Volume 32, Number 1 • 2003

Studies in African Linguistics

TABLE OF CONTENTS

VOWEL HARMONY AND VOWEL MERGER IN AGOI

Shirley Yul-Ifode
University of Port Harcourt

This paper describes the vowel harmony system and patterns of vowel merger in Agoi, an Upper Cross language. Data indicate that a once fully operative system of vowel harmony has now been generally restricted to the non-high vowels, with a few residual instances of /ɪ ʊ/-determined harmony. The evolution of this change is described.

1. Introduction

Agoi is a language of the Upper Cross River group spoken by about twenty-five thousand people in the Cross River State of Nigeria. The paper examines the vowel harmony system of Agoi, with the aim of showing how the present system of partial harmony reflects an earlier, more complete harmony system, and how vowel merger has led to this change.

Agoi has ten short oral vowels–/i ɪ e ɛ ə a ɔ o ʊ u/ – but only seven long vowels – /iː eː ɛː aː ɔː oː uː/. All the vowels have nasalised counterparts in the environment of nasals. Of the ten short vowels, only six /e ɛ ə a o ɔ/ participate actively in harmony phenomena. They can be said to constitute two distinct harmony sets. In a few limited cases, /ɪ/ and /ʊ/ also participate in harmony, but more commonly occur in free variation with their [+expanded] counterparts /i/ and /u/, respectively. Long vowels behave in exactly the same way as their short counterparts; hence, the discussion and examples will focus on short vowels.

2. The vowel harmony feature

Most linguists use the feature Advanced Tongue Root [ATR] in the discussion of a harmony system like that found in Agoi. However, I follow Lindau (1975a) in

her treatment of vowel harmony, using the feature [expanded] in describing the vowel sets observed in Agoi because the phonetic parameter of the feature [expanded] appears to be the relevant one for the discussion of this type of vowel harmony. That is, in a typical ten-vowel system, vowels may be divided into two contrasting sets based on a difference in expansion of the pharynx. One set – /i e ə o u/ – consists of vowels with an expanded pharynx. This expansion is accomplished not only by advancing the tongue root, as Stewart (1976) suggests with use of the feature Advanced Tongue Root [ATR], but also by lowering the larynx and expanding the back wall of the pharynx. The second set, comprising /ɪ ɛ a ɔ ʊ/, is produced with a retracted tongue root and raised larynx, thus making the pharynx more contracted than it is for set I vowels. In the discussion that follows, I refer to the set 1 vowels as [+expanded] and to the set II vowels as [-expanded].

Figure 1 provides an approximation of the Agoi vowel chart showing the vowels produced with expanded pharynx in the upper area and those produced with the non-expanded pharynx in the lower one.

Figure 1. Agoi vowel (harmony) chart
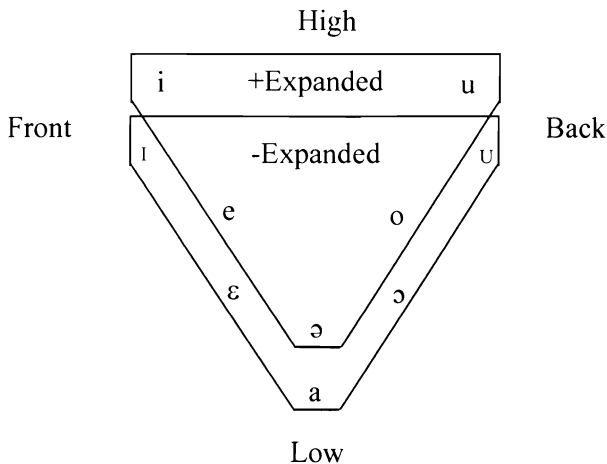
3. Evidence of vowel harmony

In a fully operative vowel harmony system, the [+expanded] vowels on the one hand and the [-expanded] ones on the other do not normally co-occur with each other within a phonological word. This is not the case in Agoi, where we find that vowel harmony is not fully realized in all words. Rather, the ten short vowels

participate to a greater or lesser extent in harmony phenomena; hence, we can speak of a partial harmony system. Of the ten short vowels, /ɪ/ and /ʊ/ occur in only a few morphemes, but completely harmonise when they do. In the few cases where they do occur, they are in apparent free variation with [i] and [u], respectively, as with [rùʒìt] ~ [rùʒìt] 'food' or [rùjùk] ~ [rùjùk] 'horn'. The mid-vowels /e ɛ o ɔ/ harmonise in most words, as do /ə a/. The [+expanded] high vowels /i/ and /u/ no longer participate in the harmony process, as they currently co-occur with both [+expanded] and [-expanded] vowels.

The degree of harmony, therefore, varies from pair to pair, but their general behaviour demonstrates that some vowels that now appear to be neutral once belonged to a specific harmony set. In the sections that follow, I demonstrate with relevant examples the mergers that have occurred, drawn from a corpus of two hundred examples.

3.1 The mid vowels /e ɛ o ɔ/. As noted previously, the strongest manifestation of harmony is found with the mid vowels. Since the data with these vowels are the clearest, we will begin the discussion here. As the examples in (1) illustrate, the mid-vowels can be sub-divided into two harmonic sets to the extent that they co-occur in a word either as all [+expanded] (1a) or all [-expanded] (1b).

(1)   a. [+exp] harmony

Stem V

		e		o	
Prefix V e		rè -bèm	'chin'	rè -rò	'head'
		tè -tè	'story'	rè -kòŋ	'war'
				rè -wòŋ	'knee'
				tè -nòm	'dry season'
	o	ʋò -sè	'trees'	kò -ròm	'work'
				ʋò -kòm	'toads'
				ò -kòɣə	'cooking pot'
				ʋò -ʋònì	'boats'

b. [-exp] harmony

Stem V

		ɛ			ɔ		
Prefix V	ɛ	tɛ̀ -tɛ̀b	'house'	ɛ̀ -kɔ̀		'snail'
				ɛ̀ -wɔ̀m		'cow'
				rɛ́ -tɔ́ŋ		'mortar'
				rɛ̀ -ŋɔ̀d		'small'
	ɔ			kɔ̀ -nɔ̀n		'bird'
				kɔ̀ -wɔ̀m		'leg'

The vowels /e/ and /ɛ/ occur more often in prefix position than they do in stem position. In this position, they harmonise often with the stem vowel. They occur only in stem position in a few items, where they also select the relevant harmonising vowels.

The tables in (2) show examples of the co-occurrence of the mid-vowels with the high vowels–[i] or [ɪ], [u] or [ʊ]–and with the low vowels, [ə] or [a], both in prefix position and in stem position. Here, too, the distribution reflects the harmony sets distinguished in (1).

(2)   Mid-vowels with non-mid-vowels

a. [e] and [ɛ]

	Prefix			Stem	
e	è -wùrù	'robe'	ì -fèn	'crocodile'
	è -rɔ̀n	'animal'	rɔ̀ -bèm	'chins'
ɛ	ɛ̀ -fíá	'market'	tɛ̀ -tɛ̀b	'house'
	ɛ̀ -gà	'dog'		

b. [o] and [ɔ]

	Prefix			Stem	
o	ʋò -sè	'trees'	ì -kòb	'friends'
	ò -kòɣɔ̀	'cooking pot'	ù -sòkòrò	'orange'
			rɔ̀ -rò	'heads'
ɔ	ɔ̀ -tà	'witch'	ʋà -kɔ̀m	'plantains'
	ɔ̀ -tàbɛ̀	'tobacco'		
	kɔ̀ -kpàì	'crab'		

Note in the sets in (1)-(2) that [ɛ] occurs most often as a prefix vowel rather than as a stem vowel. The back mid-vowels also show a skewed distribution: [o]

occurs only rarely as a prefix vowel accompanying stem vowels other than [o]; [ɔ] occurs only rarely as a stem vowel having a prefix vowel other than [ɔ].

It is clear that it is the stem vowel that controls harmony. Not only is this the case with nouns, but also with verbs. In (3), for example, we see that both the pronominal subject prefix and the recent past tense suffix, both of the form [ə]/[a], harmonise with the stem vowel.

(3) a. mén   'swallow'   ə́-mén-ə́   'you swallowed'
                                  you-swallow-PST
         ɟə̀b   'steal'   ə́-ɟɔ́ʊ-ə́   'you stole'
                                  you-steal-PST
     b. jɛ̀ŋ   'cook'   á-jɛ́ŋ-á   'you cooked'
                                  you-cook-PST

Although most nouns occur with either all [+expanded] or all [-expanded] vowels, there are some exceptions. The few cases of harmony violation occur with [+expanded] stem vowels permitting [-expanded] prefix vowels, as in (4), or [-expanded] stem vowels permitting only [+expanded] high vowels.

(4)   Exceptions to the harmony patterns

	Prefix			Stem		
ɛ	tɛ̀	-tùm	'yam'			
	ɛ	-kɔ̀b	'seed'			
	tɛ̀	-kəb	'bone'			
ɔ	kɔ̀	-dùm	'mud'	ì	-kɔ́	'snails'
				ì	-wɔ̀m	'cows'
				ì	-nɔ̀mì	'oil'(pl)
				ù	-kɔ̀m	'plantain'

These cases do not appear to be random exceptions. In both instances, they point towards a merger of the [+exp] and [-exp] vowels. That is, we find only the [+exp] vowels [i] and [u] where we would expect to find [-exp] vowels. This skewed distribution suggests that the high vowels have merged; hence, there is no vowel alternation possible for the stem vowel to control.

The [+exp] vowel [ə], as a stem vowel, may occur with [-exp] prefix vowels. Given that the mid-vowels occurring in prefixes typically harmonise with the stem vowel, we may conclude that a [-exp] vowel, probably [ɛ], has merged with it. If so, then these few exceptional cases would appear to represent the first stages of merger of [ɛ] with [ə]. Note that there are no cases of the co-occurrence

of the pairs of vowels */e ɔ/, */ɔ o/ and */e ɛ/ in any word, a situation that justifies our claim that [+expanded] and [-expanded], /e o/ and /ɛ ɔ/, constitute distinct functional harmony sets.

3.2 [ə] and [a]

3.2.1 [ə] alternates with [a] in disyllabic nouns. As we saw in the preceding section, the mid-vowels of Agoi operate under a vowel harmony contrast. This contrast in harmony also applies to the vowels [ə] and [a]; [ə] occurs with [+exp] vowels, [a] with [-exp] vowels. Consider the examples in (5)-(6) that illustrate the contrast in the phonetic shape of the vowel in the same two prefixes (singular and plural) appearing with stems contrasting in vowel type, [e] alternating with [ɛ] in the singular (5a-6a), [ə] with [a] in the plural (5b-6b), respectively.

(5)   [+expanded] vowels in prefixes
          a. [e] in singular prefix   b. [ə] in plural prefix
             ɾè-bèm   'chin'   ɾə̀-bèm   'chins'
             ɾè-bò   'belly'   ɾə̀-bò   'bellies'
             ɾè-ɾò   'head'   ɾə̀-ɾò   'heads'
             ɾè-kòɾìbə̀   'well'   ɾə̀-kòɾìbə̀   'wells'

(6)   [-expanded] vowels in prefixes
          a. [ɛ] in singular prefix   b. [a] in plural prefix
             ɾɛ̀-dɔg   'tongue'   rà-dɔg   'tongues'
             ɾɛ́-tɔ́ŋ   'mortar'   rá-tɔ́ŋ   'mortars'
             ɾɛ̀-sàn   'tooth'   rà-sàn   'teeth'

        Additional examples of the alternation of [ə] and [a] according to harmony relations are provided in (7), showing each as prefix vowel and stem vowel.

(7)   [ə] and [a]

	Prefix		Stem	
ə	ɾə̀ -jìrì	'words'	rì -kə̀d	'neck'
	ɾə̀ -kùg	'navels'	ì -bə̀ì	'axe'
	ɾə̀ -bèm	'chins'	kù -bə̀m	'jaw'
	ɾə̀ -ɾò	'heads'	è -ɾən	'animal'
	ɾə̀ -kòŋ	'wars'	ɾə̀ -də̀nì	'roads'
	ɾə̀ -kə̀d	'necks'		

a	rà -nɔ̀n	'birds'	ɪ̀ -kpàì	'crabs'
	ʋà -nɔ̀n	'fowls'	ʋ̀ -gà	'doctor'
	ʋà -tà	'witches'	ɔ̀ -tà	'witch'
			ɔ̀ -tàm	'guinea fowls'

As with the mid-vowels, there are a few exceptions with this pair of vowels as well. These all involve the occurrence of a [-exp] mid-vowel, either [ɛ] or [ɔ], in the prefix appearing on a stem with [ə]. We have already seen that [ɛ] occurs only rarely in stems. This fact suggests that these exceptions appear to be the result of an original stem [ɛ] shifting to [ə]. Note that there are no exceptions with [a]; it invariably co-occurs with [-exp] vowels, except in cases where /u/ and /ʊ/ are in free variation.

(8)   Exceptions to the harmony patterns with stem [ə]

Prefix [ɛ]			Prefix [ɔ]	
tɛ̀ -kəb	'bone'		ʋɔ̀ -kəb	'bone'
rɛ̀ -bɔ̀m	'fight'		kɔ̀ -təd	'things'
ɛ̀ -rə̀ŋ	'okra'			
ɛ̀ -kəb	'seed'			

3.2.2 /ə/ alternates with /a/ in the possessive morpheme. Another piece of evidence supporting the position that /ə/ and /a/ belong to two distinct harmony sets is seen in their alternation in the possessive morpheme 'my': /-ɣəm/ and /-ɣam/. The former, /-ɣəm/, occurs only with stems having [+exp] vowels, the latter, /-ɣam/, occurs only with stems having [-exp] vowels, as shown in (9).

(9)   a. *-ɣə̀m* 'my'

rèbèm	'chin'	rèbèŋkə̀m	'my chin'
rèwòn	'knee'	rèwòŋkə̀m	'my knee'
kòròg	'ear'	kòròːɣə̀m	'my ear'
ʋìdə̀b	'hat'	ʋìdəːɣə̀m	'my hat'

   b. *-ɣàm* 'my'

tɛ̀kɛb	'bone'	tɛ̀kɛːɣàm	'my bone'
rɛ̀dɔg	'tongue'	rɛ̀dɔːɣàm	'my tongue'
kɔ̀bɔ̀	'hand'	kɔ̀bɔːɣàm	'my hand'
rɛ̀sàn	'tooth'	rɛ̀sàŋkàm	'my tooth'

3.3. /ə/ alternates with /a/ in verbal conjugation. In many verbal conjugations, affixes appear in two different shapes according to whether the verbs to which they are attached contain a vowel of the expanded or non-expanded sets.

As noted previously, the recent past suffix has two alternating forms, suffixal [-ə] or [-a]. The second person plural subject pronoun also has the same alter-nating forms, prefixal [ə-] or [a-], the choice in both cases being determined by the vowel of the verb stem, [ə] occurring with [+exp] vowels, [a] with [-exp] vowels, as in (10).

(10) a. /mén/   'swallow'   ə́-mén-ə́   → ə́ménə́   'you swallowed'
                                    you-swallow-PST

          /dóm/   'bite'   ə́-dóm-ə́   → ə́dómə́   'you (pl) bit'
                                    you-bite-PST

          /ʝə̀b/   'steal'   ə́-ʝəb-ə́   → ə́ʝə́ʊə́   'you stole'
                                    you-steal-PST

      b. /jɛ̀ŋ/   'cook'   ájɛ́ŋá   → ájɛ́ŋá   'you gave'
                                    you-give-PST

          /gɔ́d/   'drink'   á-gɔd-á   → ágɔrá   'you drank'
                                    you-drink-PST

          /sáb/   'tear'   á-sáb-á   → ásáʊá   'you tore'
                                    you-tear-PST

The data demonstrate that [ə] alternates with [a] in the vowel harmony system just as [e] pairs with [ɛ], and [o] with [ɔ]. The exceptions noted in a few words in (8) notwithstanding, there is ample evidence to show that they function as part of the harmony system, as [+expanded] and [-expanded], respectively. The vowel patterning discussed so far reflects the division given in (11).

(11)   [+exp]   [-exp]
        e   o   ɛ   ɔ
             ə   a

3.3 The high vowels [i]/[u] and [ɪ]/[ʊ]. We have discussed so far the six phonemically distinct non-high vowels as they function in harmonising sets. We now turn to the high vowels.

3.3.1 The high vowels [i]/[u] and [ɪ]/[ʊ] in nouns. The vowels /ɪ/ and /ʊ/ have a very limited frequency of occurrence in Agoi. For the most part, they occur in free variation with [i] and [u]. There are in the data no clear examples of [ɪ] as a simple stem vowel (i.e., where it is not in free variation with [i] or mistaken for [i]). There are, in fact, only five cases of stem [ɪ], four in which it is an off-glide of a diphthong, one in which it precedes [a], as in (12).

