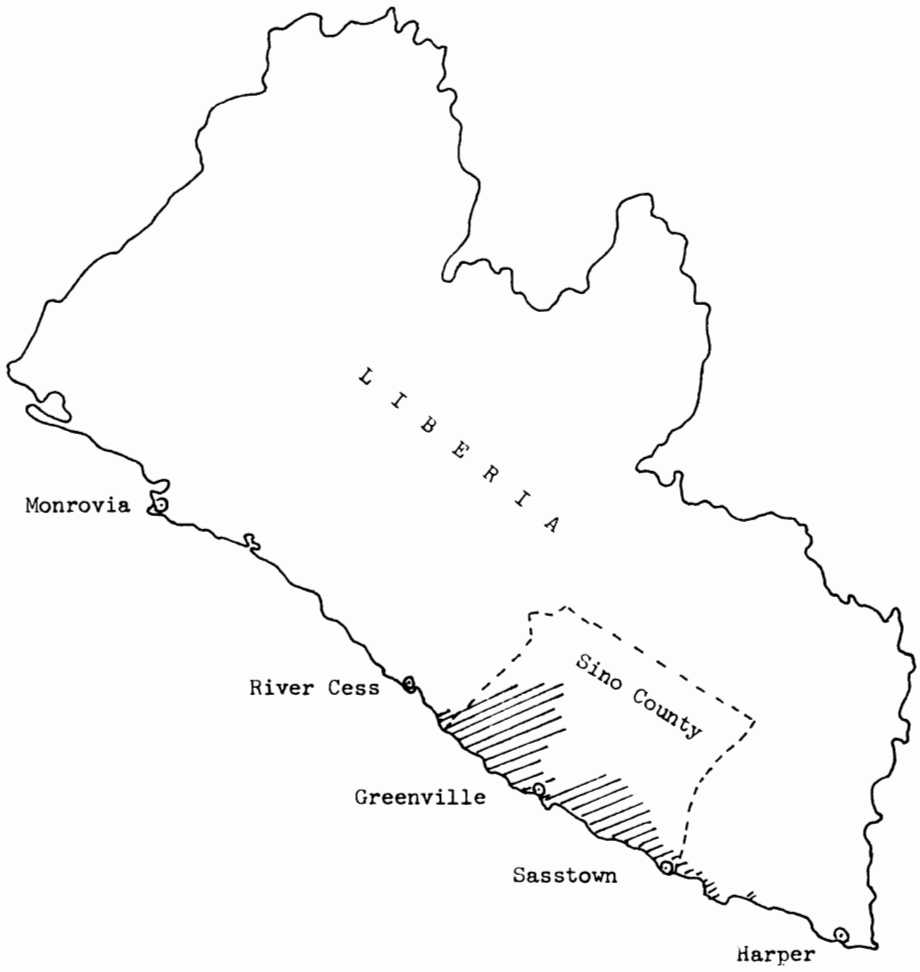
[1]We wish to thank the Reverend Augustus B. Marwieh of the Christian Nationals' Evangelism Commission in Sino County. His suggestions and insights form a valuable part of this paper and, in fact, underlie a good many of our conclusions. We are particularly indebted to the Honorable Bertha Azango of the Liberian Ministry of Education for her encouragement and generous support of this project. We are also grateful to the Reverend Augustus T. Monu and Miss Nancy Lightfoot of the United Methodist Church in Sasstown for their generous assistance during our visits there. In other areas as well we were warmly received and provided with every available amenity. In a sense then, this paper is a tribute to the spirit of cooperation and hospitality that is so evident among the Kru peoples, the Ministry of Education personnel, and the Christian organizations of Sino County.

[2]In this paper the term "clan" refers to the groups of people with which we worked. In some cases these groups are actually subdivisions within clans. The spellings for Klaɐ and Tajuosɔ and for the Klaɐ and Tajuosɔ̃ clan names were provided by Reverend Marwieh and Reverend Monu and utilize the orthographic conventions established by the Kru Committee of the United Methodist Church. A complete list of names and alternate names with their official spellings is found in Appendix I.



Map 1. Location of Klaɛ and Tajuosɔ within Liberia

of "Interior Grebo." (These relationships are discussed in detail in section 6.) Klaɵ and Tajuosɔ̃ are actually the names used by Klaɵ and Tajuosɔ̃ speakers to refer to these two subunits. For strictly linguistic purposes, we suggest that these terms be used in favor of the more general term Kru.

As a means of grouping languages and dialects, lexicostatistics has been viewed by some [Bergsland and Vogt 1962] as an unreliable shortcut from the comparative method. In the case of Klaɵ and Tajuosɔ̃, the results of the word list comparisons are supported by our intelligibility findings, by native speakers' own concepts of linguistic relationships, and by the fact that these groupings and subgroupings form orderly geographic as well as linguistic units. (The correlation between the cognate percentage figures and intelligibility is discussed in section 3.)

According to the 1962 census figures [Bureau of Statistics, Office of National Planning, Liberia 1964], the Kru population in Liberia is 80,813. Speakers of Klaɵ occupy an approximately one hundred mile stretch of coastal territory between the Po River in Grand Bassa County and the town of Grand Cess in Maryland County. The Nifa clan forms an island of Klaɵ among the Grebo in Maryland County. There is in addition a sizeable expatriate Klaɵ population distributed among West Africa's major port cities. We made no attempt to obtain data from these colonies since their inhabitants originate from the seafaring clans in Liberia and are reported to be speaking the dialects of these clans. Gbeta, Sekleɵ, Jlaɵ, and Kabɔ, numbers 42, 43, 41, and 4 on Map 2, seem to be especially well represented in such ports as Freetown, Accra, and Lagos. Speakers of Tajuosɔ̃ live in an area centered about thirty miles north of Greenville. The lined area on Map 1 indicates the position of the entire Klaɵ-Tajuosɔ̃ complex within Liberia. The approximate geographic locations of the individual clans are shown on Map 2.[3]

Westermann and Bryan [1952] classified Kru as a member of the "Isolated Language Group: KRU." Other Liberian languages belonging to this group

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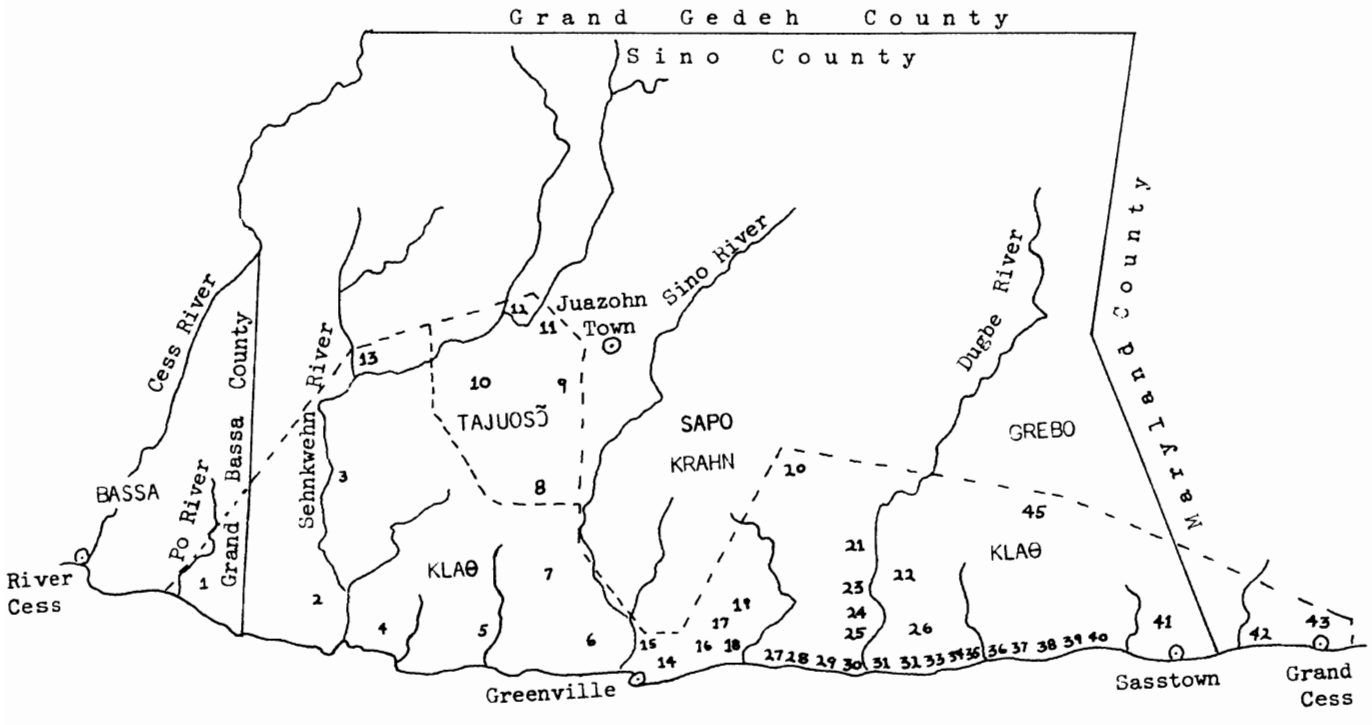
[3]We are grateful to Mr. Samuel D. Glover of the Liberian Cartographic Service for providing us with the outline for this map.

Map 2. Approximate locations of Klaɐ and Tajuosɔ̃ clans



1 Blio	6 Jale	11 Sɔɔe	16 Doo	21 Jede	26 Pete	31 Nymala	36 Wesepo	41 Jlaɐ
2 Tolo	7 Gbuu	12 Boo	17 Woli	22 Dreo	27 Wɛtɛ	32 Weao	37 Dio	42 Gbeta
3 Duo	8 Plɛ̃ɛ̃	13 Trɔe	18 Nyaɐ	23 Seo	28 Nigbi	33 Niwlɔ	38 Botba	43 Seklee
4 Kabɔ	9 Kãɛ̃	14 Wɛe	19 Tatuɛ	24 Sitɔ̃ɛ̃	29 Jlufaa	34 Kaɐ	39 Tale	44 Nifa
5 Jaɐ	10 Kulu	11 Nyanu	20 Kwaatuo	25 Teaɐ	30 Nyea	35 Sobo	40 Jlɛpo	45 Bole

include Dey, Bassa, Kuwaa (Belle), Grebo, and Krahn.[4] Although he considers the relationship tentative, Joseph Greenberg [1966] has more recently included the KRU group as a sub-branch of the larger category KWA. KWA is, in turn, a branch of the Niger-Congo language family.

2. Method

2.1 Informants. All informants were native speakers of the dialects under investigation and, for the most part, informants were interviewed inside their respective dialect areas.

Informants who were chosen for the story elicitation part of the intelligibility test met the same qualifications as those chosen for word list elicitation. However, informants who were used for the response part of the intelligibility test met somewhat stricter qualifications. For the elicitation of responses, informants were sought who had had a minimum of contact with surrounding dialects but who, at the same time, were old enough to be fully competent in their own dialect. Therefore, these informants were between the ages of 15 and 25 and they had had no extended travel or living experience outside of their dialect areas. For both parts of the intelligibility test, it was not necessary that the informants know English. Due to time and/or distance limitations, informants who met all these qualifications were not always obtained.

2.2 Materials. Both reel-to-reel Sony 800B and cassette Sony TC-95A and Aiwa tape recorders were used to record the word lists and the narratives during the first part of the survey, and to play the narrative tape and record the narrative responses during the second part of the study.

Information sheets were supplied for the purpose of interviewing informants. These sheets contained questions concerning the informants' linguistic backgrounds, their attitudes towards other dialects, and their exposure to other dialects. In addition, the information sheets included questions concerning geographical boundaries of the dialects,

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[4] Krahn, Grebo, and Bassa, like Kru, are English cover terms for collections of dialects--the status of which will be discussed in a paper being prepared by John Duitsman and Frances Ingemann.

socio-political groupings of the dialects, and alternate names of the dialects.

The word list used in the study is a modified form of the Swadesh 200-word list as it appears in William Samarin's Field Linguistics [1967]. The Swadesh word list was altered both by omitting certain words and by adding more suitable words. A brief explanation of these changes is made here. For a more thorough discussion of general problems encountered in elicitation of word lists see Clark [1971].

Words which were omitted from the list for semantic reasons fall into three categories. Firstly, some words are non-existant in Klaɐ or occur as recent borrowings. These are yellow, green, flower, ice, snow and freeze. Secondly, two English words are sometimes contained in one word in Klaɐ, and in these cases, one of the English words was omitted. Two examples of this are the pairs stick and tree, and shoot and throw. Finally, some words were found to be difficult and time-consuming to elicit because they prompted a wide and inconsistent range of responses. These words include this, that, there, here, few, some, other, wide, narrow, correct, round, smooth, lake, brother, sister, clothing, cloud, rain, river, day, sleep, to live, to think, to stick, to hit, to pierce, to wipe, to turn, or, because, at and with.

Words were added to the list in several ways. It was found that Klaɐ and Tajuosɔ̃ divide semantic components of some of the English words on the list into two separate Klaɐ words. In one case, old, Klaɐ and Tajuosɔ̃ have two forms-- daka which is used with inanimate objects, and gbaka which is used with humans. Both Klaɐ forms were elicited. In other cases such as to sew, informants responded inconsistently by giving one of two or three related words. Thus, for the word to sew informants sometimes responded tbā (to sew) and sometimes mmā (to mend). In order to clear such confusion all related words were elicited. Therefore, to mend was elicited in addition to to sew; arm and palm in addition to hand; and weeds in addition to grass. Klaɐ adjectives were found to change form depending on whether they were in the attributive or stative form. In most cases, only one form was

elicited, but for the words red and black both forms were included. Finally, individual words which have been found useful by other comparativists were added; hot and navel were used by Ronald Long [1971]; goat and town were suggested by William Welmers [personal communication] and forest was used by Ingemann, Duitsman, and Doe [1972]. The final form of the word list used in this survey is found in Appendix II in both English and Klaɵ.

2.3 Procedure: word lists and intelligibility test. An interpreter was used to communicate with the informants whenever their knowledge of English was insufficient. At the beginning of each elicitation session, the basic procedure was explained to the informant and information for the interview sheet was obtained. The words were then elicited one by one and recorded both by writing them phonetically and by recording them on a tape recorder. At the end of the first part of the survey, the word lists for all the dialects were reviewed. A list of words which appeared as isolated or unusual forms were reelicited during the second part of the survey.

The intelligibility test used in this survey was devised by Frances Ingemann and used in a survey of the Krahn dialects of Liberia [Ingemann, Duitsman, and Doe:1972]. During the first part of the survey, narratives in each dialect were recorded. The narratives usually consisted of personal childhood experiences of the speakers. The informants were asked to speak in their natural manner and to avoid borrowed terms. Each narrative was then translated into English. At the end of the first part of the survey, a total of twelve narratives were chosen which we felt were representative of linguistic subgroups within Klaɵ and Tajuos^{5}. These narratives were edited to a length of 40 to 50 seconds and copied onto a single tape. Appendix III contains the English translation of a sample narrative from the Dreo dialect.