(12) a. tɛ̀   -kpàɪ̀   'skin'   b. tí -ŋáɪ́   'nail'
          kɔ̀   -kpàɪ̀   'crab'
          ɪ̀   -kpàɪ̀   'crabs'
          ɛ́   -fɪ̀à   'market'

There are no occurrences of [ʊ] in nominal stems; however, two cases in verb stems have been noted, as shown in (13).

(13)   gʊ̀k   'dig'
        nʊ̀k   'weave'

These stem vowels do control harmony. For example, in (12a), all the vowels in the words are [-expanded]. The example in (12b) violates harmony as the prefix vowel [i] is [+expanded]. Although it appears here as exceptional, it represents the more common situation with the high vowels. We will return to this in a later section discussing the high vowels.

The verb stems can be seen to control vowel quality in the examples in (14), in which the verbal affixes for person and tense have been added. Thus, for both pre-sent and past tenses with second singular person, the words have all [-expanded] vowels if the stem vowel is [-expanded] (14a, b) but [+expanded] vowels when it is [+expanded], as in (14c).

(14) [ʊ]   stem vowel controling the form of 2S prefix and tense suffix
       a. gʊ̀k   'dig'   →   á-gʊ̀k-ɪ̀   [ágúɣɪ̀] 'you are digging'
                                2S-dig-PRES
                             á-gʊ̀k-á   [ágúɣá] 'you dug'
       b. nʊ̀k   'weave' →   á-nʊ̀k-ɪ̀   [ánú́ɣɪ̀] 'you are weaving'
                                2S-weave-PRES
                             á-nʊ̀k-á   [ánú́ɣá] 'you wove'
       compare:

c. dók   'lose'   →   ə́-dók-ì   [ədóɣì]   'you are losing'
                          2S-lose-PRES
                          ə́-dók-ə́   [ədóɣə́]   'you lost'

In (14a, b) it is apparent that [ɪ] participates in harmony as a verbal tense affix. It also participates in harmony as a verbal prefix, as does [ʊ], as third person subject markers, as in (15). Thus, although very limited in occurrence, [ɪ] and [ʊ] continue to participate marginally in the harmonising process. In these cases, they are not in free variation with [i] and [u].

(15)   [ɪ] and [ʊ] in prefixes
      jɛ̀b   'cook'   ì-bá-jɛ̀p   'it will not cook'
                       ù-bá-jɛ̀p   'he/she will not cook'
      dàm   'sleep'   ì-bà-dám   'it will not sleep'
                       ù-bà-dám   'he/she will not sleep'

Unlike the non-high vowels we have seen previously, [i] and [u] co-occur with both [+exp] and [-exp] vowels. In (16), for example, we see each as a stem vowel, while in (17) they occur as prefix vowels. The distribution is not arbitrary; the same stems consistently take [+exp] or [-exp] prefix vowels and do not vary.

(16) a.   [i] as a stem vowel
          with all [+exp] vowels   with some [-exp] vowels
          tì -bì   'shoe'   ɛ̀ -nɔ̀mì   'oil'(sg)
          ʊù -kpì   'rats'   kɔ̀ -kɔ̀nì   'song'
          ì -bɔ̀ì   'axe'
          rə̀ -jìrì   'words   í -jɛ́mì   'cassava'
          rə̀ -dènì   'roads'   í -kɔ́ːní   'songs'
          tè -wònì   'boat'   ì -nɔ̀mì   'oil'(pl)
          ʊò -wònì   'bat'
          rè -kòrìbə̀   'well'

      b.   [u] as a stem vowel
          with [+exp] vowels   with [-exp] vowels
          ì -wùrù   'robes'   ʊɔ̀   -nùà   'needle'
          ʊù -bùn   'goats'   [~ ʊɔ̀ -nùa]
          rə̀ -kùg   'navels'

(17) a. [i] as a prefix vowel

with [+exp] vowels   with [-exp] vowels

tì -bì	'shoe'	í -jɛ́mì	'cassava'
ì -wùrù	'ashes'	ì -mɔ̀	'mouths'
ì -kpè	'leopard'	ì -rɔ̀	'houses'
rì -ròg	'ears'	í -kɔ́ːní	'songs'
rì -kə̀d	'neck'	ì -nɔ̀mì	'oil'(pl)
ì -tə̀n	'heart'	ì -kàtà	'basket'

    b. [u] as a prefix vowel

with [+exp] vowels   with [-exp] vowels

ʋù -kpì	'rats'	ù: -tɛ̀ɾɛ̀	'vulture'
ʋù -bùn	'goats'	ʋù -gɔ̀b	'fear'
ù -ɟèb	'thief'	ù -kɔ̀m	'plantain'
tù -ŋkpò	'water pot'	ù -gà	'doctor'
rù -grɔ́	'money'	[also ʊ̀-]	

These data suggest that there are two types of /i/ and /u/; one type consistently behaves like [+exp] vowels, the other like [-exp] vowels. This finding can be explained if we assume that the [-exp] high vowels [ɪ] and [ʊ] have merged with [i] and [u], respectively. For the purposes of exposition in this paper, I label the [+exp] type, [i][1] and [u][1], the [-exp] type [i][2] and [u][2].

Based on these mergers, we can now establish the full extent of the harmony system as it formerly existed in Agoi, as shown in (18), in which [i][2] and [u][2] would have been phonetically [ɪ] and [ʊ].

(18) Harmony sets, revised

[+exp]		[-exp]	
i[1]/i	u[1]/u	i[2]/ɪ	u[2]/ʊ
e	o	ɛ	ɔ
	ə		a

As stem vowel, /i/[1] has a greater occurrence than /u/[1]; /u/[2] has the fewest number of occurrences. The [+exp] /i u/[1] vowels also occur more frequently in prefixes than do the [-exp] /i u/[2] vowels. The reason for this is likely to be because some stem vowels [ɛ] have merged with the [+expanded] vowel.

3.3.2 The close vowels [i] and [u] with the possessive morpheme. As we saw previously with the mid-vowels, the vowel of the possessive morpheme harmonises with the vowel of the stem. Similarly, noun stems with /i/[1] or /u/[1] take the [+exp] variant /ə/, while those with /i/[2] and /u/[2] take the [-exp] variant /a/.

(19)   a.   /i/[1] or /u/[1] in stems
            tì   -bì   'shoes'   →   [tìbìɣə̀m]   'my shoes'
            rə̀ -kùg   'navels'   →   [rəkùːɣə̀m]   'my navels'

       b.   /i/[2] or /u/[2] in stems
            rú   -ɟíd   'food'   →   [rúdʒìːɣàm]   'my food'
            rɛ̀   -kùn 'vagina'   →   [rɛ̀kùŋkàm]   'my vagina'

       Cases like those in (19b), where one would have expected [ɣəm], led me to check and recheck the data. In a few words, it was difficult to be sure whether my informant was pronouncing the vowel [i] or [ɪ], on the one hand, or [u] or [ʊ] on the other, as in (20).

(20)   Variation in pronunciation
       rú-ɟíd   →   [rúdʒít]   or   [rúdʒɪt]   'food'
       rù-jùg   →   [rùjùk]   or   [rújúk]   'horn'
       gì-rə̀   →   [gìrə̀]   or   [gìrə̀]   'break'

       When the informant was asked to repeat such words slowly, [i] and [u] were often heard, while in more informal speech [ɪ] and [ʊ] were heard. This variation only arose in a few of items, those with [i][2] and [u][2]. This follows the behavior of those few items that actually have the [-exp] vowels present. As the examples in (21) illustrate, they require [-exp] harmony.

(21)   Possessive with [-exp] stem vowel
       tí -ŋa̋ɪ   'nail'   →   [tíŋa̋ɪɣàm]   'my nail'
       tɛ̀ -kpàɪ 'skin'   →   [tɛ̀kpàɪɣàm]   'my skin'

       It is clear from the distribution of [i] and [u] in the data, and from the behavior of the few cases of [ɪ] and [ʊ], that those cases of [i] and [u] occurring with [-exp] vowels represent instances of merger of [ɪ] and [ʊ] with [i] and [u]. The former are gradually disappearing from the system, thereby moving towards loss of phonemic status.

4. Patterns of Vowel Reduction

The initial division into expanded and non-expanded sets was made on the basis of the contrast in mid-vowels between [e] and [ɛ], and [o] and [ɔ], respectively. We have seen that, where [ɪ] and [ʊ] still occur as distinct phonemes, they pattern with the [-exp] vowels. However, it is clear that most high, non-expanded vowels have merged with their [+exp] counterparts. Agoi, then, must have had a ten-vowel system, one that is slowly becoming an eight-vowel system as the [-exp] high vowels merge.

A system of ten vowels such as that I have postulated for Agoi goes back to the Proto-Benue-Congo languages. Very few languages have retained these ten vowels. Some present Benue-Congo languages have reduced their vowels systems to nine, seven, or five (cf. Williamson 1973, Lindau 1975b, Stewart 1983, Elugbe 1982, Donwa-Ifode 1989). These reduced systems have resulted from the merging of certain vowels for which various patterns have been attested. First, a nine-vowel system typically results from the merging of /ə/ with another vowel, most often /a/, which becomes harmonically neutral. Agoi, as we have seen, has not merged these vowels. Second, there are two common patterns noted in the literature in which a nine-vowel system reduces to a seven vowel system. One pattern involves the merging of /ɪ/ and /e/, then /ʊ/ and /o/ (Williamson 1973, Lindau 1975b, Stewart 1983, Elugbe 1982). The other involves the merging of /ɪ/ and /i/, and /ʊ/ and /u/, respectively. In both cases, /ɪ/ and /ʊ/ are the first vowels to disappear from the system.

Agoi is of interest because it represents a case of a language reducing its vowel inventory from a ten-vowel system, such as that in Kohumono, to an eight-vowel system, like that in Lokəə (Iwara 1983). Unlike the cases noted above, Agoi has not merged /ə/ and /a/ first; rather, /ɪ/ and /ʊ/ have almost completely merged with their [+exp] counterparts, now occurring in free variation with them in most cases. The merger appears to have begun with the front vowel /ɪ/: it is quite restricted in distribution (more so than /ʊ/), never occurring as a stem vowel (unlike /ʊ/). This would be expected if /ɪ/ had started to merge before /ʊ/.

Given this path of reduction, what reason can one postulate for the merging of /ɪ/ and /i/, on one hand, and /ʊ/ and /u/, on the other? In discussing some patterns of vowel merging, Lindau (1975b) states that /e/ and /ɪ/ merge for acoustic reasons while /ʊ/ and /o/ merge for reasons of structural pressure. We did not go into details of the reasons and this is an area that needs further investigation.

5. Summary and Conclusion

Agoi is a language with a partial vowel harmony system brought about by an on-going merger of /ɪ/ and /ʊ/ with /i/ and /u/. Agoi's former ten-vowel system is, consequently, in the process of being reduced to an eight-, rather than to the more typical nine-, seven-, or five-vowel systems commonly reported for many Benue-Congo languages. The following facts have been noted:

   i. /ɪ/ and /ʊ/ are in free variation with /i/ and /u/, respectively, in many contexts. For this reason, it is difficult to distinguish between them in some words.
   ii. In a few contexts, /ɪ/ and /ʊ/ are heard quite distinctly. In such cases, they always co-occur (in nouns or verbal constructions) with vowels of the non-expanded set.
   iii. The occurrence of /ɪ/ or /ʊ/ is highly restricted, the former being more limited; /i/ and /u/, on the other hand, are widely distributed. The neutrality of /i/ and /u/ currently in Agoi vowel harmony can be attributed to the fact that they have replaced /ɪ/ and /ʊ/.
   iv. The vowel [ɛ] appears to be beginning a process of merger with [ə]. If this continues, the vowel system will be reduced to seven.

Although /ɪ/ or /ʊ/ have nearly disappeared from the phonemic inventory in Agoi, the vowel harmony system remains fairly robust for the non-high vowels. However, the vowel /ɛ/ has also begun to disappear from the system, having only limited occurrence in stem position.

   This paper has documented the current situation in Agoi. Further work in this area will focus on variation in the use of these vowels by age group.

REFERENCES

Donwa, F. S. O. 1976. "The phonology and noun class system of Agoi." Ibadan: University of Ibadan, B. A. project.

Donwa-Ifode, S. O. 1989. "Prefix vowel reduction and loss of noun class distinction: The Edoid case." *Afrika und Übersee* 72: 229-253.

Elugbe, B. O. 1982. "The vowels of proto-Edoid." *Journal of the Linguistic Association of Nigeria* 1: 107-115.

Iwara, A. 1983. "A preliminary phonology and grammar of Lokəə." London: University of London, M.A thesis.

Lindau, Mona. 1975a. "[Features] for vowels." *UCLA Working Papers in Phonetics* No. 30. Los Angeles: University of California.

Lindau, Mona. 1975b. "A phonetic explanation to reduced vowel harmony systems." *Working Papers* 11: 43-54. Lund: Phonetics Laboratory, Lund University.

Stewart, John M. 1970. "Tongue root position in Volta-Congo languages and its significance for the reconstruction of the original Bantu vowel sounds." *African Language Studies* 11:340-350.

Williamson, Kay. 1973. "Some reduced vowel harmony systems." *Research Notes* 6: 145-169, Ibadan.

Williamson, Kay. 1983. "Vowel merger in harmony languages." *Journal of the Linguistic Association of Nigeria* 2: 61-82.

Yul-Ifode, Shirley O. 2003. "The basics of Agoi vowels". *Four Decades of Linguistics in Nigeria*, ed. by Ozo-Mekuri Ndimele. Aba: National Institute for Nigerian Languages. Pp. 593-604.

Dept. of Linguistics and Communication Studies
University of Port Harcourt
P. M. B. 5323
Choba, Port Harcourt
Rivers State, Nigeria
soyul@hotmail.com

FLOATING TONES IN GÃ[*]

Mary Paster
UC Berkeley

This paper provides robust empirical evidence for floating tones in Gã, a Kwa language of Ghana. As will be shown, floating tones are crucial to an analysis of verbal tense/aspect/mood distinctions. I begin by describing two tonal processes, the HL rule and Plateauing. While these are regular processes of the language, both are blocked in the perfective. I show that the blockage is the result of a floating low tone that marks the perfective, and that the floating tone marker explains other anomalous tonal effects in the perfective. I then give an analysis of floating tone prefixes that mark certain tenses/aspects/moods by associating to the subject prefix, thus overwriting the lexical tone of the subject prefix. Finally, I give examples of suffixed floating tones that mark tense/aspect/mood by associating to verb stems, causing the underlying stem tones to delink. In these tenses/aspects/moods, we find evidence for an underlying L vs. toneless contrast, constituting another phenomenon where, as with floating tones, there is a mismatch between the number of tones and tone-bearing units. Thus, a major prediction of Autosegmental Phonology (Goldsmith 1976, Clements and Ford 1979) is borne out in Gã.

1. Introduction

1.1 Downstep and floating tones. One of the ways that a floating tone can be manifested in Gã is as a downstep between successive high tones. Clark (1993)

has proposed that downstep is simply the manifestation of the boundary between two adjacent identical tones. This proposal fails in Gã because, as will be shown, the assumption that a floating low tone results in a downstep between two high tones is crucial to an analysis of the verbal system. The perfective aspect (section 3), for example, is indicated through downstep, blocking of the HL rule (section 2), or blocking of the Plateauing rule (section 2). While the abstractness of floating tones may be troubling to some, the fact remains that all of these effects receive a unified analysis only if we assume that the perfective is marked by a floating low tone, which is responsible for the otherwise anomalous tonal effects in the perfective. The present analysis therefore supports Clements and Ford's (1979) claim that downstep is conditioned by floating low tones.

1.2 Previous studies. The earliest work on Gã was carried out by Zimmerman (1858), who did not include any analysis of the tone system. Okunor (1969) provides the first in-depth discussion of tone, even recognizing downstepped high tones, though at that time no theoretical model existed to represent them. Wentum (1997) gives a useful analysis of lexical tone, but does not analyze grammatical tone. Dakubu (1986) and Trutenau (1972) propose some tone rules and make use of floating tones. The present study provides the first unified account of the effects of floating tones throughout the verbal system.

2. Tonal processes

There are two major tone rules in Gã, which operate in a wide variety of constructions. One of these rules, the HL rule, changes a final low (L) to downstepped high (ꜜH) after a penultimate high (H). When the HL sequence is not prepausal, no change occurs in underlyingly HL verbs, as shown in (1a). When the same verbs occur prepausally with no object (1b), the HL rule applies, and the stems surface with HꜜH tone (tones are marked as follows: H tone = ´, downstepped H tone = ꜜ´, L tone not marked; tildes in these and subsequent examples indicate nasalization, which is irrelevant here).