During the second part of the survey, the twelve narratives were played in the different dialect areas with the exceptions of Duo, Doo, Nyanu, and Nyaɵ, which were considered to be especially closely related to neighboring dialects. For each testing session, a suitable informant was found to take the intelligibility test and the procedure of the test

was explained to him either directly or through an interpreter. The stories were then played with pauses at natural breaks in the narratives. At each pause, the informant repeated in his own dialect the previously played portion of the narrative. The informant's interpretations were recorded on a second tape recorder. After all twelve narratives were played and retold in the informant's dialect, the responses of the informant were translated with the help of an English speaker.

3. Analysis and Results

3.1 Cognate percentage figures. More than forty clans and subdivisions of clans of Klaɵ and Tajuosɔ̃ were identified during this survey and word lists from thirty-eight of these were recorded. When two groups of people were reported to be speaking the same dialect, only one list was taken. When a group of people was reported to be speaking a different dialect or when there was some doubt regarding the relationship of a dialect with other dialects, a list was taken.

Each word list was compared with every other word list by counting the number of cognates for every possible pair of lists. Two words with the same or similar meanings were considered to be cognate when they resembled each other phonetically, when they exhibited regular sound changes, or when they were identical. Percentages of cognates were then calculated for each pair of lists. These scores are entered in Table 1; boxes enclose the major groupings and subgroupings of dialects.

The most basic linguistic division exists between the five dialects comprising Tajuosɔ̃ (Boo, Səɔɵ, Kulu, Kãɵ̃, and Plɛ̃ɵ̃) and those comprising Klaɵ (Tatuɛ through Seklɛɵ in Table 1). Cognate percentages fall between 89 and 97 percent within Tajuosɔ̃ and between 85 and 99 percent within Klaɵ. However, cognate percentages between Tajuosɔ̃ and Klaɵ do not rise above 80 percent and, in the case of the peripheral Tajuosɔ̃ dialect Boo, they drop as low as 67 percent.

Within Klaɵ there are four main subgroups and one peripheral subgroup. While these subgroups are based on cognate percentage figures, we also found them to be geographic units:

	Boo	Sɔɔe	Kulu	Kãẽ	Plɛ̃ẽ	Trɔe	Tatuɛ	Kwɛatuo	Blio	Tolo	Duo	Jae	Gbuu	Woli	Wɛe	Jale	Nyanu	Doo	Jede	Dreo	Nyae	Seo	Sitɔ̃ẽ	Pete	Tɛae	Nymala	Wɛtɛ	Nyea	Dio	Tale	Kabɔ	Jlɛpe	Botba	Jlae	Gbeta	Nifa	Bɔle	Seklee
Boo	X	92	89	89	89	79	73	72	73	72	72	72	73	71	70	72	72	70	70	71	71	70	70	69	70	69	69	69	70	69	69	70	69	67	68	68	69	68
Sɔɔe	92	X	94	95	96	82	76	75	78	78	78	78	78	73	72	76	77	77	74	75	75	74	74	74	74	74	74	74	73	74	73	73	73	71	71	72	72	71
Kulu	89	94	X	97	96	83	78	77	78	77	77	77	79	76	75	76	77	76	76	76	77	76	76	75	75	74	75	74	74	75	74	74	74	72	73	73	73	71
Kãẽ	89	95	97	X	94	82	78	77	78	78	77	77	78	77	75	77	77	76	76	76	77	76	76	75	75	75	75	75	74	75	74	74	74	72	72	73	73	71
Plɛ̃ẽ	89	96	96	94	X	85	79	78	79	80	79	79	80	77	76	79	79	79	78	79	78	77	78	77	77	77	77	77	76	76	75	75	76	74	74	74	75	72
Trɔe	79	82	83	82	85	X	84	81	85	85	85	85	85	82	81	84	84	83	83	84	83	83	83	82	82	82	82	82	82	82	82	81	82	79	79	80	81	77
Tatuɛ	73	76	78	78	79	84	X	95	86	88	86	88	87	92	93	86	93	91	91	91	90	91	91	90	90	89	89	88	90	89	89	88	88	89	87	87	88	85
Kwɛatuo	72	75	77	77	78	81	95	X	87	87	87	87	87	90	93	87	90	90	92	93	91	91	91	90	91	90	90	90	90	90	90	90	90	90	88	89	90	86
Blio	73	78	78	78	79	85	86	87	X	98	98	97	96	89	90	92	92	93	92	93	92	93	93	93	93	92	91	91	92	92	92	91	91	89	88	89	90	86
Tolo	72	78	77	78	80	85	88	87	98	X	99	98	98	89	91	94	93	94	93	94	93	94	94	94	94	93	93	93	92	93	93	92	92	90	90	91	91	87
Duo	72	78	77	77	79	85	86	87	98	99	X	98	97	89	91	93	92	93	92	94	92	93	92	93	93	92	92	92	91	92	92	91	91	89	89	90	90	87
Jae	72	78	77	77	79	85	88	87	97	98	98	X	99	91	92	94	94	95	92	93	93	93	93	92	93	92	93	92	92	93	93	92	92	90	90	91	90	88
Gbuu	73	78	79	78	80	85	87	87	96	98	97	99	X	90	91	95	94	95	92	93	93	93	92	92	92	92	92	92	92	92	92	92	91	92	90	90	90	89	87
Woli	71	73	76	77	77	82	90	90	89	89	89	91	90	X	95	94	94	95	93	94	94	94	94	93	94	94	94	93	91	90	90	90	91	92	91	89	89	89	88
Wɛe	70	72	75	75	76	81	93	93	90	91	91	92	91	95	X	92	96	95	98	94	94	94	95	92	93	93	92	91	90	90	90	91	92	91	89	89	88	87
Jale	72	76	76	77	79	84	86	89	92	94	93	94	95	94	92	X	94	96	92	94	93	94	94	93	93	94	93	93	91	91	91	91	93	91	89	90	90	87
Nyanu	72	77	77	77	79	84	93	90	92	93	92	94	94	94	96	94	X	97	94	96	95	95	96	94	96	95	95	94	93	92	93	91	93	92	90	90	91	87
Doo	70	77	76	76	79	83	91	90	93	94	93	95	95	95	95	96	97	X	95	97	96	96	98	95	96	97	97	95	95	94	93	94	95	94	92	92	93	90
Jede	70	74	76	76	78	83	91	92	92	93	92	92	92	93	93	92	94	95	X	97	96	96	96	97	96	96	95	95	95	96	96	95	94	94	90	91	90	90
Dreo	71	75	76	76	79	84	91	93	93	94	94	93	93	94	94	94	96	97	97	X	97	98	99	97	98	97	97	95	94	95	94	95	95	95	93	93	95	90
Nyae	71	75	77	77	78	83	90	91	92	93	92	93	93	94	94	93	95	96	96	97	X	97	97	95	96	96	96	94	93	94	93	94	94	93	92	92	92	88
Seo	70	74	76	76	77	83	91	91	93	94	93	93	93	94	94	94	95	96	96	98	97	X	99	97	98	97	97	93	94	94	94	94	95	94	93	93	94	88
Sitɔ̃ẽ	70	74	76	76	78	83	91	91	93	94	92	93	93	95	95	94	96	98	96	99	97	99	X	97	98	98	97	95	94	94	93	94	96	95	93	93	94	90
Pete	69	74	75	75	77	82	90	90	93	94	93	92	92	94	93	93	94	95	97	97	95	97	97	X	97	95	96	95	94	94	93	95	95	94	93	93	94	89
Tɛae	70	74	75	75	77	82	90	91	93	94	93	93	92	94	93	93	96	96	96	98	96	98	98	97	X	96	96	96	95	96	94	95	96	95	93	94	95	89
Nymala	69	74	74	75	77	82	89	90	92	93	92	93	92	94	93	94	95	97	96	97	96	97	98	95	96	X	98	95	95	95	95	95	96	95	93	93	93	90
Wɛtɛ	69	74	75	75	77	82	89	90	91	93	92	93	92	93	93	95	94	96	98	96	99	97	99	X	97	98	98	97	95	94	94	93	94	96	95	93	94	90
Nyea	69	74	74	75	76	82	88	90	91	93	92	92	92	91	91	93	94	95	95	95	94	95	95	95	96	95	95	X	96	94	96	95	95	97	95	94	94	93
Dio	70	73	74	74	76	82	90	90	92	92	91	92	92	90	90	91	93	95	96	94	93	94	94	94	95	95	94	96	X	98	97	97	97	96	95	95	95	92
Tale	69	74	75	75	76	82	89	90	92	93	92	93	92	90	90	91	92	94	95	95	94	94	94	94	96	95	96	96	98	X	97	97	98	96	96	96	94	92
Kabɔ	69	73	74	74	75	82	89	90	92	93	92	93	92	90	90	91	93	93	95	94	93	94	93	93	94	95	95	95	95	97	99	X	97	97	96	96	96	92
Jlɛpe	70	73	74	74	75	81	88	90	91	92	91	92	91	91	91	91	91	94	96	95	94	94	94	95	95	95	95	96	97	97	97	X	98	96	96	96	96	92
Botba	69	73	74	74	76	82	88	90	91	92	91	92	92	92	92	93	93	95	96	95	94	95	96	95	96	96	97	97	97	98	97	98	X	99	98	98	96	94
Jlae	67	71	72	72	74	79	89	90	89	90	90	91	91	91	92	94	95	95	95	93	94	95	94	95	95	95	95	96	96	96	96	99	X	97	97	95	93
Gbeta	68	71	73	72	74	79	87	88	88	90	89	90	90	89	89	89	90	92	94	93	92	93	93	93	93	93	94	94	95	96	96	96	98	97	X	99	94	95
Nifa	68	72	73	73	74	80	87	89	89	91	90	91	90	89	89	90	90	92	94	93	92	93	93	93	94	93	94	96	95	96	96	96	98	97	99	X	94	95
Bole	69	72	73	73	75	81	88	90	90	91	90	90	89	89	88	90	91	93	94	95	92	94	94	94	95	93	94	93	95	94	94	96	96	95	94	94	X	91
Seklee	68	71	71	71	72	77	85	86	86	87	87	88	87	88	87	87	87	90	90	90	88	88	90	89	89	90	93	91	92	92	92	92	94	93	95	95	91	X