(1)   a.   e-káne gbɛmɛ̃ĩ   'he counted people'
             e-chála mãmáꜜĩ́   'he mended clothing'
             e-pĩ̃ĩ shɔ   'he suffered Wednesday'
             e-bóte-ɔ   'he enters (habitual)'

   b. e-ká'né   'he counted'
      e-chá'lá   'he mended'
      e-pí'í   'he suffered'
      e-bó'té   'he entered'

The HL rule also applies when the HL sequence is the result of a H prefix fol-
lowed by L stem, as shown in (2). The simple past forms (2a) show the underly-
ing L tone of the stems In the subordinate (2b), the combination of the H-toned
prefix with the L stem tone before a pause triggers the HL rule, and the stems sur-
face with downstepped H tone. In (2c), the stems remain L toned after a H-toned
prefix when followed by objects, because the L of the stem is not prepausal and
therefore does not trigger the HL rule. A comparison of (2a) with (1b) shows that
the penultimate H is the trigger of the HL rule, since a final L is not raised when
preceded by L.

(2)   a. e-nã   'he saw'   b. é-'nã   'that he see'
         e-kɔ   'he bit'   é-'kɔ   'that he bite'
         e-jo   'he dug'   é-'jó   'that he dance'
         e-fũ   'he buried'   é-'fũ   'that he bury'

      c. é-nã wɔ   'that he see us'
         é-kɔ wɔ   'that he bite us'
         é-jo adoá   'that he dance the Adoa'
         é-fũ ako   'that he bury Ako'

Two-syllable stems that have L tone in the simple past (3a) do not undergo the
HL rule even when preceded by a H-toned prefix, as in the subordinate and future
(3b). This is further evidence for the claim, supported by the data in (2c) above,
that in order for the HL rule to be triggered, the H tone must be penultimate.[1]

---

[1] If disyllabic L-toned stems have only a single L tone linked to both stem syllables, as I as-
sume, then technically the H tone of the stems in (3b) *is* the penultimate tone. However, the
application of the HL rule to these stems is ruled out by the structural description of the rule
(6), which requires the target to be a L tone belonging to a single syllable preceded by H tone
and followed immediately by a phrase boundary.

(3)   a. e-sɔle   'he prayed'   b. é-sɔle   'that he pray'
         e-bɔle   'he surrounded'   é-bɔle   'that he surround'
         e-hala   'he chose'   e-baá-hala   'he will choose'
         e-kata   'he lifted'   e-baá-kata   'he will lift'

In addition to the restrictions described above, the HL rule does not apply to ver-
bal suffixes or noun roots.[2] Following a stem with final H tone, neither the L-
toned habitual suffix (4a) nor the L-toned negative perfective suffix (4b) undergo
the rule.

(4)   a. e-fó-ɔ   'he weeps (hab.)'   b. e-fó-kɔ   'he hasn't wept'
         e-télɛ́-ɔ   'he carries (hab.)'   e-télɛ́-kɔ   'he hasn't carried'
         e-kpɛ́-ɔ   'he chews (hab.)'   e-kpɛ́-kɔ   'he hasn't chewed'
         e-chú-ɔ   'he sends (hab.)'   e-chú-kɔ   'he hasn't sent'

There is a robust surface contrast between HL (5a) and H'H (5b) in nouns. This
indicates that the HL rule does not apply to noun roots, whose application would
neutralize the two types to H'H.

(5)   a. mɔ̋bɔ̏   'pity'   b. shí'tɔ́   'pepper'
         fɔ̋te   'termite'   yí'chú   'head'
         kpúlu   'cup'   gbé'kɛ́   'child'
         zɛ́ŋgle   'roof'   gó'wá   'guava'

      The HL rule, as shown in (6), states that H tone is inserted and links to a L-
toned syllable when preceded by a H tone and followed by pause (#). The L tone
delinks from the vowel and is manifested as a downstep before the final H tone,
so that the underlying tone sequence HL surfaces as H'H.

(6)   HL rule
      V   V
      | ╪ ⌐ ⌐ ⌐   (does not apply to verbal suffixes or noun stems)
      H   L #   H ← ∅

---

[2] It is not the case that the target L must be a stem tone. L-toned noun suffixes do undergo the
rule. For example, in phrase-final position, the L-toned plural suffix /-i/ surfaces with L fol-
lowing L-final roots, as in [nãne-i] 'legs', but with downstepped H following H-final roots (due
to the HL rule), as in [chwí'ı̌] 'hearts'.

A second rule, Plateauing, raises a L tone between two H tones. The simple past forms (7a) show the underlying LH pattern of these stems. In (7b), the H-toned subject prefix of the subordinate in combination with the LH of the stems gives HLH. This sequence triggers Plateauing, which causes underlying HLH to surface as H'HH.

(7) a. e-hulú   'he jumped'   b. é-ˈhúlú   'that he jump'
        e-kojó   'he judged'   é-ˈkójó   'that he judge'
        e-majá   'he sent'   é-ˈmájá   'that he send'
        e-basá   'he grabbed'   é-ˈbásá   'that he grab'

Plateauing also applies to monosyllabic L-toned stems. When underlyingly L-toned stems in the progressive are followed by a L-toned object, no tone change occurs because neither Plateauing nor the HL rule described earlier are triggered (8a). In (8b), the combination of the H-toned progressive prefix -Ń-, L-toned verb stem, and H-toned object provides the HLH sequence that triggers Plateauing, so that the underlyingly L-toned stems surface with downstepped H tone.

(8) a. mî-ŋ-gbe ako   'I am killing Ako'
        mî-m-fo ako   'I am cutting Ako'
        mî-ŋ-tĩ ako   'I am scratching Ako'
        mî-ŋ-kɔ ako   'I am biting Ako'

     b. mî-ŋ-ˈgbé ákú   'I am killing Aku'
        mî-m-ˈfó ákú   'I am cutting Aku'
        mî-ŋ-ˈtĩ ákú   'I am scratching Aku'
        mî-ŋ-ˈkɔ́ ákú   'I am biting Aku'

Plateauing applies to underlyingly HL stems when followed by a H-toned object. When a L-initial object or adverb appears after the verb, no change is triggered (9a). When the HL verb stem is followed by a H-initial object, Plateauing applies to this HLH sequence, so that the underlyingly L syllable of the stem surfaces as 'H (9b).

(9)   a. e-káne ako   'he counted Ako'
          e-kóta cho   'he folded a tree'
          e-bóte shɔ   'he entered Wednesday'
          e-p͡íi shɔ   'he suffered Wednesday'

      b. e-ká'né ákú   'he counted Aku'
          e-kó'tá tṹ   'he folded a gun'
          e-bó'té jú   'he entered Monday'
   e-p͡í'í jú   'he suffered Monday'

The Plateauing rule does not apply where multiple L-toned syllables inter-
vene between the H tones. In (10a), the H-toned prefix of the progressive, fol-
lowed by a L-toned verb stem, which is followed by objects with the tone patterns
LH or LLH, produces the sequences HLLH and HLLLH, respectively, and no
tone change occurs. In (10b), a HL stem followed by a LH or LLH object also
yields sequences of multiple L-toned syllables between H's, and there is no
change in the surface form.

(10) a. m͡í-ŋ́-gbe kwakwí   'I am killing a mouse'
          m͡í-ḿ-fo lemã́   'I am cutting an axe'
          m͡í-ŋ́-kɔ̃ ataadé   'I am biting a dress'
          m͡í-ŋ́-cha kaklá   'I am digging a knife'

      b. e-káne kwakwí   'he counted a mouse'
          e-kóta ataadé   'he folded a dress'
          e-chála ataadé   'he mended a dress'
          e-chála lemã́   'he mended an axe'

Unlike the HL rule, Plateauing does apply to suffixes. The imperative and habit-
ual suffixes (/-a/ and /-ɔ/, respectively), have underlying L tone (11a). Adding an
object whose initial syllable has H tone yields the sequence HLH, to which the
Plateauing rule applies, changing the underlyingly L suffix tones to downstepped
H (11b).

(11) a. nyέ-wó-a   'lift (pl.)!'
          nyέ-hé-a   'buy (pl.)!'
          e-kpé-ɔ   'he chews (hab.)'
          e-lá-a   'he sings (hab.)'

      b. nyέ-wó-ˈá ákú   'lift (pl.) Aku!'
          nyέ-hé-ˈá tũ   'buy (pl.) a gun!'
          e-kpé-ˈɔ wó   'he chews (hab.) a bone'
          e-lá-ˈá lálá   'he sings (hab.) a song'

The Plateauing rule (12) applies to HLH as follows: the second H tone spreads to the L-toned syllable, and the L tone delinks, remaining as a downstep. Thus, underlying HLH surfaces as H$^{\shortmid}$HH.[3]

(12) Plateauing

          V   V   (V)
          | ╪‒‒‒‒┤
          H   L   H
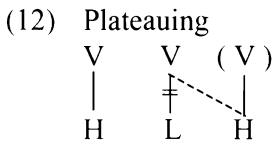
    Assuming, with Clark (1993), that downstep is the automatic result of adjacent identical tones, one might be tempted to reinterpret Plateauing as follows: the second H spreads to the L-toned syllable, delinking the L, which is then deleted via Stray Erasure and thus is not phonetically manifested. The downstep that I have attributed to a floating L tone might then actually be the phonologically predictable result of two adjacent H tones. This type of reanalysis fails because, as shown below, sequences of adjacent H tones in Gã do not result in downstep.

---

[3] A reviewer has suggested that the Plateauing rule could be seen as two separate rules, one spreading H, and another delinking L when preceded by H and linked to the same tone-bearing unit (TBU) as a following H. The ostensible advantage of this approach would be that the second of these rules could also generate the delinking of L in cases I have described as undergoing the HL rule. This would require a separate rule to replace the first part of the HL rule, where a H is inserted after HL and spreads to the L-bearing TBU when immediately preceding a pause; this effect cannot be attributed to a general H 'boundary tone' at the end of every phrase, since as shown in (4) and (5), the HL rule does not apply to verb suffixes or to noun stems. My objection to this reanalysis is that there is no independent evidence for either of the two new rules that would serve as the 'first steps' of Plateauing and the HL rule. That is, both of these rules would invariably feed the delinking rule, since there is no environment where the first rule would apply without the second. This being the case, the reanalysis seems unmotivated.

Some H-toned roots are shown in (13a) in the simple past, where subject prefixes surface with L tone. When the subject prefix takes on the H tone of the subordinate (13b), no tone sandhi occurs between the H of the prefix and the H of the stem.

(13)   a.   e-lá   'he sang'   b.   é-lá   'that he sing'
           e-dṹ   'he cultivated'   é-dṹ   'that he cultivate'
           e-yóó   'he recognized'   é-yóó   'that he recognize'
           e-fóté   'he poured'   é-fóté   'that he pour'

In addition, no downstep occurs between the final H of a stem and the initial H of a following object. Nouns with underlying H tone (14a) do not have their H tone downstepped when preceded by H-final roots (14b).

(14)   a.   ákú   'Aku (man's name)'   b.   e-yóó ákú   'he recognized Aku'
                                                 e-chósé ákú   'he trained Aku'
           tṹ   'gun'   e-kpé tṹ   'he chewed a gun'
   e-wó tṹ   'he lifted a gun'

3. A floating tone in the perfective

The two processes described in section 2, the HL rule and Plateauing, apply regularly throughout the language. They apply to both nominal constructions (to noun suffixes, though not to roots) and verbal constructions. In the perfective tense, however, these rules do not apply. In this section, I show that a downstep that appears in the perfective between H-toned prefixes and H-toned roots is the result of a floating L tone prefix that marks the perfective. As I show, the presence of this floating L tone also explains the blockage of the HL rule and Plateauing in the perfective.
        The perfective introduces a downstep before H-initial stems. In (15a), H-toned stems do not change tone when preceded by a H-toned subject in the subordinate, since no tone change is triggered by the tone sequence HH (as was demonstrated in section 2). In the perfective (15b), a downstep appears between the H-toned prefix and H-toned stems.

(15) a. é-lá   'that he sing'   b. é-ꜜlá   'he has sung'
      é-dṹ   'that he cultivate'   é-ꜜdṹ   'he has cultivated'
      é-wó   'that he lift'   é-ꜜwó   'he has lifted'
      é-fó   'that he weep'   é-ꜜfó   'he has wept'

The diagram in (16) schematizes how the downstep results from a floating L that marks the perfective. This accounts for why the downstep appears in the perfective (15b), but not in the subordinate (15a), since the floating tone is specific to the perfective. The circled tone indicates that the tone is unassociated.

(16)   é   ꜜ   dṹ   [éꜜdṹ] 'he has cultivated'
      | |
      H   ⒧   H
      Subject prefix   Perfective   Verb stem
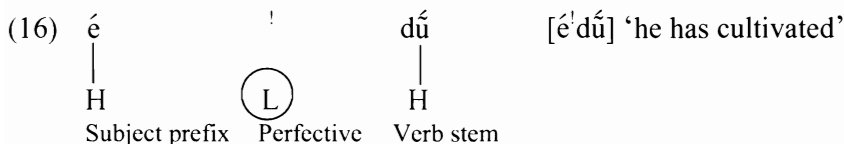
If this downstep is indeed the result of a floating L tone that marks the perfective, we predict that this tone should interfere with the tone rules described above, the HL rule and Plateauing. As mentioned above, this prediction is confirmed, since the perfective is a systematic surface counterexample to both rules. We find prepausal HL sequences in the perfective, constituting surface counterexamples to the HL rule. In the subordinate forms in (17a), the HL rule applies as predicted, so that the underlyingly L-toned stem surfaces with downstepped H when preceded by the H-toned subject prefix and followed by pause. In (17b), the HL rule fails to apply to the perfective forms. This results in HL sequences before pause.

(17) a. é-ꜜchá   'that he dig'   b. é-cha   'he has dug'
      é-ꜜjó   'that he dance'   é-jo   'he has danced'
      é-ꜜfó   'that he cut'   é-fo   'he has cut'
      é-ꜜnṹ   'that he drink'   é-nũ   'he has drunk'

As schematized in (18), this failure of the HL rule in the perfective is explainable given the floating L tone perfective marker that we posited above. The combination of the H-toned subject prefix, floating L tone perfective marker, and L-toned stem actually produces the sequence HLL, not HL. As was shown in section 2, HLL does not undergo the HL rule, so the failure of the HL rule in the perfective is expected based on our formulation of that rule and the existence of a floating L tone in the perfective.

(18)   é-   jo

       | |
       H   (L)   L   (= HLL, not a trigger of the HL rule)
       Subject   Perfective   Verb
       prefix   marker   stem

The Plateauing rule is also blocked in the perfective. In the subordinate (19a), stems with the underlying tone pattern LH undergo Plateauing after a H-toned prefix, so the stem tone changes to ˈHH. In the perfective (19b), Plateauing is blocked, resulting in the surface sequence HLH.

(19)   a. é-ˈhúlú   'that he jump'   b. é-hulú   'he has jumped'
           é-ˈmájé   'that he send'   é-majé   'he has sent'
           é-ˈbálá   'that he wrap'   é-balá   'he has wrapped'
           é-ˈkásé   'that he learn'   é-kasé   'he has learned'

The blockage of Plateauing in (19b) can be explained on the basis of the floating L tone marker in the perfective, since the addition of the floating L tone to the H-LH sequence of the prefix plus LH stem results in the input tone sequence HLLH, which does not undergo Plateauing (as was demonstrated in section 2). This is schematized in (20).
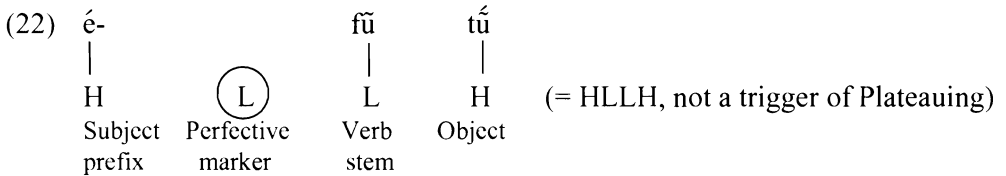
(20)   é-   hulú

       | | |
       H   (L)   L H   (= HLLH, not a trigger of Plateauing)
       Subject   Perfective   Verb
       prefix   marker   stem

Another case where Plateauing is blocked occurs when monosyllabic L-toned stems occur with H-initial objects in the perfective. The examples in (21a) show the underlying L tone of the stems when followed by L-initial objects. No change occurs because the triggering environments for neither the HL rule (HL#) nor Plateauing (HLH) are found. In the subordinate (21b), Plateauing applies when L-toned stems are followed by H-toned objects. In the perfective (21c), it appears that Plateauing should be triggered since the combination of the H-toned prefix, L-toned stem, and H-toned object produces HLH, yet the rule does not apply.

(21)   a. é-gbe ako   'that he kill Ako'   é-fo ako   'that he cut Ako'
           é-kɔ ako   'that he bite Ako'   é-fũ lemã́   'that he bury an axe'

b. é-ˈgbé ákú   'that he kill Aku'   é-ˈfó ákú   'that he cut Aku'
   é-ˈkɔ̃́ ákú   'that he bite Aku'   é-ˈfũ̃ tṹ   'that he bury a gun'

c. é-gbe ákú   'he has killed Aku'   é-fo ákú   'he has cut Aku'
   é-kɔ̃ ákú   'he has bitten Aku'   é-fũ tṹ   'he has buried a gun'

Again, the floating L tone marker explains the blockage of Plateauing. The floating L tone of the perfective appears between the subject prefix and stem. This produces the sequence HLLH, not HLH, so Plateauing does not apply (22).