Table 1. Cognate Percentage Scores

Western Klaɵ: Blio, Tolo, Duo, Jaɵ, and Gbuu (1, 2, 3, 5, and 7 in Map 2)

West Central Klaɵ: Woli, Wɛɵ, Jalɵ, Nyanu, and Doo (17, 14, 6, 15, and 16 in Map 2)

Central Klaɵ: Doo, Jede, Dreo, Nyaɵ, Seo, Sitɔ̃ɵ̃, Pete, Tɵaɵ, Nymala, and Wɛtɛ (16, 21, 22, 18, 23, 24, 26, 25, 31, and 27 in Map 2)

Eastern Klaɵ: Wɛtɛ, Nyɵa, Dio, Talɵ, Kabɔ, Jlɛpo, Botba, Jlaɵ, Gbeta, Nifa, Bɔlɵ, and Seklɵ (27, 30, 37, 39, 4, 40, 38, 41, 42, 44, 45 and 43 in Map 2)

Tatuɛ and Kwɵatuo

Cognate percentage figures within Western Klaɵ fall between 96 and 99 percent; those within West Central Klaɵ fall between 92 and 97 percent; and those within Eastern Klaɵ score between 94 and 99 percent cognate with the exception of Bɔle and Seklɵ which are peripheral members whose scores drop as low as 91 percent. Two dialects of Eastern Klaɵ, Gbeta and Nifa, are particularly closely related (99 percent). This high percentage figure supports the migratory history of the Nifa clan which originally came from Gbeta and which is now located at the far eastern end of the Klaɵ dialects (44 on Map 2). The same migratory pattern explains why Kabɔ, located on the Western Klaɵ coastline, is more closely related to the central dialects of Eastern Klaɵ (96-99 percent) than it is to the dialects of Western Klaɵ (92-93 percent). The Kabɔ people migrated from the Eastern Klaɵ coastal area and may still be considered part of the larger unit Jlɔ. Jlɔ also includes Talɵ (39), Wesepo (36), Sobo (35), and Kaɵ (34).

Finally, Kwɵatuo and Tatuɛ, which are spoken in an area north of the Central Klaɵ group, form a unit which is peripheral to the entire Klaɵ group. Those two dialects are closely related to each other (95 percent) but they do not score above 93 percent with any of the other Klaɵ dialects and cannot be included as members of any of the above subgroups.

The dialects of Klaɵ can be divided into the above subgroups on the basis of higher percentage scores within each group. They can be further divided into smaller units with even higher percentage scores. However, the boundaries of all these subgroups are neither rigid nor mutually exclusive, and, in fact, they frequently overlap. Thus, Wɛtɛ is both a

member of the Central and Eastern subgroups, and Doo is a member of both the West Central and Central subgroups. Allowing for a possible two percent error margin in the calculation of any of the percentages, one should not view these dialects as separate clusters but rather as members on the continuum of all Klaɔ speakers.

3.2 Intelligibility test. Narratives from twelve dialects which are representative of Klaɔ and Tajuosɔ̃ were selected for testing mutual intelligibility. These twelve narratives were played in 33 of the 38 areas we worked in excluding Duo, Doo, Nyanu, Sitɔ̃ɔ̃, and Nyaɔ. We felt that little additional information would be obtained by including these five dialects in the testing procedures because of their close relationships with neighboring dialects.

After the 33 informants each retold the 12 narratives in their respective dialects, the contents of these interpretations were compared with the original narratives and rated on a scale ranging from complete comprehension to failure to understand anything. The number of mistakes that each informant made during his interpretations was counted and evaluated using this six point scale:

(1) 1. Understood the dialect completely and made no mistakes
2. Made one or two mistakes
3. Made three or four mistakes
4. Understood the basic story only
5. Understood only isolated sentences and fragments of sentences
6. Understood nothing

These results are entered in Table 2. In order to maintain some degree of objectivity in evaluating the interpretations, the following guidelines were used to score the number of mistakes each informant made:

(2) 1. Single words were counted as one-half of a mistake; a missing phrase or sentence was counted as one mistake. Not more than one full mistake was counted per sentence.
2. When the total number of mistakes added up to an odd half, the half was eliminated in figuring the final score.
3. Errors involving pronouns were not counted as mistakes.

4. Errors involving tense or aspect were not counted as mistakes.
5. Rephrasings with no change in meaning were not counted as mistakes.
6. Additions were not counted as mistakes.
7. Recurrances of a mistake (such as a misunderstood word) were not counted.
8. Errors in sentences containing a proper name were not counted as mistakes.

As might be expected, the results of the intelligibility test generally support the conclusions of the cognate percentage analysis. They also provide interesting insights into the influence of non-linguistic factors such as economic organization and geographic location on Klaɔ-Tajuosɔ̃ dialect interrelationships. Those dialects which are grouped together on the basis of mutual intelligibility scores in Table 2 coincide with those dialects which are grouped together on the basis of cognate percentage figures in Table 1. The results show that two way intelligibility within each subgroup is high (rating from 1, understood completely, to 3, made three or four mistakes) with the exception of the peripheral dialects Bɔlɔ and Seklɛɔ within the Eastern Klaɔ subgroup.

Scores between the Tajuosɔ̃ and the Klaɔ dialects demonstrate one-way intelligibility. That is, the representative dialect of Tajuosɔ̃ (Kulu) is very difficult for most Klaɔ speakers to understand and Klaɔ informants scored mostly between 5, understood only isolated sentences and fragments of sentences, to 6, understood nothing. On the other hand, the central Klaɔ dialects (with the exception of Bɔlɔ, Seklɛɔ and Tatuɛ) are not difficult for the Tajuosɔ̃ informants to understand. Tajuosɔ̃ informants scored highly (between 1 and 3) on these Central Klaɔ dialects. This one way intelligibility phenomenon has also been identified among dialects of Guere in the Ivory Coast [Duitsman, Campbell, and Kwejige 1972] and among the Krahn dialects of Liberia [Ingemann, Duitsman, Doe 1972]. Part of the explanation may lie in the fact that the large and commercially important Klaɔ towns and cities which are located in the Klaɔ coastal area attract and exert influence on Tajuosɔ̃ speakers from the interior dialect areas.

Table 2. Scores for Mutual Intelligibility Test

	Test Dialects														
	Kulu	Trɔɵ	Tatuɛ	Duo	Jaɵ	Gbuu	Dreo	Nymala	Talɵ	Jlaɵ	Seklɵɵ	Bolɵ	Sex	Age	Informant Information
Boo	2	1	4	2	2	3	1	3	1	3	5	4	F	25	
Sɵɔɵ	1	2	4	2	3	1	2	3	3	4	5	5	M	14	
Kulu	1	2	3	2	2	2	1	3	2	3	4	4	M	18	five months in
Kaɵ	2	4	4	2	2	2	2	4	2	3	4	4	M	16	Monrovia
Plɛɵ	1	2	3	1	2	1	1	2	2	2	4	3	M	15	
Trɔɵ	2	2	4	1	2	1	1	2	2	2	4	4	M	14	
Tatuɛ	5	4	2	2	2	2	1	3	4	3	3	3	M	26	
Kwɵatuo	5	3	3	3	2	5	1	2	2	2	4	3	M	13	
Blio	5	3	4	2	3	2	2	2	2	2	4	4	M	15	
Tolo	5	3	4	1	3	3	1	2	2	3	5	4	M	13	three years in Kabɔ
Jaɵ	4	3	3	1	2	1	2	2	2	2	2	4	M	15	three years in Kabɔ
Gbuu	2	3	4	1	1	1	1	2	2	2	4	3	M	15	
Woli	5	4	3	2	3	4	2	2	2	2	4	4	M	15	
Wɛɵ	5	3	2	2	2	2	1	3	1	2	3	4	M	14	
Jalɵ	2	4	4	1	2	2	1	2	3	2	4	4	F	21	
Jedɵ	6	4	4	3	2	4	2	2	2	3	4	3	M	15	
Dreo	3	2	3	2	2	2	2	1	1	1	2	3	M	15	nine months in
Seo	5	4	4	1	2	3	1	2	2	1	2	3	M	17	Monrovia
Pete	5	3	3	3	2	3	1	2	1	1	3	3	M	21	four years in
Tɵaɵ	6	6	6	2	4	4	2	2	3	4	5	6	M	24	Greenville
Nymala	6	5	6	5	5	5	2	2	2	5	5	5	M	16	
Wɛtɛ	5	3	3	2	3	3	1	2	1	2	3	4	M	35	
Nyɵa	6	4	4	3	4	4	2	2	2	2	3	3	M	17	
Dio	6	5	6	2	4	6	1	2	1	1	2	3	M	20	
Talɵ	6	6	6	3	3	4	1	2	2	1	2	4	M	18	
Kabɔ	6	4	5	4	3	3	3	3	2	2	4	4	F	13	
Jlɛpɵ	6	4	6	2	4	6	1	1	2	1	2	4	M	27	
Botba	6	5	5	2	5	6	1	2	1	1	2	3	M	15	
Jlaɵ	6	5	5	3	4	5	1	2	2	1	2	3	F	18	
Gbeta	5	4	4	3	2	5	2	2	2	2	2	4	M	19	six months in
Nifa	5	5	4	5	4	5	2	2	1	1	2	4	M	17	Monrovia
Bolɵ	5	4	4	2	4	5	1	3	1	2	2	1	M	17	
Seklɵɵ	6	6	6	4	5	5	1	2	2	2	2	5	M	20	
	4.3	3.6	4.0	2.2	2.8	3.2	1.4	2.1	1.8	2.1	3.1	3.6			Average Score for Each Test Dialect

The overall average intelligibility of each of the twelve dialects for the thirty-four dialects of Klaɵ and Tajuosɔ̃ is presented at the bottom of Table 2. These results indicate that the most difficult dialect to understand is the Tajuosɔ̃ dialect, Kulu, which received an average of 4.3 on the intelligibility scale. Other dialects which are difficult to understand include the transitional dialect Trɔɵ, and the peripheral dialects Tatuɛ and Bɔlɵ which averaged 3.6, 4.0, and 3.6 respectively. The overall easiest dialect to understand is Dreo, a member of the central subgroup of Klaɵ which received an average score of 1.4 on the scale of intelligibility. The other representative dialects of West Central, Central and Eastern Klaɵ (Duo through Jlaɵ in Table 2) are understood with little or no difficulty and received scores of between 1.8 and 3.2 on the intelligibility scale.

It was mentioned earlier in this section that the intelligibility scores provide some interesting insights into the influence of non-linguistic factors on the interrelationships of the dialects. The most striking example of non-linguistic influence is that of the Klaɵ commercial centers on the interior Tajuosɔ̃ speakers. The Tajuosɔ̃ dialects are not closely related to the Klaɵ dialects (averaging 76 percent cognate) and Klaɵ speakers generally cannot understand much Tajuosɔ̃. However, Tajuosɔ̃ people travel to the Klaɵ commercial centers and are frequently in contact with Klaɵ dialects. These Tajuosɔ̃-Klaɵ contacts are usually limited to the Klaɵ speaking areas. Hence, the Tajuosɔ̃ people have become adept at understanding the Klaɵ dialects while the Klaɵ speakers cannot understand Tajuosɔ̃.

Another example of this type of influence on mutual intelligibility lies within the Central and Eastern Klaɵ subgroups. Sekleɵ, which is linguistically a peripheral dialect of Eastern Klaɵ, is not difficult for speakers of Eastern Klaɵ dialects to understand. This is probably because Sekleɵ is spoken in the large and historically influential town of Grand Cess which serves as a trading center for surrounding clans. Similarly, the intelligibility scores show that the other seaside dialects of Nymala, Talɵ, and Jlaɵ are easy to understand for interior

people, but speakers of these seaside dialects have little reason to travel to the interior areas and they, in fact, scored much lower on most interior dialects than they did on the other seaside dialects.