(22) é-   fũ   tṹ

      | | |

      H   (L)   L   H   (= HLLH, not a trigger of Plateauing)

      Subject   Perfective   Verb   Object
      prefix   marker   stem

As demonstrated, a floating L tone prefix indirectly affects stem tones in the perfective by causing downsteps, blocking the HL rule, and blocking Plateauing. In the following section, I describe a different set of floating tone prefixes that are more directly manifested because they associate to subject prefixes.

4. Subject prefix-altering grammatical tones

In this section, I show that in addition to the floating tone prefixes just described which do not associate, there are grammatical floating tone prefixes which do associate to subject prefixes. A comparison of the realization of these floating tones in different verb tenses gives evidence for the underlying forms of the subject prefixes, which are toneless with the exception of the first person singular.

      As shown in (23a), the first person singular prefix is H-toned in the habitual. The possessive prefix, which I assume to be identical to the subject prefix, is also H-toned in the first person singular (23b). All of the other subject prefixes are pronounced with L tone in the habitual (23c) and in the possessive forms (23d).

(23)   a. mí-ˈlá-a   'I sing (hab.)'   b. mí-tṹ   'my gun'

     c. o-lá-a   'you sing (hab.)'   d. o-tṹ   'your gun'
        e-lá-a   'he sings (hab.)'   e-tṹ   'his gun'
        wɔ-lá-a   'we sing (hab.)'   wɔ-tṹ   'our gun'
        nyɛ̃-lá-a   'you (pl.) sing (hab.)'   nyɛ̃-tṹ   'your (pl.) gun'
        amɛ̃-lá-a   'they sing (hab.)'   amɛ̃-tṹ   'their gun'

Although the subject prefixes surface with L tone in (23c) and (23d), I will show that they are best analyzed as underlyingly toneless rather than L-toned. There is a phonological distinction between underlyingly L-toned vs. toneless syllables, though this distinction is neutralized in surface forms where toneless syllables are pronounced with L tone by default. (24) schematizes the difference between the first person singular prefix (1sg) and the other prefixes, exemplified by the third person singular (3sg). While the first person singular prefix (24a) has underlying H tone and undergoes no tone change in the unmarked forms, the underlyingly toneless prefixes (24b) get a default L tone when in verbal categories that do not supply grammatical prefix tones.
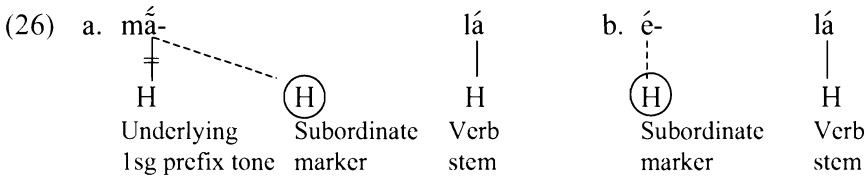
(24)   a.   1sg subject prefix   b.   3sg subject prefix
            mí   e → e
             | |
            H   L

In the perfective (25a) and subordinate (25b), all subject prefixes have H tone. The systematic appearance of H on the subject prefixes can be explained by positing floating H tones marking the perfective and subordinate. Unlike the floating L of the perfective (section 3), these floating H tones dock to subject prefixes and are directly phonetically manifested.

(25)   a. mí-cha   'I have dug'   b. mɑ́-lá   'that I sing'
        ó-cha   'you have dug'   ó-lá   'that you sing'
        é-cha   'he has dug'   é-lá   'that he sing'
        wɔ́-cha   'we have dug'   wɔ́-lá   'that we sing'
        nyɛ̃́-cha   'you (pl.) have dug'   nyɛ̃́-lá   'that you (pl.) sing'
        amɛ̃́-cha   'they have dug'   amɛ̃́-lá   'that they sing'

mí-balá	'I have wrapped'	mã́-gbélé	'that I open'
ó-balá	'you have wrapped'	ó-gbélé	'that you open'
é-balá	'he has wrapped'	é-gbélé	'that he open'
wɔ́-balá	'we have wrapped'	wɔ́-gbélé	'that we open'
nyɛ̃́-balá	'you (pl.) have wrapped'	nyɛ̃́-gbélé	'that you (pl.) open'
amɛ̃́-balá	'they have wrapped'	amɛ̃́-gbélé	'that they open'

The diagram in (26) shows how the floating H tone associates to prefixes in the subordinate. The first person singular prefix (26a) has underlying H tone and surfaces as H, but I assume that the floating H tone subordinate prefix associates to the subject prefix and that the underlying H tone of the subject prefix delinks. Since the tone does not change, there is no evidence directly supporting this particular mode of docking to syllables that are H, but the assumption is not crucial to the analysis. The third person singular prefix (26b) is underlyingly toneless, and the floating H tone associates to the subject prefix.

(26) a. mã́-   lá   b. é-   lá

H   (H)   H   (H)   H
Underlying   Subordinate Verb   Subordinate   Verb
1sg prefix tone marker   stem   marker   stem

The segmental change in the 1sg subordinate forms (mi → ma) provides insight into the historical origin of the floating H tone marker of the subordinate. At some stage in its development, the subordinate was likely marked by a H-toned /á-/ prefix which intervened between the subject prefix and verb stem in all contexts. The /á-/ marker still surfaces when the subject is an NP, e.g. [ákú á-lá] 'that Aku sing'. Over time, the vowel of the subordinate prefix merged with the vowels of the subject prefixes, leaving only its tone in all cases except the 1sg, where the vowel of the subordinate 'won out' over the vowel of the subject prefix. I am assuming that all of this took place historically and is not part of the synchronic phonology of Gã. Though one could argue that the subordinate is marked by an /á-/ prefix rather than a floating H tone, there are at least two arguments against such an analysis. First, there is no independently motivated rule in Gã that deletes an /a/ after another vowel, nor is there a rule that deletes /i/ before /a/. Both rules would be needed to generate the correct surface forms for all of the subject prefixes in the subordinate. Secondly, positing a segmental prefix may seem to make the analysis less 'abstract' than my analysis referring to a floating tone, but since

we have seen other instances where floating tones are crucial to the analysis of verbal tone (e.g., the perfective (section 3)), the 'abstract' concept of a floating tone is still required to analyze the tonal system of the language. For these reasons, I assume that the H-toned subject prefixes of the subordinate (including the 1sg, which also has a segmental change of /i/ to [a]) are portmanteaux that mark person/number as well as the subordinate verb form. The realization of the /á-/ subordinate marker, which surfaces when the subject is an NP, is morphologically blocked when the subject is a prefix since the H-toned prefixes already convey the subordinate mood.

There is also a floating L tone prefix that associates to the subject prefix to mark the simple past. In the simple past, all of the prefixes surface as L, including the underlyingly H-toned first person singular (27).

(27)   mĩ-dṹ   'I cultivated'   mĩ-cha   'I dug'
       o-dṹ   'you cultivated'   o-cha   'you dug'
       e-dṹ   'he cultivated'   e-cha   'he dug'
       wɔ-dṹ   'we cultivated'   wɔ-cha   'we dug'
       nyɛ̃-dṹ   'you (pl.) cultivated'   nyɛ̃-cha   'you (pl.) dug'
       amɛ̃-dṹ   'they cultivated'   amɛ̃-cha   'they dug'

       mĩ-chɔ́sé   'I trained'   mĩ-hala   'I collected'
       o-chɔ́sé   'you trained'   o-hala   'you collected'
       e-chɔ́sé   'he trained'   e-hala   'he collected'
       wɔ-chɔ́sé   'we trained'   wɔ-hala   'we collected'
       nyɛ̃-chɔ́sé   'you (pl.) trained'   nyɛ̃-hala   'you (pl.) collected'
       amɛ̃-chɔ́sé   'they trained'   amɛ̃-hala   'they collected'

The derivation of prefix tones in the simple past is illustrated below. In (28a), the floating L tone of the simple past associates to the H-toned 1sg subject prefix, and the underlying H tone of the subject prefix delinks so that the prefix surfaces with L tone. In (28b), the floating L tone associates to an underlyingly toneless subject prefix, and the prefix surfaces with L tone.

(28)   a. mĩ-   dṹ   b. e-   dṹ
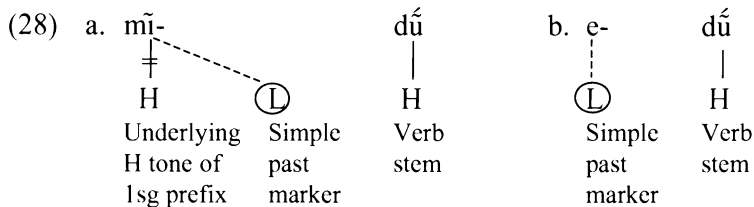
These L-toned subject prefixes in the simple past are phonetically identical to the toneless prefixes that surface with L tone in categories not marked by floating tones. However, below I show that the subject prefixes marked with the L tone of the simple past are phonologically distinct from toneless subject prefixes in other tenses where there is no floating tone and where L is supplied by default.

A process deleting non-H toned subject prefixes after a noun phrase subject provides evidence for the distinction. In the negative perfective and negative past, the underlyingly toneless 3sg subject prefix surfaces normally (with L tone) with H-initial verb stems (29a). When a noun phrase subject (here, the name 'Aku') appears with these roots, the 3sg subject prefix is deleted (29b). Note that there is no tone change in the stem between (29a) and (29b).

(29)   a.   e-lá-kɔ   'he has not sung'
            e-lá-áâ   'he did not sing'
            e-chú-kɔ   'he has not sent'
            e-chú-úû   'he did not send'
            e-yóó-kɔ   'he has not recognized'
            e-yó-óô   'he did not recognize'
            e-gbélé-kɔ   'he has not opened'
            e-gbélé-éê   'he did not open'

       b.   ákú lá-kɔ   'Aku has not sung'
            ákú lá-áâ   'Aku did not sing'
            ákú chú-kɔ   'Aku has not sent'
            ákú chú-úû   'Aku did not send'
            ákú yóó-kɔ   'Aku has not recognized'
            ákú yó-óô   'Aku did not recognize'
            ákú gbélé-kɔ   'Aku has not opened'
            ákú gbélé-éê   'Aku did not open'

The subject prefix is not deleted when it is H toned. As we have seen, the perfec-

tive marks subject prefixes with a H tone (30a). Unlike in other verbal categories that do not mark prefixes with H tone, in the perfective the addition of the subject 'Aku' does not allow deletion of the subject prefix (30b).

(30)   a.   é-ˈlá   'he has sung'   b.   ákú é-ˈlá   'Aku has sung'
            é-ˈbé   'he has quarrelled'   ákú é-ˈbé   'Aku has quarrelled'
            é-ˈyóó   'he has recognized'   ákú é-ˈyóó   'Aku has recognized'
            é-ˈfɔ́té   'he has poured'   ákú é-ˈfɔ́té   'Aku has poured'

Based on (29) and (30), it seems that subject prefix deletion applies to toneless subject prefixes when preceded by a noun phrase subject. However, a complication arises when we consider categories where the subject prefix is marked by a phonological L tone (in contrast to the toneless prefix in (29), which is pronounced with L tone by default). (31a) shows simple past examples with no noun phrase subject. In (31b), when the subject 'Aku' is added, the subject prefix is deleted, and a downstep appears. Thus, the correct statement of the subject prefix deletion rule is that it deletes non-H (both toneless and L-toned) subject prefixes following a noun phrase subject.[4]

(31)   a.   e-dṹ   'he cultivated'   b.   ákú ˈdṹ   'Aku cultivated'
            e-lá   'he sang'   ákú ˈlá   'Aku sang'
            e-yóó   'he recognized'   ákú ˈyóó   'Aku recognized'
            e-gbélé   'he opened'   ákú ˈgbélé   'Aku opened'

The contrast between the forms in (31b) vs. the negative perfective forms (29b) where subject prefix deletion did not result in a downstep may seem surprising, but this follows naturally from the present analysis: the downstep in (31b) appears because the subject prefix deletion rule deletes only the segmental portion of the subject prefix, leaving its L tone behind. Further evidence that subject prefix deletion leaves behind the L prefix tone of the simple past is that the HL rule and Plateauing do not apply when the subject prefix has been deleted. When the L-toned subject prefix of the simple past (32a) is deleted before L-toned roots, the HL rule is blocked (32b).

---

[4] The rule crucially refers only to subject prefixes, and the effect cannot be attributed to a general vowel hiatus rule since, as we have seen, derived V-V sequences are allowed, as in plural nouns (e.g., [kpúlu-i] 'cups'), definite nouns (e.g., [nuú'ɛ] 'the man'), nouns modified by adjectives (e.g., [cho agbo] 'big tree'), and habitual verbs (e.g., [e-nṹ-ɔ̃] 'he drinks (hab.)').

(32) a. e-cha   'he dug'   b. ákú cha   'Aku dug'
          e-fũ   'he buried'   ákú fũ   'Aku buried'
          e-kɔ   'he bit'   ákú kɔ   'Aku bit'
          e-mã   'he built'   ákú mã   'Aku built'

Plateauing is also blocked by the L tone left behind by subject prefix deletion. (33a) shows the L-toned prefix of the simple past, and in (33b), when the prefix is deleted, Plateauing does not apply to LH roots, and the result is a surface HLH sequence.

(33) a. e-chwalá   'he beat (rice)'   b. ákú chwalá   'Aku beat (rice)'
          e-balá   'he wrapped'   ákú balá   'Aku wrapped'
          e-hulú   'he jumped'   ákú hulú   'Aku jumped'
          e-kujú   'he judged'   ákú kujú   'Aku judged'

The diagram in (34) illustrates the difference between the L-toned vs. toneless prefixes with respect to the subject prefix deletion rule. In the simple past (34a), deletion of the prefix leaves behind a L tone which causes a downstep before the high-toned stem. In the negative perfective (34b), the subject prefix is toneless, so no tone is left behind after deletion, and there is no downstep before the stem.

(34) a. ákú   [e → ∅]   ꜜlá   b. ákú   [e → ∅]   lá   -kɔ
          ＼／ | | ＼／ | | |
          H   L   H   H   L   H   L
          NP   L-toned   Verb   NP   Toneless Verb   Negative
          subject subject   stem   subject subject   stem   perfective
                  prefix   prefix   suffix

          'Aku sang'   'Aku hasn't sung'

5. Stem-altering grammatical tones

A final way that floating tones play a significant role in distinguishing verb tense/aspect/mood is by associating to stems. In the negative perfective, negative future, and imperative, suffixed floating tones associate to the verb stem itself, rather than associating to the subject prefix or floating between the prefix and verb stem as was seen in the preceding sections. For example, the negative perfective is characterized by a H tone that associates to verb stems, so that L-toned

stems surface with a downstepped H tone. (35a) gives citation forms of these L-toned verbs in the simple past. The negative perfective forms (35b) have down-stepped H tone.

(35) a. e-cha   'he dug'   b. é-'chá-kɔ   'he has not dug'
         e-jo   'he danced'   é-'jó-kɔ   'he has not danced'
         e-gbɔɔ   'he hunted'   é-'gbɔ́ɔ́-kɔ   'he has not hunted'
         e-hao   'he worried'   é-'háó-kɔ   'he has not worried'

(36) illustrates how the suffixed H tone of the negative perfective links to the stem, creating the HLH sequence required so that Plateauing delinks the under-lying L tone of the stem, resulting in a downstepped H in the stem.
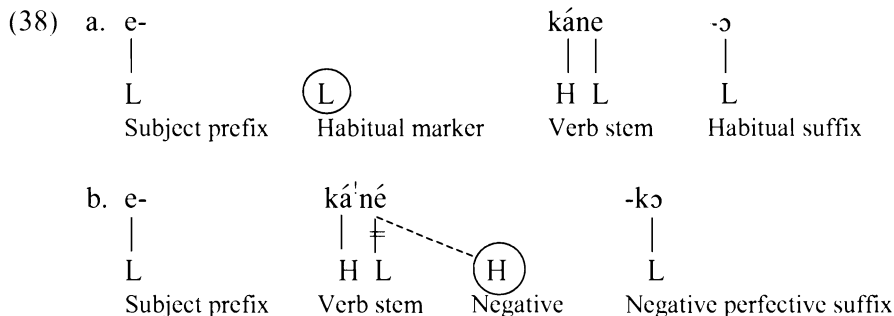
(36) é-   'chá   -kɔ

H	L	(H)	L
H-toned	L-toned	H tone	Habitual
subject	verb	negative	negative
prefix	stem	marker	suffix

When 2-syllable HL stems appear in the negative perfective, the H tone surfaces on the second stem syllable, justifying the characterization of the floating tone as a suffix. The forms in (37a) show the underlying HL tone pattern surfacing un-changed in the habitual. In the negative perfective (37b), these stems surface as H'H. Without the floating H, this is not explainable by the HL rule, Plateauing, or any other regular rule of the language. Thus, the tone change must be due to the grammatical H tone of the negative perfective.

(37) a. e-káne-ɔ   'he counts (hab.)'
         e-chála-a   'he mends (hab.)'
         e-bóte-ɔ   'he enters (hab.)'
         e-kpála-a   'he herds (hab.)'

      b. e-ká'nɛ́-kɔ   'he has not counted'
         e-chá'lá-kɔ   'he has not mended'
         e-bó'tɛ́-kɔ   'he has not entered'
         e-kpá'lá-kɔ   'he has not herded'

(38) compares the habitual with the negative perfective, showing how the stem

surfaces with HL in the habitual, which does not mark the stem with a grammatical tone, but with H'H in the negative perfective because of the grammatical H tone suffix.

(38) a. e-   káne   -ɔ
       | | | |
       L   Ⓛ   H L   L
       Subject prefix   Habitual marker   Verb stem   Habitual suffix

      b. e-   ká'né   -kɔ
         | | ╪---... |
         L   H L   Ⓗ   L
         Subject prefix   Verb stem   Negative   Negative perfective suffix

The negative future tense is characterized by the same floating H tone, which I assume is a general negative marker, whose effect was shown in the negative perfective. Compare L-toned stems in the simple past (39a) vs. the negative future (39b), where the suffixal H associates to L-toned stems via Plateauing, delinking the underlying L tone, and resulting in a downstepped H tone on the stem.

(39) a. e-jo   'he danced'   b. é-'jó-'ŋ   'he won't dance'
         e-cha   'he dug'   é-'chá-'ŋ   'he won't dig'
         e-la   'he dreamed'   é-'lá-'ŋ   'he won't dream'
         e-kpɛ   'he sewed'   é-'kpɛ́-'ŋ   'he won't sew'

(40) illustrates how the negative future is formed.[5] The grammatical H tone associates to the stem and the underlying L tone of the stem delinks, due to Plateauing (note that the -['ŋ́] suffix always surfaces with downstepped H tone; I assume that its underlying tone pattern consists of an unlinked L tone followed by a linked H tone, but the exact tonal representation of this suffix is not central to the point under discussion).

---

[5] Subject prefixes in negative forms undergo a rule of tonal polarity, which affects their tone. The prefixes surface as L before H-toned stems, and as H before L-toned stems. I have simplified the discussion of prefix tone in the negative by assuming that the grammatical tones of interest are assigned and interact with the prefix and stem tones after polarity has already applied.

(40) é-   ꞌ jó   -ꞌ ŋ́
      | |ǂ------___ |
      H   L   (H)   (L) H
      Subject prefix Verb stem   Negative   Negative future suffix
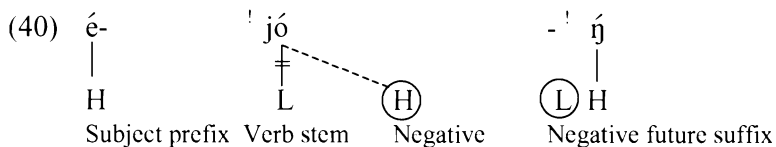
The imperative is marked by a H tone suffix that behaves like those of the nega-
tive perfective and negative future described above, with one exception. Since the
imperative does not use subject prefixes, Plateauing does not apply when the
grammatical H tone associates to L-toned roots. The result is that both the L tone
of the stem and the H tone of the imperative surface on the stem, which is pro-
nounced with a rising tone (41).

(41) e-cha   'he dug'   chaá   'dig!'
      e-jo   'he danced'   joó   'dance!'
      e-fo   'he cut'   foó   'cut!'
   e-tĩ   'he scratched'   tĩ́í   'scratch!'

The lengthening of the vowel in the imperative forms in (41) is the result of a
regular process of rising tone lengthening, whereby a short (monomoraic) vowel
bearing a rising tone becomes a long (bimoraic) vowel (Paster 2000).
        I have demonstrated why the L vs. toneless distinction is crucial to an
analysis of subject prefix tone, since the two behave differently with respect to
the rule of subject prefix deletion described in section 4. However, we have not
yet seen evidence for a L vs. toneless distinction among verb stems. In fact, the
behavior of the H tone imperative marker provides evidence for this contrast. As
shown in (42), although toneless stems in are indistinguishable from L-toned
stems in the simple past and perfective, in the imperative they behave differently
from the L-toned stems that were shown in (41).

(42) e-ba   'he came'   bá   'come!'
      e-ho   'he passed by'   hó   'pass by!'
      e-wo   'he wore'   wó   'wear!'
      e-wɔ   'he slept'   wɔ́   'sleep!'
      e-hao   'he worried'   háó-mɔ̌   'worry!'[6]
      e-sɔɔ   'he caught'   sɔ́ɔ́-mɔ̌   'catch!'
      e-doo   'he roasted'   dóó-mɔ̌   'roast!'

---

[6] The imperative suffix appears only with certain stem types (Paster 2000); its distribution is
not relevant to the discussion of the grammatical tone.

As illustrated below, toneless stems (43a) take on the H tone of the imperative straightforwardly, while L-toned stems (43b) retain the underlying L tone, resulting in a rising tone, which induces lengthening of the vowel. The difference between these two types of stems, which are indistinguishable in verbal categories that do not mark the stem with a tone, is explainable if we assume a L vs. toneless contrast in verb stems.

(43)   a. Toneless stems   b. L-toned stems
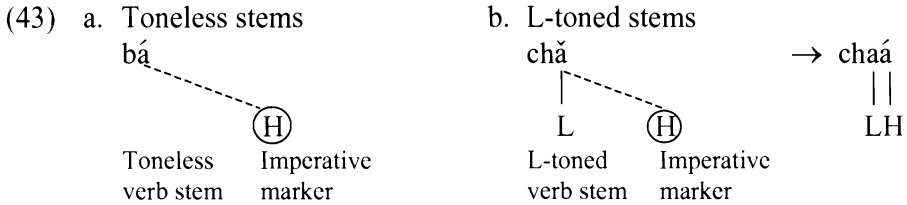
The L vs. toneless distinction in verb stems is confirmed in the negative forms, which mark the stem with a H tone. In the negative past (44a), negative perfective (44b), and negative future (44c), toneless roots pattern with H-toned roots rather than L-toned roots. This is because while toneless roots take on the H tone straightforwardly and H-toned roots retain their H tone (or the grammatical H merges with the lexical H — there is no evidence for one analysis over the other), the lexical L of L-toned stems remains and is manifested as downstep before the grammatical H.

(44)   a. H-toned roots   b. H-toned roots
          e-lá-áâ   'he did not sing'   e-lá-kɔ   'he has not sung'
          e-kpɛ́-ɛ̂   'he did not chew'   e-chú-kɔ   'he has not sent'

          Toneless roots   Toneless roots
          e-hó-óô   'he did not pass by'   e-hó-kɔ   'he has not passed by'
          e-lé-éê   'he did not know'   e-lé-kɔ   'he has not known'

          L-toned roots   L-toned roots
          é-ˈchá-áâ   'he did not dig'   é-ˈchá-kɔ   'he has not dug'
          é-ˈmá-áâ   'he did not build'   é-ˈmá-kɔ   'he has not built'

c. H-toned roots
  e-lá-ˈŋ́   'he will not sing'
  e-kpέ-ˈŋ́   'he will not chew'

  Toneless roots
  e-hó-ˈŋ́   'he will not pass by'
  e-lé-ˈŋ́   'he will not know'

  L-toned roots
  é-ˈchá-ˈŋ́   'he will not dig'
  é-ˈlá-ˈŋ́   'he will not dream'

6. Conclusion

The Gã verb system makes use of floating tones in a variety of ways. Floating tone prefixes and suffixes interact with lexical tones to produce the verbal distinctions that have been described. Some tenses, such as the perfective, are marked by a floating L tone prefix between the subject prefix and verb stem. Some, including the subordinate, are marked by a prefixed floating H tone which associates to the subject prefix. The simple past, on the other hand, has a floating L tone prefix which replaces the lexical tone of subject prefixes; the deletion of non-H-toned subject prefixes following a noun phrase subject leaves floating tone prefixes behind, giving us clear evidence for the floating tone. Floating tone markers which occur as suffixes alter the tone of verb stems in some tenses, such as the negative future. The behavior of the suffixes affecting stem tone indicates an underlying L vs. toneless contrast. The existence of this contrast is evidence that, in combination with the evidence from floating tones, strongly reaffirms the claim of Autosegmental Phonology that the number of tones is independent of the number of TBUs. There are numerous further examples of floating tones in Gã (Paster 2000); this paper has presented some of the many ways that they contribute to tense/aspect/mood distinctions in verbs.

REFERENCES

Clark, Mary M. 1993. "Representation of downstep in Dschang Bamileke". *The Phonology of Tone: The Representation of Tonal Register*, ed. by Harry van der Hulst and Keith Snider. Berlin/New York: Mouton de Gruyter. Pp. 29-73

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

Kropp-Dakubu, Mary E. 1986. "Downglide, floating tones and non-WH questions in Gã and Dangme." *The Phonological Representation of Suprasegmentals*, ed. by Koen Bogers, Harry van der Hulst, and Maarten Mous. Dordrecht: Foris Publications. Pp. 153-173.

Goldsmith, John. 1976. *Autosegmental Phonology*. Cambridge: MIT, PhD. dissertation. Distributed by IULC.

Okunor, Vincent. 1969. *Tone in the Gã verb.* Legon: Institute of African Studies.

Paster, Mary. 2000. "Issues in the tonology of Gã." Columbus: Ohio State University, Undergraduate thesis.

Trutenau, H.M.J. 1972. "A sketch of tone rules required for a generative transformational grammar of Gã (a terraced level tone language)." *Linguistics* 79: 83-96.

Wentum, Comfort. 1997. *A Lexical Tonology of Gã*. Legon: University of Ghana, M. Phil thesis.

Zimmerman, J. 1858. *A grammatical sketch and vocabulary of the Akra- or Gã-language with an appendix on the Adanme dialect.* Stuttgart, 2 vols. Republished with an Introduction by J. Berry, Gregg International, 1972.

Department of Linguistics
UC Berkeley
1203 Dwinelle Hall
Berkeley CA 94720-2650

ON THE PROPERTIES OF EMAI'S *KHI* COPULA CONSTRUCTION[*]

Ronald P. Schaefer & Francis O. Egbokhare
Southern Illinois University Edwardsville & University of Ibadan

This paper examines the equational identity (EI) construction in Nigeria's Edoid language Emai. It weighs this construction's grammatical properties against a complex of equational identity patterns developed in the crosslinguistic investigations of Stassen (1997). Although EI properties reveal its functional heritage, they fail to conform fully to Stassen's findings. While EI noun phrases are sensitive to information structure and definiteness values, the construction as a whole fails to exhibit crucial features. It evinces no third person limitation, manifests limited predicational structure, and demonstrates compatibility with a restricted range of temporal categories, although not indicative tense/aspect. It is the last of these that highlights the EI construction's obligatory subjunctive marking and its non-deictic temporal character.

---

1.   Introduction.

As part of a crosslinguistic investigation of intransitive predication and its formal encoding, Stassen (1997) delineates the morphosyntactic properties of nominal predication. In contrast to adjectival and locational predication, its function is to specify class membership, i.e. assign the referent of *the man* to the class farmer in *The man is a farmer*. Stassen's wide-ranging database, including that from sub-Saharan Africa, reveals that nominal predication is frequently expressed through the morphosyntax of equational identity. The latter's primary function is to equate two referents previously assumed to be non-identical, e.g. *It is the man whom we greeted that is a farmer* or *This man is the farmer whom we greeted*. This concern with function leads Stassen to reach beyond the definiteness requirement of identity-construction noun phrases often noted in previous literature (Strawson 1974).

      Stassen (1997) summarizes his crosslinguistic findings for identity constructions by highlighting four grammatical tendencies:

> In sum, we can state that identity statements, on the basis of their semantic-functional characteristics, can be predicted to exhibit the following structural features:
>
> - their unmarked person form will be the third person;
> - they will either lack tense-marking or have present tense;
> - they will have zero predicate marking if the language allows this at all and
> - they may feature topic/focus-marking devices in a more obligatory way than other sentence types do. (p. 110-111)

In other words, equational identity should be framed by construction elements whose grammatical origin lies in overtly signaling aspects of information structure. It should also prefer third person form (if person is marked); reject tense marking and associated temporal forms (or exclusively rely on present tense); and fail to evince predication (i.e. favor identification over predication and its consequent assignment of a subject argument to a predicate). These properties converge on so-called "zero copula" constructions (e.g. Russian's *Moskova gorod* 'Moscow is a city.'), which Stassen frequently finds encoding not only equational identity but also class membership. Nonetheless, not all languages allow a zero copula; some may instead dedicate a specific morphosyntactic construction to each of the functions equational identity and class membership. For such cases, closer scrutiny of Stassen's crosslinguistic tendencies may prove worthwhile.

The West African language Emai (Edoid, Benue-Congo)[1] explicitly distinguishes the functions of equational identity from class membership in its morphosyntax. Equational identity is formally grounded to the BE form *khi* (*ólí ómọ́hé nà lí í khì ọ̀nwìmè* 'It is this man who is a farmer.') and class membership to the BE form *vbi* (*ólí ómọ́hé nà í ì vbì ọ̀nwìmè*. 'This man is not a farmer.').[2] For this paper, we restrict analysis to the equational identity (EI) construction. Its character appears to reflect its functional heritage, although its grammatical properties do not follow entirely the specific crosslinguistic tendencies outlined by Stassen. EI noun phrases are sensitive to information structure and definiteness values but show no third person restriction. Emai's EI construction exhibits a limited but nonetheless evident predicational nature. And while EI constructions reject tense/aspect marking, they accept auxiliary and preverb categories with non-deictic temporal significance, thus casting doubt on a general atemporal characterization for equational identity.

2.   Overview of Equational Identity Construction.

At the core of Emai's EI construction is the copula form *khi*, a focus position noun phrase preceding the copula and a post-copula noun phrase.[3] The focus position noun phrase requires the positive focus (PF) marker *li* (1a) or its negative focus (NF) counterpart *ki* (1b). Either of these markers is immediately followed by an obligatory particle *í* in subject position. The post-*khi* noun phrase exhibits no obligatory grammatical marking.

---

[1] The major subdivisions of the Edoid language family are outlined in Elugbe (1989). Emai is a member of the North-Central Branch. It is spoken by approximately 25-30,000 speakers across 12 villages in an area that is at longitude 6° east of Greenwich Meridian and latitude 7° north of the equator.

[2] Some of the typological character of Emai's five BE constructions is discussed in Schaefer and Egbokhare to appear.

[3] Orthographic conventions for Emai are consistent with those in Schaefer (1987) and Schaefer and Egbokhare (1999), where <ọ> represents a lax mid-back vowel, <ẹ> a lax mid-front vowel, and <vb> a voiced bilabial approximant. High tone is marked by an acute accent, low tone by a grave accent and high downstep by an acute accent followed by an apostrophe. Across an Emai clause, tone marking is grammatically conditioned by inflectional factors such as mood, tense/aspect, polarity as well as syntactic position. As a result, tone values on most lexical or grammatical items will appear to shift somewhat from construction to construction.

(1) a. ólí ómóhé nà lí í khì odón   ôi.[4]
        the man   this PF ID COP husband her
        'It is this man who is her husband.'

     b. ólí ómóhé nà kí í khì odón   ôi.
        the man   this NF ID COP husband her
        'It isn't this man who is her husband.'

The equational identity character of the *khi* construction is emphasized through obligatory number agreement. The noun phrase preceding the focus marker and the one following *khi* must agree in number, as indicated by the plural definite determiner *élí* and the plural demonstrative *eâın* (2a), compared to the singular definite determiner *ólí* and the singular demonstrative *òâın* (2c). Lack of number agreement between these positions leads to ungrammaticality (2b and 2d).

(2) a. élí úkpún lí óbín lí í khì eâın.
        the cloth R dark PF ID COP those-ones
        'It is the dark cloths that are those ones./Those ones are the dark cloths.'

     b. *élí úkpún lí óbín lí í khì òâın.
        the cloth R dark PF ID COP that-one

     c. ólí úkpún ísì òjè lí í khì òâın.
        the cloth ASS Oje PF ID COP that-one
        'It is the cloth of Oje that is that one./
        That one is the cloth of Oje.'

     d. *ólí úkpún ísì òjè lí í khì eâın.
        the cloth   ASS Oje PF ID COP those-ones

---

[4] Abbreviations used throughout this study include the following: ABSI = absolute intensification, ADD = additive, ANT = anterior, ANTI = anticipative, APP = applicative, ASS = associative, C = continuous, CER = certaintive, CON = conative, CONC = concessive, COP = copula, CORC = correlative conjunction, DED = deductive, DMD = distal manner deictic, DUB = dubitative, DUR = durative, EG = egressive, H = habitual, HOR = hortative, HYP = hypothetical, IG = ingressive, NEG = negative, NF = negative focus, PA = past absolute, PCT = punctual, PF = positive focus, PR = prohibitive, PRED = predictive, R = relator, RC = recurrent, REFL = reflexive REP = repetitive, SC = subject concord, SEQ = sequential, SUB = subsequent, and TEMP = temporal perspective.