Geographical location accounted for three distinctive patterns in the intelligibility scores. Firstly, Kabɔ, (4 on Map 2) which is linguistically more closely related to the Eastern Klaɐ group than to any of the other Klaɐ subgroups, was the only eastern dialect to have difficulty understanding Sekleɐ. This is most likely due to the fact that the Kabɔ people live at the western end of the Klaɐ coast and they do not have the opportunity to travel to the Sekleɐ speaking areas. Secondly, although the Klaɐ informants in general had great difficulty understanding Tajuosɔ̃, informants from three Klaɐ dialects (Dreo (22), Gbuu (7), and Jaleɐ (6)) scored well on the Tajuosɔ̃ intelligibility test. The Dreo informant who had scored highly on all the tests had lived in Monrovia for nine months, and for this reason his score was probably not representative of a native speaker of his dialect. On the other hand, Gbuu and Jaleɐ are located closer to Tajuosɔ̃ and opportunities for frequent contact between these two Klaɐ dialects and Tajuosɔ̃ may have caused higher mutual intelligibility between them. Not only did Gbuu and Jaleɐ score highly on the Tajuosɔ̃ intelligibility test but Tajuosɔ̃ informants also understood Gbuu more easily than they understood many other Klaɐ dialects. There is also some indication that Jaɐ speakers who also live in an area bordering on Tajuosɔ̃ can understand Tajuosɔ̃. Unfortunately, the Jaɐ informant who scored 4 on the Tajuosɔ̃ intelligibility test came from the southern area of Jaɐ and had attended school for three years in the Kabɔ town of Baffu Bay. It is likely that a Jaɐ speaker living in a northern area of Jaɐ would be able to understand Tajuosɔ̃. Thirdly, the Trɔɐ informant scored highly both on the Tajuosɔ̃ and the Central Klaɐ intelligibility tests thereby giving further evidence of Trɔɐ's transitional relationship between Tajuosɔ̃ and Klaɐ. However, Trɔɐ (13) is situated to the west of the Tajuosɔ̃ area and to the north of Western Klaɐ and was generally better understood by informants from these two groups than by informants from the other dialect subgroups.

4. Phonological Notes

The information contained in the following phonological sketches was gleaned for the most part, from our hastily transcribed word lists and must be considered tentative.

4.1 Word shape, syllable patterns. Our lists consist primarily of one and two syllable words. Three and four syllable words are less common and usually involve compounding or reduplication. The following syllable patterns have been noted: V, VV, CV, CVV, CCV, CCVV.

4.2 Consonants.

(3) Klaɐ-Tajuosɔ̃ Consonant Chart

		bilabial	labio-dental	alveolar	alveo-palatal	velar	labio-velar	
obstruents	vl	p	f	t	c	k	kp*	k^w
	vd	b		d	j		gb	
sibilants	vl			s				
	vd							
lateral	vd			l				
nasals	vd	m		n	ny		ŋm*	
semi-vowels	vd	w				y*		

(* non-occurring in Tajuosɔ̃)

The Klaɐ and Tajuosɔ̃ consonant inventories are alike except for the fact that Tajuosɔ̃ appears to have no /kp/, /ŋm/, or /y/. Where /ŋm/ occurs in Klaɐ, /gb/ occurs in Tajuosɔ̃. The absence of /kp/ and /y/ may be due to the brevity of our lists.

The distributional characteristics of Klaɐ and Tajuosɔ̃ consonants are those typically found among the consonant systems of other languages belonging to the KRU language group. Consonant clusters involving /l/ and

/b/ as the second member, for example, also occur in Bassa, Dey, Krahn, and Grebo. The non-phonemic transitional vowel occurring within such clusters is also common. The quality of that vowel is determined by the features of the surrounding consonants and the following vowel: /dba/, [dəba], 'kill,' /dba ɛ/, [d^{e}bɛ ɛ], 'kill it.' When asked to repeat such words for the second or third time, informants will usually produce an exaggerated, carefully pronounced form in which the quality of the transitional element becomes identical with that of the following vowel: [dəba], 'kill', [dɛbɛ ɛ], 'kill it.' The absence of word initial /l/ and of syllable final consonants is also typical of these languages.

4.3. Vowels.

(4) Klaɵ-Tajosɔ̃ Vowel Chart

	front	central	back
high	i		u
	(ɪ)		(ʊ)[5]
mid	e		o
		ɛ̲	ɔ̲
low	ɛ	a	ɔ

Among the most interesting aspects of the Klaɵ and Tajosɔ̃ phonologies are the vowel systems. Both vowel systems, like those of Krahn and Grebo, contain two sets of vowels: one utilizing the standard features of the above charts and another utilizing these same features plus an additional one we shall call constriction. It has been stated by Rev. Marwieh (who has had considerable linguistic training) and others that the constricted vowels, which we have written as ɛ̲ and ɔ̲, are produced with the tongue root in a retracted position (ɛ̲ and ɔ̲ are reseesented in the Klaɵ literacy materials as ə and ɵ respectively.) Our most successful

[5] Our Tajosɔ̃ lists, including the one provided by Rev. Marwieh, include two additional vowels ɪ and ʊ . At this point, the phonemic status of these is uncertain.

attempts to reproduce these vowels ourselves did involve moving the tongue root back. But at the same time we also found ourselves tightening pharyngeal muscles to produce the acceptable constricted effect. Perhaps the pharyngeal activity is merely a secondary result produced by drawing the tongue root back.

Ladefoged's cine-radiology studies have clearly demonstrated the importance of tongue root position in Igbo. He states: "The most striking difference between the vowels in the two sets is that in each case the body of the tongue is more retracted for the vowels of set 2" [1968:39]. His statement appears to fit the Klaɐ-Tajuosɔ̃ situation. A statement in an earlier paragraph, however, does not seem appropriate: "I find it difficult to hear an auditory property which I can clearly assign as a distinguishing parameter of the two sets in any of these languages" [1968:38]. The constricted quality of the ɛ̲ and ɔ̲ set in Klaɐ-Tajuosɔ̃ is clearly audible.

According to Nancy Lightfoot [personal communication], vowel length and nasalization are phonemic. We have examples of all nine Tajuosɔ̃ vowels nasalized but we are missing nasalized /ɛ̲̃/ from Klaɐ. Lightfoot has, however, found numerous examples of words containing /ɛ̲̃/ but no examples of nasalized /ɔ̲̃/.

4.4. Tone. In regards to tone, our transcriptions are impressionistic and bear signs of undue influences from our previous language study. Some words with mid tones which are cognate with high tone words in Krahn, for example, were initially written with high tone. (Tajuosɔ̃ tū, 'tree', was initially transcribed with high tone, tú . 'Tree' in Krahn is tú.)

Phonetically, there are three level tones and, in most dialects, at least one rising and at least one falling tone. As in Krahn, there is an amazing amount of tonal interaction between syllables. Most of this interaction can be explained in terms of tones which are realized in their effects upon the tones of syllables following the syllables that they are associated with. While observing this phenomenon in Krahn, Gene Bunkowske applied the term post-associative to such tones. Since the word associative is already in use by linguists in grammatically defined contexts, William Welmers [personal communication] suggested calling them

post-associated tones. For a thorough discussion of Klae tones (Jlɛpe dialect) consult Nancy Lightfoot's Tones on Kru Monosyllables [1973].

5. Phonological Correspondences

The following is a list of non-identical phonological correspondences occurring between Tajuosɔ̃ and Klae. The Tajuosɔ̃ examples are from our Saɔe list; unless otherwise stated, the Klae examples are from Tale.

(5)

	English	Tajuosɔ̃	Klae
gb - ŋm	'mend'	gbā̃ā̃	ŋmà
kʷ - k	'belly'	kʷlé̄	klī́
	'left'	kʷénā	kénā̃
m - b	'snake'	smɛ́	sōbɛ̄
m - p	'worm'	sɔ̃́ɔ̃́mɔ̃̄	sɔ̃̄pɔ̃̀
c - j	'fog'	clù	jlū́
	'pull'	clì	jlì
a - ɛ	'fire'	nā	nɛ̃̄
	'die'	mā̃ā̃	mɛ̃̄́
o - a	'feather'	nɔ́nú	nānū
	'wing'	póbʊ̄	pápū

Some of the correspondences occurring within Klae are listed below.