Emai's EI construction may have its origin in a grammatical device marking information structure, as Stassen's findings would suggest. The form *khi* with obligatory low tone combines with the subject particle *í* to define right dislocation constructions and their "afterthought" function, as shown in (3).

(3)   a. ò gbé éwè, í khì òlí ómòhè.
          he kill goat ID COP the man
          'He killed a goat, that is, the man.'

     b. élí ímòhè gbé ôı, í khì èwé ısì òjè.
          the men   kill it ID COP goat ASS Oje
          'The men killed it, that is, the goat of Oje.'

The form *khi* alone also designates a correlative conjunction, i.e. 'both NP and NP.' However, the resulting construction is limited to the discourse sensitive position topic. Preceding each correlatively conjoined noun phrase in topic position is the form *khi* with obligatory low tone.

(4)   khì   òlí ómóhé khì   òlí óvbékhán, yàn é émà.
       CORC the man   CORC the youth   they eat yam
       'As for both the man and the youth, they ate yam.'

3.   Subject Position Constraints.

Of the three positions associated with *khi* in EI constructions, subject is the most restricted. The position occupied by the subject particle *í* requires an obligatory high tone. It fails to accept pronominal particles conveying person (third person singular *ó* 5a or plural *yán* 5b), which are otherwise acceptable in subject position in focus constructions (*yán* 5c).

(5)   a. *ólí ómóhé nà lí ó khì ònwìmè.
          the man   this PF he COP farmer
          'It is this man who is a farmer.'

     b. *élí ímóhé nà   lí yán khì ìnwìmè.
          the men   these PF they COP farmers
          'It is these men who are farmers.'

c. élí ímóhé nà   lí   yán gbé ólí ófè.
the men   these PF they kill the rat
'It is these men who killed the rat.'

Since the position occupied by the *í* particle disallows subject particles expressing person, the *khi* construction reveals no person function and, thus, no evidence of a third person bias. Instead, the subject particle *í* conveys an identiphoric function.[5] It registers identification between construction noun phrases, i.e. the noun phrases in focus position and post-*khi* position. Two other Emai constructions marking identification relationships also require the particle *í* in subject position. We have already seen its use in the right dislocation (afterthought) construction of (3), where the speaker registers subject (3a) or direct object (3b) identification explicitly in the phrase following *khi*. The *í* particle is also obligatory in information questions of the 'which' type in (6), where it precedes the verb *yi* 'declare, show, indicate' to query the identification of a referent.

(6)   í   yì   òlí ómóhé lí ó   hían ólí óràn?
     ID indicate the man   R he cut   the wood
     'Which one indicates the man who cut the wood?/
     Which man cut the wood?'

Across equational identity, 'afterthought' and 'which' constructions, *í* specifies a subject relation relative to a predicate, either *khi* or *yi*. Its status as grammatical subject is revealed by behavior with an auxiliary particle such as *ma* 'surely, certainly.' In non-equational identity constructions, subject particles expressing person (*ó* /third person singular) precede a verb (*da* 'drink') in constructions where an auxiliary is lacking (7a) but precede an auxiliary when one is present (*má* CER in 7b). A similar pattern characterizes subject particles in non-equational identity focus constructions (*ó* precedes *da* in 7c but *ma* in 7d).

_____

[5] The pronominal function identiphoric contrasts not only with definite personal pronouns (e.g. *o* 'he/she/it', *yan* 'they') but also with logophoric pronouns. The latter express referential identity between a human noun argument embedded in a clause under a verb of communication or cognition and the grammatical subject of that verb (e.g. *yon* in *ólí ómòhè ééní khì yòn gbé élí éwè*. 'The man knew that he (himself) killed the goats.' Definite personal pronouns in embedded clauses show disjoint reference vis-à-vis the grammatical subject of the main clause verb (e.g. *o* in *ólí ómòhè ééní khì ò gbé élí éwè*. 'The man knew that he (someone else) killed the goats.').

(7)   a. ó dá   óĺí ényò.
         he drink the wine
         'He drank the wine.'

      b. ó má dá   óĺí ényò.
         he CER drink the wine
         'He surely drank the wine.'

      c. óĺí ómó̩hé nà ĺí   ó dá   óĺí ényò.
         the man   this PF he drink the wine
         'It is this man who drank the wine.'

      d. óĺí ómó̩hé nà ĺí   ó má dá   óĺí ényò.
         the man   this PF he CER drink the wine
         'It is this man who surely drank the wine.'

khi constructions as well as 'which' interrogatives with the same auxiliary require
that the   í particle precede *ma* (8a-b).   í thus registers a subject-predicate
relation, and Emai's *khi* construction evinces predication, even of a limited sort,
contra Stassen.

(8)   a. óĺí ómó̩hé nà   ĺí í   mà khí   ódó̩n ô̩i.
         the man   this PF ID CER COP husband her
         'It is this man who surely is her husband./
          Her husband is surely this man.'

      b. í mà yí   óĺí ómó̩hé ĺí ó hían óĺí óràn?
         ID CER indicate the man   R 3S cut   the wood
         'Which one surely indicates the man who cut the wood?/
          Which man surely cut the wood?'

4.   Noun Phrase Constraints.

The two noun phrase positions in Emai's EI construction exhibit a complex of
symmetrical and asymmetrical structural constraints. The dimensions of these
constraints fall along emphatic and definiteness lines rather than person. EI noun
phrase positions are symmetrical in their rejection of overt non-definite marking
by pronouns or post-nominal modifiers. They are asymmetrical in their
acceptance of emphatic particles, the definite determiner and pronouns reflecting

person.

Pre-*khi* focus position does not admit explicit indefinite marking. It admits proper names as well as proper names marked by the emphatic particle *òkpá*.

(9) òhí / òhí òkpá ĺi í khì òdón ôĩ.
     Ohi   Ohi   alone PF ID COP husband her
     'It is Ohi / Ohi alone who is her husband.'

It accepts bare inanimate nouns with or without emphatic *òkpá* (10a) as well as inanimate nouns marked by the definite determiner *óĺi* (10b), the latter also allowing emphatic *òkpá*. Overt definite marking is thus not obligatory in pre-*khi* position.

(10) a.   èkpà / èkpà òkpá ĺi í   khì ísì òjè.
          bag   bag   alone PF ID COP ASS Oje
          'It is a bag / a bag alone that is Oje's.'

      b. óĺi èkpà / óĺi èkpà òkpá ĺi í khì ísì òjè.
          the bag   the bag alone PF ID COP ASS Oje
          'It is the bag / the bag alone that is Oje's.'

Focus position allows emphatic pronouns regardless of person (11a), thus demonstrating no third person bias, as would be expected from Stassen's findings. Moreover, focus position admits no non-emphatic personal pronouns, as in (11b).

(11) a. mèmè / wèwè / ìyòìn ĺi í khì ònwìmè.
          I   you   he   PF ID COP farmer
          'It is I/you/he who am/are/is a farmer.'

      b. *ì / ù / ò ĺi í khì ònwìmè.
           I you he PF ID COP farmer
          'It is I/you/he who am/are/is a farmer.'

Pre-*khi* focus position permits a wide range of impersonal pronouns, including numeral and universal quantifying pronouns, sortal[6] pronouns and the demonstra-

---

[6] Sortal refers to a type of grammatical category in Emai specifying a "kind of" relation within a proximal/distal deictic frame. It occurs as pronoun or modifier, assuming the shapes *óĺiyó*

tive pronouns in (12).

(12) ọ́âin   / ọ́nà /   ọ́nội   ĺı í   khì àgbògbòràn.
       that-one this-one   next-one PF ID COP woodpecker
       'It is that one /this one/ the next one that is a woodpecker.'

However, focus position fails to accept the existential quantifying pronoun *ọ́sò* 'some/certain one' whose referent is known to the speaker but not shared by speaker and hearer. Since *ọ́sò* thus establishes a relation of specific reference, it is overtly non-definite.

(13) *ọ́sò   ĺı í   khì ísì èmę́.
       certain-one PF ID COP ASS my
       'It is a certain one that is mine.'

Pre-*khi* focus position also allows pronominal-headed relative clauses (14a). They become unacceptable if marked by the recurrent (RC) particle *a*, whose generic, overtly non-definite character is signaled by translations with 'wh-ever' (14b).

(14) a. ọ́   ĺı ọ́ nwú émà ĺı   ọ́lì òkpòsò ĺı í   khì òâin.
           one R he give yam APP the   woman   PF ID COP that-one
           'It is the one who gave yam to the woman who is that one. /
           That one is the one who gave yam to the woman.'

     b. *ọ́   ĺı ọ́ á   nwú émà ĺı   ọ́lì òkpòsò ĺı í   khì òâin.
           one R he RC give yam APP the   woman   PF ID COP that-one
           'It is whoever gave yam to the woman that is that one. /
           That one is whoever gave yam to the woman.'

With respect to post-nominal modifiers, focus position does not admit the existential quantifier *ọ́sò* with its specific reference.

'that kind', *ọ́lìná* 'this kind', *élìyọ́* 'those kinds', *énìná* 'these kinds' for the older generation familiar with Emai's oral tradition (Schaefer and Egbokhare 1999), but only *élìyọ́* 'that kind' for the younger generation. As a modifier in contemporary speech, it appears in phrases such as *úkpún élìyọ́* 'cloth of that kind' and *érá élìyọ́* 'father of that kind' as well as a pronoun in expressions like *élìyọ́ ĺı í khì àgbògbòràn*. 'It is that kind of one that is a woodpecker. / A woodpecker is that kind of one.'

(15) *úkpún ósò   lí í khì ùkú   ísì èmé.
      cloth certain PF ID COP inheritanace ASS my
      'It is a certain cloth that is my inheritance.'

The noun phrase position following *khi* is more constrained than its focus position counterpart. Post-*khi* position is sensitive to emphatic and definiteness but completely rejects person marking. Proper names occur in this position but not with emphatic *òkpá*.

(16) ódón ôì lí í khì òlólò / *òlólò òkpá.
      husband her PF ID COP Ololo   Ololo alone
      'It is her husband who is Ololo. / Ololo is the one who is her husband.'

Inanimate lexical nouns (*èkpà* 'bag') in post-*khi* position require the definite determiner *ólí* (17a); bare inanimate nouns are ungrammatical, as seen in (17b). Regardless of determiner presence, emphatic *òkpá* is disallowed in post-*khi* position, as shown in both (17a) and (17b). It thus appears that post-*khi* position must be overtly definite but can never be overtly emphatic.

(17) a. ísì   òjè lí í khì ólì èkpà / *ólì èkpà òkpá.
         ASS Oje PF ID COP the bag   the bag alone
         'The bag is Oje's. / The one that is Oje's is the bag.'

      b. *ísì òjè lí í khì èkpà / èkpà òkpá.
         ASS Oje PF ID COP bag   bag alone
         'A bag is Oje's. / The one that is Oje's is a bag.'

Post-*khi* position restricts pronominal forms. Regardless of pronoun person, it admits neither subject (18a), direct object (18b), nor emphatic personal forms (18c). It thus reflects no propensity for third person, contra Stassen, and no grammatical relation such as direct object.

(18) a. *ódón   ôì lí í khì ì / ù / ò.
         husband her PF ID COP I   you he
         'Her husband is the one that is I /you/he.'

      b. *ódón   ôì lí í khì mè / è / ôì.
         husband her PF ID COP me / you / him

c. *ódón   ói lí í khì   mèmè / wèwè / ìyòìn.
    husband her PF ID COP I   you   he
    'Her husband is the one that is I /you/he.'

Post-*khi* position permits various impersonal pronouns: demonstrative (*èáìn* 'those ones,' *ènôì* 'next ones'), universal quantifying (*èrèmé* 'all'), and collective quantifying (*èvèvá* 'both').

(19) ìgbégbè lí í khì èáìn   / ènôì   / èrèmé / èvèvá.
      velvet   PF ID COP those-ones next-ones all   both
      'It is the ones that are velvet that are those ones /the next ones / all / both./
      Those ones / the next ones / all / both are the ones that are velvet.'

It fails, nonetheless, to accept the existential pronoun *ósò* 'some/certain one' and its specific reference requirement.

(20) *ìgbégbè lí í khì ósò.
      velvet   PF ID COP certain-one
      'It is velvet that a certain one is./ A certain one is the one that is velvet.'

And while post-*khi* position admits pronominally headed relative clauses (21a), such clauses are unacceptable if they incorporate the recurrent particle (RC) *a* and its generic 'wh-ever' interpretation (21b).

(21) a. óáìn   lí í khì ò lí ó nwú émà lí ólì òkpòsò.
        that-one PF ID COP one R he give yam APP the woman
        'It is that one who is the one who gave yam to the woman.'

     b. *óáìn   lí í khì ò lí ó á nwú émà lí ólì òkpòsò.
        that-one PF ID COP one R he RC give yam   APP the woman
        'It is that one that is whoever gave yam to the woman.'

Relative to nominal modification, post-*khi* position does not allow the existential quantifier *ósò* 'certain, some' and its specific reference obligation.

(22) *àzén lí í khì òmóhé ósò.
      wizard PF ID COP man   certain
      'It is a wizard that is a certain man./
      A certain man is the one who is a wizard.'

The preceding has attempted to demonstrate that the two noun phrase positions in Emai's EI construction uniformly disallow overtly non-definite pronouns and modifiers. These positions also exhibit asymmetric distribution regarding emphatic and definiteness marking. Bare inanimate nouns and proper names with emphatic marking appear in pre-*khi* focus position, whereas post-*khi* position requires inanimate nouns marked as definite or proper names, although neither of these in post-*khi* position allows emphatic marking. Pre-*khi* focus position allows emphatic pronouns reflecting person, whereas post-*khi* position admits no personal pronouns at all. To this extent, neither noun phrase position associated with the *khi* construction reveals Stassen's postulated third person preference.

5.   Temporal Constraints.

We direct attention now to the properties of *khi* in Emai's EI construction. As our point of departure, we take note of Stassen's (1997) review of the temporal character of identity constructions:

> Thus, in their typical use, identity statements are the epitome of Time Stability. In fact, one might even doubt whether the concept of time is applicable to them at all; one might see them as essentially A-TEMPORAL or TIMELESS.... The timeless nature of identity statements may find its formal correlate in two different ways. First there are languages in which identity statements 'deny' the relevance of time specification by disallowing any formal tense marking at all. While other sentence types may (or must) be marked for tense, identity statements in these languages are constructed as 'a-temporal' or 'tenseless'. ... Other languages, however, do not permit sentence types which lack formal tense-marking. In such a case, the language typically singles out one of the available tense forms as the preferred encoding for identity statements. [pp. 109-110]

In contrast to the summary statements in Stassen, *khi* constructions do not reflect a completely atemporal character. This becomes evident through construction compatibility with auxiliaries and adverbial preverbs manifesting temporal significance.

Overall, *khi* constructions are incompatible with indicative mood. They reject tense/aspect marking in the imperfective and perfective, which in Emai reflects metrical tense values indicating degrees of remoteness from the deictic center (Haspelmath, König, Oesterreicher and Reuble 2001). Relative to the perfective, *khi* constructions do not show the completive past (compare

ungrammatical 23a with its high tone *khí* preceded by high tone subject *í* to grammatical 23b with its high tone verb *gbé* 'kill' preceded by high tone subject *ọ́*) or completive present (compare ungrammatical 23c with its high tone *khí* preceded by low tone subject *ì* to grammatical 23d with its high tone *gbé* preceded by low tone subject *ọ̀*).

(23)   a.   *ọ́lí ọ́mọ́hé nà lí í khí   ọ̀nwìmè.
            the man   this PF ID COP   farmer
            'It is this man who was a farmer.'

         b.   ọ́ gbé   ọ̀nwìmè.
            he kill   farmer
            'He killed a farmer.'

         c.   *ọ́lí ọ́mọ́hé nà lí ì   khí   ọ̀nwìmè.
            the man   this PF ID COP farmer
            'It is this man who has been a farmer.'

         d.   ọ̀   gbé ọ̀nwìmè.
            he kill   farmer
            'He has killed a farmer.'

Likewise, *khi* fails to manifest imperfective tense/aspect. It does not permit the habitual, while a verb such as *gbe* 'beat' does (compare ungrammatical 24a with its high tone subject *í*, low tone habitual *ọ̀* and low tone *khì* to grammatical 24b with its high tone subject *ọ́*, low tone habitual *ọ̀* and low tone verb *gbè*). *khi* also does not allow the continuous (compare ungrammatical 24c with its low tone subject *ì*, high tone continuous *ọ́* and low tone *khì* to grammatical 24d with its low tone subject *ọ̀*, high tone continuous *ọ́* and low tone *gbè*). *khi* thus accepts neither the perfective nor imperfective tense/aspect of the indicative.