(6)

	English	Other Klae dialects	Jlae	Bɔle	Dio
k - ʔ	'in'	klī	ʔīlī	ʔɛ́lɛ́	ʔili
	'wet'	mā̃kā̃	mā̃ʔā̃	mā̃kā̃	mā̃ʔā̃
	'leaf'	kɔ̃́kū̃	ʔū́ʔū̃	kɔ̃̄kū̃ī̄	ʔɔ̃́ʔū̃
	'old'	dāká	dáʔá	dāʔá	dáká

	English	Other Klao dialects[6]	Nyoa, Dio, Talo, Jlɛpo, Botba, Kabɔ, Jlao, Nifa, Gbeta, Seklee
b - l	'sea'	jbō (Nyanu)	jōlō (Nyoa)
	'snake'	sɛ̄bɛ̄ (Nyanu)	sēlɛ̄ (Nyoa)
m - n	'hot'	smū (Toao)	snū (Nyoa)
	'sharp'	náḿá́ (Toao)	náńá́ (Nyoa)

	English	Other Klao dialects	Seklee
db, dl - l	'rope'	dbu (Toao)	lú́
		dūlú́ (Nyoa)	
	'kill'	dbá́ (Toao)	lá́
		dlá́ (Nyoa)	

	English	Other Klao dialects	Bɔlo	Tatuɛ
i - ɛ	'in'	klī	ʔɛ́lɛ́	kwɛ̌lɛ́
	'water'	nī́	nɛ́	nɛ̌

6. Extended Dialect Relationships

From our conversations with Rev. Marwieh prior to the survey we received our first glimpses into the complexities enshrouded within the name "Kru." He reported that Tajuosɔ̃ was "quite distinct" from the rest of Kru and that Jedepo and Cɛdɛpo, two "interior Grebo" dialects, seemed to him to be "a part of Kru."

At that time we interpreted the first statement to mean that Kru was divided into several dialectal subgroups, one of which was Tajuosɔ̃. The second statement was a mystery: Why should a Kru man consider "interior Grebo" to be part of Kru? As the word lists were compared and as the results of the mutual intelligibility tests were calculated, the meaning

[6] Several of the Central Klao dialects contain examples of both of the above types of forms. Nymala, for example, has 'm' in the word for blood, nyma, and 'n' in the word for hot, snu. The Nymala word for sea is jlo. Their word for snake is sbɛ.

of Rev. Marwieh's statements became clear. Tajuosɔ̃ did emerge as distinct from Klaɵ--not as a distinct dialect as we had originally suspected, but as a separate language. For determining whether two dialects are from the same or separate languages, William Welmers [personal communication] uses mutual intelligibility as a rule of thumb. That is, if two people can understand each other when conversing, they are speaking the same language or dialects of the same language; if they cannot, then they are speaking different languages. (He has observed that there are, of course, countless borderline cases.) Since only one way intelligibility occurs between Tajuosɔ̃ and Klaɵ, they are, by this criterion, separate languages. (The Tajuosɔ̃ speakers were able to understand most of the Central Klaɵ dialects during the intelligibility test, but the Klaɵ speakers rarely understood more than occasional isolated sentences and phrases of Tajuosɔ̃.)

M. Swadesh [1954] uses 81 percent cognate as a cutoff figure. If two lists are above 81 percent cognate, he considers them to be from the same language; if they are 81 percent or below 81 percent cognate he considers them to be from different languages. Tajuosɔ̃ and Klaɵ were found to have an average of 76 percent of the words on our lists in common--well below Swadesh's cutoff point.

After comparing both Klaɵ and Tajuosɔ̃ with contiguous dialects of Grebo, Bassa, and Krahn, (see (7) below) the reasoning behind Rev. Marwieh's opinion of Interior Grebo became apparent; Interior Grebo was found to be 81 percent cognate with Tajuosɔ̃. If Tajuosɔ̃, which averages 76 percent cognate with the Klaɵ dialects, is called Kru, Interior Grebo should, he reasoned, be included as well--especially since the Tajuosɔ̃ people are said to have migrated from the Cɛlɛpɵ Grebo area.

The comparisons between Klaɵ, Tajuosɔ̃, and Sapo Krahn were also revealing: Klaɵ was found to be about as closely related to Sapo Krahn as it is to Tajuosɔ̃ (78 percent with Sapo versus 76 percent with Tajuosɔ̃). Tajuosɔ̃ on the other hand, scored only 74 percent with Sapo. Klaɵ and Tajuosɔ̃ scored about the same when compared with River Cess Bassa (Dbowɛ̃ĩ), 77 and 75 percent respectively.

(7)

River Ce
(Dbowẽĭ)

Sapo Kra
(Sikɔ̃)

Interior
(Jedepɵ)

On the t
tuitions, th
fication for
among the Ba
including Ta
grouping Ta,

It is d
in only one
The intelli
Central Kla
who were be
identical t
formants be
But they ha
therefore,
Although a
still neede

The Uni
in Tale (39

one; Tale will likely serve for all of Klaɵ. The possible exceptions are Tatuɛ, Kwɔatuo, and Trɔɵ. Again, a systematic test of Klaɵ materials should precede larger scale literacy programs in these areas.

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[7] Nancy Lightfoot, William Jlopeh, and Sampson Tiklo are those principally involved there. Tale is twelve miles west of Sasstown and the residence of Rev. Monu, United Methodist Literacy Director.

lternate spellings nd names in use by hose who do not peak Klaɐ or Tajuosɔ̃
oe
haw
yahn, Nyarn
lahn
roh
artweh
uatoe
ock Cess
otoe
arsue
utaw
olee, Wadee
or, Worh, Wah
arleh, Murraysville, Snow Country
yannue
ue, Blubara, Blue Barrica
adae, Jedei, Jidi Jeadae
reoh
ayoh
eethun
atae
wah, Toah
ana Krue, Nana Kana
ettra, Seta Kru
uohn Point, Nyua
ioh
efu, Nifu, Nifo, Niff
abor, Sanquin

ERRATUM

Page 99 last word, second to last line from bottom of table should read Niffo.

[1]For the recommended spellings of Klaɐ and Tajuosɔ̃ we are grateful to Mr. J. Lawrence F. Sawyerr, Director of the Liberian Cartographic Service. The linguistic diversity among these clans points to the need for linguists to specify which clans' speech they are studying. It is hoped that this list will aid them in coordinating their efforts.

Jlɛpo	Betu	Jlepo	
Botba	Botra	Botba	**Botrah**, Potrah
Jlaɵ		Jlao	Sasstown, Sastown
Gbeta		Gbeta	Picnicess, Pickininni Cess, Pickininny
Nifa	Nifaɵ	Nifa	Nivaao, Po River, Kpo River
Bɔlɵ		Bolo	
Seklɵ		Sekle	Seklakpo, Grand Cess

APPENDIX II

Klaɵ Word List (Tale dialect)[1]

1.	'one'	dò̰ò	31.	'thin'	pēpé
2.	'two'	sé	32.	'long'	tnɔ̄ˋ
3.	'three'	tãã̄	33.	'short'	kẽã́
4.	'four'	nyī̀	34.	'far'	tnɔ̄ˋ
5.	'five'	mùù	35.	'near'	kwãnɛ́
6.	'six'	ŋmī̀ dò	36.	'good'	nmɔ̄ˋjē
7.	'seven'	ŋmī̀ sɔ́	37.	'bad'	nynī jé
8.	'eight'	ŋmī̀ tã̄	38.	'old' (table)	dãká
9.	'nine'	sɛpáá dɔ̄	39.	'old' (man)	kpàlà
10.	'ten'	pūē	40.	'new'	dēdē
11.	'twenty'	wlɵ	41.	'dry'	mānyā
12.	'hundred'	wlɵ mù	42.	'wet'	mākã̄
13.	'count'	slɛ̀	43.	'hot'	snū
14.	'I'	mɔ́	44.	'cold'	wlɛ̄lɛ̄
15.	'you' sg.	mɔ̄ˋ	45.	'warm'	kpɔ̄tɔ́
16.	'you' pl.	āá	46.	'full'	jī̀dʃ
17.	'he'	ɔ̄	47.	'sharp'	nmā́
18.	'they'	ī	48.	'dull'	sū̃́
19.	'we'	à mēà	49.	'heavy'	kūū̃kwà
20.	'who?'	nyɔ́	50.	'left'	kénā
21.	'what?'	dɛ́bɛ́	51.	'right'	dʃdā
22.	'when?'	tʃbɛ́	52.	'rotten'	sé
23.	'where?'	tābɛ̄	53.	'straight'	slɛ̄dɛ́
24.	'how?'	kàbɛ̄	54.	'black' at.	jlɛ̄ kpōkpōˋ
25.	'not'	sē	55.	'black' st.	slù
26.	'all'	mùɛ̀	56.	'white' st.	plṓ
27.	'many'	fɛ́fē	57.	'red' at.	cɛ̄lō
28.	'small'	dɛ̄gbē	58.	'red' st.	flō
29.	'big'	bōã́	59.	'person'	nyɔ̄
30.	'thick'	kpōklɔ́	60.	'man'	nī̀mɛ̄jū

[1]This transcription, which follows the orthographic conventions established by the Kru Committee of the United Methodist Church, was provided by Nancy Lightfoot. Nasalization is unmarked after nasals. The restricted vowels ɛ and ɔ are represented by ə and ɵ.

61.	'woman'	nynɔ́
62.	'child'	jɛ̄gbɛ́
63.	'husband'	nyɔ̄
64.	'wife'	nynɔ́
65.	'father'	mɪ̄́
66.	'mother'	dɛ́
67.	'name'	nynɛ̄́
68.	'fish'	nɛ̀
69.	'bird'	nūŋmɛ̄
70.	'snake'	sɪɛ̄
71.	'worm'	sɔ̄pɔ̀
72.	'animal'	nmɛ̄
73.	'dog'	gbɛ̀
74.	'louse'	nɛ́
75.	'forest'	kwɪā
76.	'tree'	tū
77.	'leaf'	wɛ̄
78.	'seed'	jɔ́
79.	'fruit'	būī
80.	'root'	snɔ́
81.	'bark'	kɛ̄
82.	'grass'	kwɪɛ̄
83.	'weeds'	pɪ̄tɪ́
84.	'skin'	kū
85.	'flesh/meat'	sōā
86.	'bone'	kpā́
87.	'blood'	nynɔ̄
88.	'grease/fat'	cnā́
89.	'egg'	nyɛ̄̀
90.	'horn'	ŋmɔ̄̀
91.	'tail'	wɛ̄̀
92.	'wing'	pɛ́pū
93.	'feather'	nānū
94.	'head'	dlṓ, dbṓ
95.	'hair'	nūī́
96.	'ear'	nɔ̄kù̀
97.	'eye'	jɪ́
98.	'nose'	mnā́
99.	'mouth'	wɔ̄
100.	'tooth'	nyɛ́
101.	'tongue'	mɛ̄
102.	'neck'	pnū̀
103.	'back'	kɛ̄̀
104.	'foot'	bɔ̄pɔ̀
105.	'leg'	bɛ̄
106.	'knee'	kūlú
107.	'hand'	kēbā̀
108.	'nail'	kɔ̄nɔ̄̀
109.	'arm'	sɛ̄
110.	'belly'	klī́
111.	'navel'	pùtù
112.	'guts'	mɔ̄ɛ́
113.	'breast'	nyɪ̄tɪ̄
114.	'heart'	wlɛ̄̀
115.	'liver'	pɔ̄lɔ̄̀
116.	'rope'	dlū́, dbū́
117.	'salt'	tɔ̄́
118.	'spear'	dɪ̄́
119.	'sun'	jlɛ̄́
120.	'moon'	cɛ̄́
121.	'star'	jātnɛ̄̀
122.	'fog/dew'	jlū́
123.	'water'	nɪ̄́
124.	'wind'	pɔ̄pɔ̄lɔ̌
125.	'stone/boulder'	sɔ́gbɛ́
126.	'sand'	pɛ̄sɪ̄ɔ̄
127.	'earth/ground'	blɛ̄́
128.	'dust'	pūpūī́
129.	'fire'	nɛ̄
130.	'smoke'	snɔ̄̀
131.	'ashes'	pū̄pnū
132.	'road'	wɪ̄̀
133.	'mountain'	tlō
134.	'sea'	jlṓ
135.	'night'	mātɛ́
136.	'year'	sɛ̀
137.	'cook' v.	pɪ̄
138.	'eat' v.	dɪ̄
139.	'drink' v.	nā́
140.	'suck' v.	nā́
141.	'bite' v.	nnū
142.	'see' v.	jɛ̄́
143.	'hear' v.	wɔ̄́
144.	'smell' v.	wɛ̀nē
145.	'know' v.	jēpō
146.	'stand' v.	nynāā́tɪ̄
147.	'sit' v.	kṑtɪ̄
148.	'lie down' v.	pɛ̄́tɪ̄
149.	'die' v.	mɛ̄́
150.	'kill' v.	dlā́, dbā́
151.	'walk' v.	nā̀
152.	'come' v.	jɪ̄
153.	'swim' v.	dlū, dbū
154.	'fly' v.	wɔ̄̃
155.	'give' v.	nyi
156.	'call' v.	dā́
157.	'laugh' v.	cāā́
158.	'spit' v.	pō tɔ̄̃tɔ̄̃
159.	'vomit' v.	wlà
160.	'blow' v.	pō pɔ̄lɔ̀

161.	'breathe' v.	fɔ̄ˋ	178.	'throw' v.	pō
162.	'fear' v.	fānōˋ	179.	'work' v.	nū kɛ̄kwà
163.	'swell' v.	pṹˋ	180.	'hold' v.	kpɔ̄ tī
164.	'cut' v.	cɛ̄	181.	'take' v.	dū́
165.	'split' v.	kè	182.	'pull' v.	jlì
166.	'squeeze/wring' v.	pnī́	183.	'push' v.	tū́
167.	'scratch' v.	snā́	184.	'wipe' v.	snā́nyā
168.	'dig' v.	blū́	185.	'wash' v.	swɛ̄
169.	'dance' v.	jē	186.	'tie' v.	mwɛ̄ nɛˋ
170.	'sing' v.	blē	187.	'float' v.	sōpō
171.	'play' v.	sɔ́snɛ́	188.	'flow/pass' v.	sì
172.	'fall' v.	kpā́tī	189.	'burn' v.	wɛ̄
173.	'fight' v.	fɔ̀	190.	'and'	táɛ́
174.	'sew' v.	tlà	191.	'in'	klī
175.	'mend' v.	ŋmà	192.	'dirty'	mnū́
176.	'stab' v.	nynā́	193.	'town'	klɔ̀
177.	'hunt' v.	mū kwlā́	194.	'goat'	bɔ̀klɔ́

APPENDIX III

English Translation of Dreo Narrative

by Kofa Brown

When I was a small boy, I was sitting on a country bench. I was crying and calling my mother. My mother should have come but she didn't want to come. I was angry with her so I threw myself down. When my mother heard my crying she came and started to beat me. While my mother was beating me, my father came out from the house. He asked my mother, "What has this child done to cause him to be crying?" My mother said, "He threw himself down on the ground and that is why I am beating him." My father said, "No, the child called you twice and you didn't answer and that is why he threw himself down. For this reason you start beating the child?" My father turned on his wife and started beating her.

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