(24)   a. *ọ́lí ọ́mọ́hé nà   lí   í   ọ̀ khì   ọ̀nwìmè.
            the man   this PF ID H COP farmer
            'It is this man who is (usually) a farmer.'

         b.   ọ́   ọ̀ gbè   ìnwìmè.
            he H   beat farmers
            'He beats farmers.'

   c. *ólí ómóhé nà lí ì ó khì ònwìmè.
       the   man   this PF ID C COP farmer
       'It is this man who is being a farmer.'

   d. ò ó gbè ólì ònwìmè.
       he C beat the farmer
       'He is beating the farmer.'

In lieu of indicative marking, *khi* constructions evince properties consistent with Emai's subjunctive mood.[7] The latter contrasts with the indicative in which the speaker commits himself to the true or false status of a proposition. The subjunctive's lack of commitment to truth value manifests itself in a restricted set of constructions that reflect, among others, imperative and embedded imperative constructions, as well as hortative (should'), conative ('went to'), anticipative ('about to'), and predictive ('will') significance.[8] As with indicative, subjunctive mood in Emai is conveyed through tone marking. Its pattern is perhaps most easily seen in the effect of auxiliary and preverb elements on verb tone. When indicative constructions of perfective or imperfective tense/aspect are marked with a preverb or auxiliary (e.g. *gbo/* ADD 'too'), verb tone is invariable relative to the unmarked construction. The verb *da* 'drink' has high tone in perfective (25a-b) and low tone in imperfective (25c-d), irrespective of *gbo*'s presence.

(25) a. ólí ómóhé dá ényó élìyó.
       the man   drink wine   that-kind
       'The man drank wine of that kind.'

---

[7] Following Lyons (1977), we take subjunctive as grounded to non-factivity conditions in which the speaker commits to neither the truth nor falsity of a proposition (Schaefer and Egbokhare 1998). We also note that lack of commitment to proposition truth value may occur for different reasons: either the proposition refers to an event which has yet to occur (the case with imperatives, anticipatives and others) or the proposition is assumed to be true within the societal universe (the apparent case with equational identity constructions).

[8] Subjunctive also includes prohibitive constructions like *é è dá ólí ényò*. 'Don't drink the wine.', which place low tone on the prohibitive particle *è* as well as the immediately following auxiliary or preverb but not the verb, e.g. *é è kè dá ólí ényò*. 'Don't drink the wine anymore.' This has led us to distinguish strong (verb inclusive tone) and weak (verb non-inclusive tone) subjunctive patterns for Emai (Schaefer and Egbokhare 1998).

b. ólí ómọ́hé gbó dá ́ ényọ́ élìyọ́.
  the man   ADD drink wine   that-kind
  'The man drank wine of that kind too.'

c. ólí ómọ́hé ọ́ ọ̀ dà ́ ènyọ́ élìyọ́.
  the man   SC H drink wine   that-kind
  'The man drinks wine of that kind.'

d. ólí ómọ́hé ọ́ ọ̀ gbó dà ́ ènyọ́ élìyọ́.
  the man   SC H ADD drink wine   that-kind
  'The man drinks wine of that kind too.'

When subjunctive constructions include a preverb or auxiliary, verb tone is variable. The verb *da* has low tone in the unmarked construction (26a) but high tone in the presence of *gbo* (26b).

(26) a. ólí ómọ́hé lọ́ dà ̀ òlí ́ ényò̀.
  the man   PRED drink the wine
  'The man will drink the wine.'

b. ólí ómọ́hé lọ́ gbò dá vbí ́ ólí ́ ényọ́.
  the man   PRED ADD drink LOC the wine
  'The man will drink from the wine too.'

What then is *khi*'s tonal pattern? Consistent with the subjunctive in (26), *khi* manifests low tone in a structure unmarked by an auxiliary or preverb (27a) but high tone when a preverb like *gbo* is present (27b).

(27) a. òhí kí í ́ khì óbá'?
  Ohi NF ID COP Oba/king
  'Isn't it Ohi who is Oba?'

b. òhí kí í ́ gbò khí óbá'?
  Ohi NF ID ADD COP Oba/king
  'Isn't it Ohi who is Oba too?'

Relative to post-verbal adverbs and particles linked to tense/aspect marking, *khi* is extremely constrained. It fails to co-occur with the post-verbal temporal perspective particle *lee* (28a), which makes reference to event onset or endpoint

depending on tense/aspect. With verbs like *e* 'eat,' *lee* has an 'already finished' interpretation in perfective (28b) and an 'already starting to' interpretation in imperfective (28c).

(28)   a. *ólì ómóhé nà   ĺi í   khì   ònwìmè léé.
            the man   this PF ID COP farmer   TEMP
            'It is this man who is already a farmer.'

     b. ólì ómóhé nà   é   ólì émà léé.
           the man   this eat the yam TEMP
          'This man has already finished eating the yam. /
          This man has finished eating the yam.'

     c. ólì ómóhé nà   ò   ó   è   òlì émá lèé.
           the man   this SC C eat the yam TEMP
          'This man is already starting to eat the yam. /
          This man is already eating the yam.'

As well, *khi* constructions reject the full range of post-verbal temporal adverbs linked to the deictic moment of utterance or the deictic center of discourse. Excluded are adverbs in (29) such as *èènà* 'today,' *ènyáà* 'just now,' *èghèènà* 'recently,' *òdè* 'yesterday,' *élá úkpè* 'last year,' and *úkpùúkpè* 'yearly.'

(29)   a. *ólì ómóhé nà ĺi í   khì   ònwímé èènà / ènyáà.
           the man   this PF ID COP farmer   today   just-now
          'It is this man who is a farmer today / just now.'

     b. *ólì ómóhé nà   ĺi í   khì   ònwímé èghèènà / òdè.
           the man   this PF ID COP farmer   recently   yesterday
          'It is this man who was a farmer recently / yesterday.'

     c. *ólì ómóhé nà   ĺi í   khì   ònwímé élá úkpè.
           the man   this PF ID COP farmer   last year
          'It is this man who was a farmer last year.'

     d. *ólì ómóhé nà ĺi í   khì   ònwímé úkpùúkpè.
           the man   this PF ID COP farmer   every-year
          'It is this man who is a farmer every year.'

These adverbs are otherwise compatible with verbs like *e* 'eat' marked for tense/aspect (Schaefer and Egbokhare 1997), for example *ènyáà* 'just now' in the continuous (30a), *èghéènà* 'recently' in the completive present (30b) and *élá úkpè* 'last year' in the completive past (30c).

(30) a. ólí ómòhè ò ó è òlí émá ènyáà.
   the man SC C eat the yam just-now
   'The man is eating the yam just now.'

  b. ólí ómòhè é ólí émá èghéènà.
   the man eat the yam recently
   'The man has eaten the yam recently.'

  c. ólí ómóhé é ólí émá élá úkpè.
   the man eat the yam last year
   'The man ate the yam last year.'

khi's rejection of tense/aspect extends to its failure to accept predicate negation. While verbs like *gbe* 'kill' allow predicate negation (*i* / NEG 31a), *khi* does not (31b).

(31) a. ólí ómóhé nà í ì gbè ólí ònwìmè.[9]
   the man this SC NEG kill the farmer
   'This man did not kill the farmer.'

  b. *ólí ómóhé nà íí í ì khì ònwìmè.
   the man this PF ID NEG COP farmer
   'It is this man who is not a farmer.'

Tense/aspect properties aside, *khi* constructions allow only selected auxiliaries and preverbs, some of which manifest a temporal nature. First we note that *khi* is incompatible with all event (deontic and dynamic) modality particles (Palmer 2001), those that convey obligation, ability or willingness. *Khi* does not permit predictive *ló* /PRED (32a), anticipative *ló* /ANTI or hortative *í* /HOR (32b)

---

[9] Although one might be tempted to view the *i*/SC in negative constructions as another instance of the identiphoric pronoun *i*/ID, negative constructions with pronominal subjects show person distinctions, as in *ó ì gbè ólí ònwìmè.* 'He did not kill the farmer.' and *yán ì gbè ólí ònwìmè.* 'They did not kill the farmer.' *i*/ID never alternates with a personal pronoun.

particles. At least two of these (predictive and anticipative) incorporate a metrical tense dimension, reflecting proximal/distal temporal degrees relative to the moment of utterance or some other stipulated reference time (Schaefer and Egbokhare 1997).

(32) a. *ọ́lí ọ́mọ́hé nà   lí í   lọ́   khì ọ̀nwìmè.
          the man   this PF ID PRED COP farmer
          'It is this man who will be a farmer.'

      b. *ọ́lí ọ́mọ́hé nà   lí ì   lọ́   / í   khì ọ̀nwìmè.
          the man   this PF ID ANTI / HOR COP farmer
          'It is this man who is about to be/ should be a farmer.'

Khi also restricts particles of epistemic modality (Palmer 2001), the latter referencing speaker judgments of degree of certainty in a proposition's truth value. *khi* constructions admit certaintive *ma* /CER (33a), concessive *rẹrẹ* /CONC (33b), and dubitative *vba* /DUB (33c), although the latter two require a yes/no question. *Khi* does not allow the particles hypothetical *kha*/HYP or deductive *za*/DED (33d), which specify a speaker's modal judgment based entirely on logical deduction or inference.

(33) a. ọ̀hí lí í mà khí ọ̣́bá'.
          Ohi PF ID CER COP Oba
          'It is Ohi who surely is the Oba.'

      b. ọ̀hí lí í rẹ̀rẹ̀ khí ọ̣́bá'?
          Ohi PF ID CONC COP Oba
          'So is it Ohi who is even the Oba?'

      c. ọ̀hí lí í vbà khí ọ̣́bá'?
          Ohi PF ID DUB COP Oba
          'Could it be that it is really Ohi who is the Oba?'

      d. *ọ̀hí lí í khà / zà   khí ọ̣́bá'.
          Ohi PF ID HYP   DED COP Oba
          'It is Ohi who would have been/ must have been the Oba.'

Khi is compatible with Emai's relative tense auxiliaries. These are particles that relate situation time to contextually given reference time rather than to time of

utterance (Haspelmath, König, Oesterreicher and Reuble 2001). We find that *khi* accepts two relative tense particles. It allows anterior *ke* /ANT (with dependent clause sense 'after' and main clause sense 'since then, anymore' 34a) and subsequent *kpe* /SUB (with a dependent clause sense 'before' and a main clause sense 'yet' 34b). *Khi* never occurs with relative tense *re* /SEQ (34c), whose 'and then' sequential meaning is restricted to main clauses.

(34) a.   èkpèn lí í kè khí ójé ísì éànmì.
          leopard PF ID ANT COP king ASS animal
          'It is the leopard who has been king of the animals since then.'

      b. èkpèn lí í kpè khí ójé ísì éànmì.
          leopard PF ID SUB COP king ASS animal
          'It is the leopard who is yet king of the animals.'

      c. *èkpèn lí í rè khí ójé ísì éànmì.
          leopard PF ID SEQ COP king ASS animal
          'It is the leopard who (and) then was king of the animals.'

As for preverb classes, *khi* combines with member items in a manner reflecting at least in part their event-directed or participant-directed nature (Schaefer and Egbokhare 2000). The latter distinction refers to alternative domains over which preverb meaning has influence: either the event encoded by the predicate or an event participant designated by grammatical subject or direct object. Some event-directed particles with temporal significance are grammatical with *khi*, whereas none of the participant-directed particles are. From the event-directed evaluative class, only *kuku*'s 'after all' assessment of information is grammatical in *khi* constructions (35a-b).

(35) a. òhí lí í kùkù khí óbá'.
          Ohi PF ID after-all COP Oba
          'It is Ohi afterall who is the Oba.'

      b. *òhí lí í dùù / wòò khí óbá'.
          Ohi PF ID in-fact instead COP Oba
          'It is Ohi in fact / instead who is the Oba.'

Among event-directed temporal preverbs, *kpao* 'initially' is acceptable (36a), although the more deictic orientation of *bobo* 'promptly' is not (36b).

(36) a. èkpèn ĺí í kpàò   khí ójé ísì éànmì.
   leopard PF ID initially COP king ASS animal
   'It is the leopard who was initially king of the animals.'

  b. *èkpèn ĺí í bòbò   khí ójé ísì éànmì.
   leopard PF ID promptly COP king ASS animal
   'It is the leopard who promptly was king of the animals.'

Khi's occurrence is relatively constrained with aspectualizer preverbs, a class of grammatical forms semantically akin to aspectualizer verbs (e.g. 'start,' 'stop,' and 'continue') in other languages (Haspelmath, König, Oesterreicher and Reuble 2001).[10] Emai aspectualizer preverbs reference temporal phases of an event (ingressive, egressive) or construe an entire event as a temporal phase within a larger stretch of time (repetitive, additive, conative, punctual, and durative). *Khi* constructions admit two event-directed aspectualizer preverbs, both conditioned by negative focus with *ki* and interrogative force. Each has a temporal character, additive *gbo* 'too/also' (37a) and durative *sẹ* 'continue on' (37b).

(37) a. òhí kí í gbò khí óbá'?
   Ohi NF ID ADD COP Oba
   'Isn't it Ohi who is also Oba?'

  b. òhí kí í sè   khí óbá'?
   Ohi NF ID DUR COP Oba
   'Isn't it Ohi who continues to be Oba?'

No other aspectualizers, among them repetitive *che* /REP and punctual *ghe* /PCT (38a), conative *oo* /CON (38b), ingressive *ya* /IG, egressive *mo* /EG (38c), and past absolutes *ya* /PA and *mo* /PA (38d), are grammatical with *khi*, irrespective of speech act force or focus particle polarity.

---

[10] Emai has few aspectualizer verbs of the general type conveyed by 'to start', 'to continue' or 'to stop.' And Emai aspectualizer particles differ from auxiliaries in their propensity to occur in imperative constructions and to occupy positions following auxiliaries and preceding other preverbal adverbs.

(38) a. *òhí kí í chè / ghè khí óbá'?
      Ohi NF ID REP PCT COP Oba
      'Isn't it Ohi who is again/just Oba?'

   b. *òhí kí í óó khì óbá'?
      Ohi NF ID CON COP Oba
      'Isn't it Ohi who went to be Oba?'

   c. *òhí kí ì yà / mò khí óbá'.
      Ohi NF ID IG EG COP Oba
      'It is Ohi who was almost Oba.'

   d. *òhí kí í yà / mò khí óbá'.
      Ohi NF ID PA PA COP Oba
      'It is Ohi who was formerly/at one time Oba.'

None of the remaining preverb classes is grammatical in *khi* constructions. The event-directed preverb class incorporating manner deictics like *ìyó* 'that way' is ungrammatical. Equally rejected are participant-directed preverb classes typified by subject attributive *dabò* 'deliberately,' absolute intensifier *zemi* /ABSI, and emphatic subject reflexive *dòbó*/REFL.

(39) *òhí lí í ìyó / dàbò / zèmì / dòbó òi khí óbá'.
      Ohi PF ID DMD deliberately ABSI REFL him COP Oba
      'It is Ohi who that way/deliberately/really/himself is Oba.'

6.   Discussion

As we have observed, Emai's *khi* construction manifests some of the temporal and predicational nature Stassen's crosslinguistic findings deny identity constructions. The grammatical situation in Emai appears more complex than predicted. However, it does not involve a simple rejection of the pattern outlined by Stassen.

Since *khi* must be preceded by the subject particle *í*, EI constructions evinced a predicational nature, albeit limited, distinguishing subject from predicate. And although EI constructions failed to accept subject or direct object personal pronouns, no third person preference was evident. Focus position accepted first, second and third person emphatic pronoun forms, while post-*khi* position failed to accept any personal pronouns, relying exclusively on

impersonal forms.

In addition, the two principal noun phrases linked by the *khi* copula revealed a number of asymmetric information-level properties, especially with regard to definite and emphatic marking. Focus position accepted bare inanimate nouns as well as proper names and inanimate nouns with emphatic marking, while post-*khi* position accepted neither bare inanimate nouns nor emphatically marked proper names or inanimate nouns. Only post-*khi* position required nominals marked as definite. Moreover, both positions equally rejected nominals overtly marked as non-definite.

As for temporal character, EI constructions failed to exhibit tonal patterns or particles associated with Emai's tense/aspect types, imperfective and perfective. Linked to this restriction is *khi*'s failure to admit post-verbal temporal adverbs like *òdè* 'yesterday' and the temporal perspective particle *lee* 'already.' EI constructions, instead, manifested the subjunctive: variable verb tone correlating with the presence or absence of an auxiliary or preverb. Since EI constructions also accepted a range of auxiliary and preverb particles with temporal character, one cannot claim along with Stassen (1997) that identity constructions are completely atemporal. *Khi* allowed the relative tense particles *ke* 'since then' and *kpe* 'yet,' the aspectualizer particles *gbo* 'too/also' and *se* 'continue on,' and the preverb *kpao* 'initially.' While these particles may not be linked to tense, they are not atemporal. Rather than relate an event to the deictic moment of utterance, they relate one event to another in discourse without obligatory reference to the moment of utterance. They establish a non-deictic temporal character for EI constructions that allows the latter to be located in discourse. The Emai data suggest that it would be preferable to construe EI constructions as non-deictic rather than atemporal.

The preceding interpretation of Emai's EI construction reveals its essential compatibility with the subjunctive mood. It may prove worthwhile to investigate the grammatical encoding of EI constructions more carefully in other African languages, in particular their possible acceptance or rejection of forms related to tense/aspect. This might allow us to determine whether the patterns uncovered in this study are peculiar to Emai, and perhaps the Edoid family, or whether they reflect broader tendencies in Benue-Congo or Africa. Secondly, it would seem useful to scrutinize the grammatical encoding of equational identity constructions for temporal marking. Which categories with temporal significance are permissible in equational identity constructions? To what extent are particular temporal categories compatible with the indicative or subjunctive mood marking of equational identity? At the very least, this brief excursion into Emai's EI constructions sug-

gests that the formal expression of temporality, predication and person in equational identity constructions in Africa would benefit from closer scrutiny.

REFERENCES

Elugbe, Ben. 1989. *Comparative Edoid: Phonology and Lexicon*. Port Harcourt: University of Port Harcourt Press.

Haspelmath, Martin, Ekkehard König, Wulf Oesterreicher and Wolfgang Reuble. eds. 2001. *Language Typology and Language Universals: An International Handbook*. Berlin: Mouton de Gruyter.

Lyons, John. 1977. *Semantics, Volume I and II*. Cambridge: Cambridge University Press.

Palmer, F. R. 2001. *Mood and Modality*. New York: Cambridge University Press. [Second Edition; First Edition 1986.]

Schaefer, Ronald P.1987. *An Initial Orthography and Lexicon for Emai: an Edoid Language of Nigeria*. Bloomington: Indiana University Linguistics Club.

Schaefer, Ronald P. and Francis O. Egbokhare. 1997. "Emai's temporal adverbs". *Language History and Linguistic Description in Africa*, ed. by Ian Maddieson and Tom Hinnebush. Lawrenceville, NJ: African World Press. Pp. 269-276

Schaefer, Ronald P. and Francis O. Egbokhare. 1998. "On tone and mood correlations in Emai". *Research in African Languages and Linguistics* 4.1.1-13.

Schaefer, Ronald P. and Francis O. Egbokhare. eds. 1999. *Oral Tradition Narratives of the Emai People, Part I and Part II*. Hamburg: LIT Verlag.

Schaefer, Ronald P. and Francis O. Egbokhare. 2000. "Emai preverb order". *Proceedings from the 2nd World Congress of African Linguistics, Leipzig 1997*, ed.

by Ekkehard Wolff and Orin Gensler. Köln: Rüdiger Köppe Verlag. Pp. 733-746.

Schaefer, Ronald P. and Francis O. Egbokhare. In preparation. An Emai-English Dictionary. Mouton Trends in Linguistic Documentation. Berlin: Mouton de Gruyter.

Schaefer, Ronald P. and Francis O. Egbokhare. In press. "Toward a typological perspective for Emai's BE Constructions". *Studies in African Linguistic Typology*, ed. by F.K. Erhard Voeltz. Philadelphia: John Benjamins.

Stassen, Leon. 1997. *Intransitive Predication*. Oxford: Clarendon Press.

Strawson, P.F. 1974. *Subject and Predicate in Logic and Grammar*. London: Methuen.

Department of English Language and Linguistics
Southern Illinois University
Edwardsville, IL 62026-1431
rschaef@siue.edu

Department of Linguistics
University of Ibadan
Ibadan, Nigeria
foegbokhare@yahoo.com

DYNAMICS OF INTERACTING POPULATIONS: LANGUAGE CONTACT IN THE LWOO LANGUAGES OF BAHR EL-GHAZAL[*]

Anne Storch
Institut für Afrikanische Sprachwissenschaften
Johann Wolfgang Goethe-University

Number inflection systems in Western Nilotic languages appear highly complex and diverse. Comparative work on Nilotic and other Nilo-Saharan families has shown that these languages have a morphologically tripartite system with marked plurals and a bare root singular, marked singulatives constructed from unmarked collectives, and a replacement pattern with morphologically marked singulars and plurals. Historical comparison of the formatives used to construct the different number categories has proven difficult. A number of little-explored Western Nilotic languages of Bahr el-Ghazal have been in contact with Niger-Congo (predominantly Ubangi) languages and have undergone typological as well as specific grammatical changes. An investigation into the historical and present contact situations is needed in order to shed light on how the number inflection systems of these languages were created historically. Sprachbund phenomena include the diffusion of a *ka-* plural prefix into the Belanda languages, while a convergence phenomenon whose origin is probably more recent is the gradual loss of suffixing singulatives in the Lwoo languages that are in contact with Niger-Congo, which itself does not use singulatives. Retentions and innovations within the system of

---

number inflection of certain Lwoo languages of Bahr el-Ghazal are discussed and analysed in terms of the history of these languages. This paper argues that crucial changes and differences within Western Nilotic noun morphology cannot be understood without taking into account the long and complicated contact history of these languages.

1. Introduction

In the nominal system of a language which is in close contact with a typologically different language, number marking is a feature which easily changes. Singular and plural categories such as singulatives, collectives, mass items, plurals of countable objects etc. do not necessarily appear in every language. As marked structures, they are often eliminated by language contact. Besides simplifying a formerly rich system, language contact may also result in the transfer of grammatical elements: number-marking techniques and patterns may be borrowed, so that the system of one language converges with that of another instead of simply being reduced.

Contact-induced changes of nominal systems have been described for a number of African linguistic areas. In the contact zone of Benue-Congo and Chadic in north-eastern Nigeria, both Bole-Tangale (Chadic) and Jukun (Benue-Congo) lost their grammatical gender and noun-class systems and significantly lack nominal plural formation (cf. Jungraithmayr & Leger 1993; Storch forthcoming). Some Semitic languages of Ethiopia almost totally lack the dual-number category due to language contact with Cushitic (Thomason 2001: 65; Leslau 1945). Other examples include the Nilotic-Bantu contact area, where Luo incipiently acquired a noun-class system typologically related to Bantu (Dimmendaal 2001b: 97 ff.). In all three cases, language contact has led to radical typological restructuring. For example, in Jukun (which is in contact with Chadic), the semantically and morphologically complex number marking system deriving from Proto-Niger-Congo noun classes is reduced to a distinction between singulars and plurals of humans. Most non-human and all inanimate objects are not number-marked, as they do not distinguish the plural anymore. The prefixed noun class markers of Proto-Jukunoid have been lost or are lexicalized, and the concord markers largely went the same way. The result is a typological pattern very much resembling the Kwa characteristics classically outlined in Westermann (1927). Williamson (1985) presents a case study of the typological changes observed in the Ogoni languages spoken in the Niger delta in eastern Nigeria which (unlike in

Jukun) may not be due to language contact, and which led to a similar "Kwa-type" isolating structure of a formerly rich morphological nominal system. This example, too, illustrates a case of extreme reduction of number marking.

Being a region with much language contact, Bahr el-Ghazal in South-Western Sudan provides an example of related phenomena of linguistic interference which include significant morphological convergence in the nominal system. Typologically, however, the languages of Bahr el-Ghazal that are involved in these contact phenomena remain conservative in retaining tripartite number marking and the use of suffixes. This distinguishes the language contact situation described here from the cases mentioned above. The contact situation dealt with in this paper involves primarily Belanda Bor, a Northern Lwoo language of the Western Nilotic sub-family (Nilo-Saharan), and Bviri, which belongs to the Banda-Gbandi-Sere group of the Ubangi family (Niger-Congo). Contact between Nilo-Saharan and Niger-Congo is certainly not the only example of linguistic interference observed in our research area. Contact between members of the same phylum and family also occurs, so that various convergence phenomena of different origins can be identified.

MAP 1: Northern Lwoo and Sere Languages of Bahr el-Ghazal
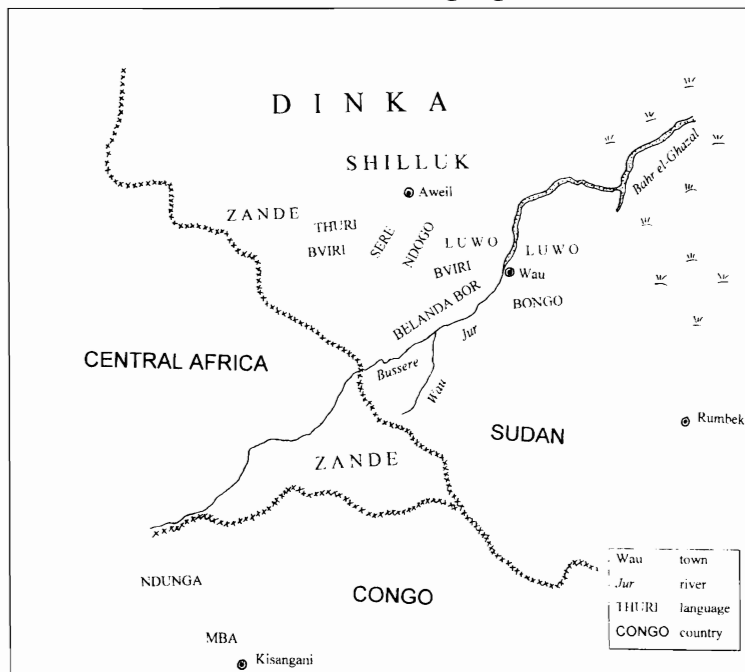
The approximate geographic location of Northern Lwoo and the Sere languages is shown on the map (modified from Santandrea 1946). A more current statement of the distribution of the languages cannot be given at present, as fieldwork in the area is not possible.

Data focussing on noun morphology and on the structures of noun phrases in Western Nilotic were collected by the author in Khartoum in 2000 and 2002. Research was conducted on Burun (Mayak), Mabaan, Jumjum, Dinka-Padaŋ and Dinka-Rek, Nuer, Shilluk, Luwo ("Jur"), Päri, Thuri, Bor (Belanda) and Acoli. For the following languages, published sources have been used as well: Burun languages (Andersen 1992, 1998, 1999a-c, 2001), Anywa (Reh 1996, 1999), Shilluk (Gilley 1991, 1992, 2000a-b; Kohnen 1933; Westermann n.d.), Päri (Andersen 1988a-c, 1989; Simeoni 1979), Agar Dinka (Andersen 1987, 1995), Luo (Tucker 1994), Alur (Knappert & Ukoko 1964) and Lango (Noonan 1992). For Luwo (Jur) on which this paper partly focuses, Santandrea (1946) and Buth (1981a-b) provide noteworthy sources.

On the Niger-Congo side, we find that Banda-Ngbandi-Sere languages of Sudan are poorly documented. Santandrea (1961) and Behagel (1988) using data collected by Boyd are the only published sources on Bviri available to the author. A thesis on the noun phrase in Bviri is in progress at the University of Khartoum (L. Gilley & Clement Mur'ba Wau, pers. comm.).

The classification models for the Lwoo group (Reh 1996: 4 following Rottland 1981: 269) and Bviri (Boyd 1989: 194) are as follows:

Table 1: Classification models.

Nilo-Saharan
    Eastern Sudanic
        Nilotic
            Eastern Nilotic
            Southern Nilotic
            Western Nilotic
                I.   Burun
                II.   Dinka-Nuer
                III. Lwoo
                      a.   Northern (Shilluk, Anywa, Päri, Luwo, Thuri, Belanda Bor)
                      b.   Southern (Acoli, Luo, Alur, Labwor, Kumam, Lango)

Niger-Congo
 Ubangi
  a) Gbaya
  b) Banda-Ngbandi-Sere
  c) Zande
     Ngbaka Mba Sere/Bviri

   Of the three sub-families of Nilotic, Western Nilotic is probably the least studied. The lack of adequate data and analyses of many Western Nilotic languages and lects partly results from the long-lasting political, religious and ethnic tensions in southern Sudan and northern Uganda, which make field research in much of the Western Nilotic area almost impossible. Another reason for the lack of comparative and reconstructive work may be the highly complex phonology obscuring the diversified noun morphology: Oswin Köhler who can be regarded as the founder of comparative Nilotic studies, is said to have once remarked that adequately describing Western Nilotic or reconstructing its Proto-language would be a hopeless undertaking, as this language group could be best termed a *Steinbruch* — a quarry with some eroded remains of a once complex system (F. Rottland, pers. comm.). This paper attempts to explain part of the sub-family's structural diversity as a result of different strata of intergenetic and intragenetic convergence. As a contribution to the group's linguistic history, it is hoped that this will lead to further investigations into the development of Western Nilotic systems of noun morphology.

   A look at a rather uncomplicated sample of Western Nilotic noun forms illustrates the intragenetic diversity:

Table 2: Western Nilotic noun forms for 'intestines ~ liver'.

Language	Collective	Singulative/Plural	Group
Mayak	kɛ́n	kɛ́nàt̪	Burun
Mabaan	kyɛ́nnù	kyɛ́t̪gɔ̀	
Jumjum	kɛ́nnù	kɛ́t̪	
Dinka Padaŋ	cùɛ́ɲ	cùɛ́ɲ	Dinka-Nuer
Dinka Rek	cùɛ́ɲ	cùàɲ	
Nuer	cùɛ́ɲ	cùàɲ	
Luwo	cwíɲ	cwìɲe	Lwoo
Anywa	cwɪ̀ɲ	cwíɲɲí	

Päri	cwiɲ	cwiɲji
Shilluk	ú-cwíɲ	ú-cwìɲ
Belanda Bor	súɲ	kásúɲ
Thuri	cíɲ	cíɲè
Acoli	cwíɲ	cwíɲgé
Lango	cúɲ	
Dholuo	cụ́ɲ	cụnje

The root reconstructed for 'intestines, bowels' in Proto-Nilotic is *cin* (Dimmendaal 1988: 33), and has been retained in all branches of Western Nilotic. The Burun group clearly differs from the two other sub-groups of Western Nilotic. These languages exhibit an unvoiced palatal plosive /k/ or palatalized /ky/ instead of initial /c/. Mabaan and Jumjum employ a suffix -*u* or -*Nu* to construct the collective form, and suffix the morpheme complexes -*à-t̪* and -*t̪-gɔ̀* to construct singulatives or plurals. A detailed analysis of Mabaan number inflection is presented in Andersen (1998).

In Dinka-Nuer, number marking is indicated by tone and vowel changes. Observe the change from creaky voice vowels [ùέ][1] to breathy voice vowels [ṳὲ] in Dinka, and the change to a voiceless breathy vowel [a̤] in Nuer. In the Lwoo languages, number is marked by affixes rather than apophony. We observe the suffixes -*e, -ɲú, -ji, -je* and -*ge* as well as a prefix *ká*- which occurs exclusively in Belanda Bor. The *ú* prefix of Shilluk does not mark number, but is a derivational morpheme. All Dinka-Nuer and Lwoo forms in the "collective" column exhibit morphologically simple structures in Lwoo and [-breathy] vowels in Dinka-Nuer. In the "singulative/plural" column we find morphologically more complex forms.

The examples in table 2 also help to illustrate — besides comparability of morphological structures — that Western Nilotic nouns do not necessarily occur in a singular and plural form. The liver, like meat, for example, is perceived as a collective or mass and not a single item. The morphologically less salient form is grammatically collective. In some cases, e.g. in Belanda Bor, the morphologically unmarked form — *súɲ* — means '(a) liver' and the salient form — *kásúɲ* — means 'livers' (the same holds true for most Southern Lwoo languages). But Luwo for instance uses the unmarked form in the first column for something like 'liver as a mass', while the suffix-marked form in the second column has the meaning of 'quantities pieces of liver'. Here, the singulative / plural derives from

---

[1] Creaky voice will not be marked; all Dinka/Nuer vowels that are not breathy are necessarily creaky.

the collective. Collective here labels items that cannot be counted, for example liquids, dust, sand, meat, gruel etc. Things that naturally occur in masses or larger numbers, such as birds, locusts, hair, ribs, fingers etc. are also treated as collectives in Western Nilotic.

A singulative form in the sense of 'piece of liver' can be derived for example with the help of a particular suffix in many Lwoo languages. In some cases, however, such a form has the connotation of a plural, as in Mayak or Acoli, where it means 'pieces of liver' (but never 'livers'). The liver is regarded as the seat of the soul by many Nilotic peoples, and with this meaning, the word may also have a true plural that is not referring to a large number of singled-out items.

A singulative noun is typically a word that denotes an item that is singled out from a mass or group of similar items. Items that normally occur in pairs or larger numbers are semantically and grammatically plural or collective and morphologically not overtly marked. Verb concord, however, often is in the 3rd sg. when the subject noun is collective (as it is the case e.g. in Luwo). A modifying adjective or any other modifier is plural. Compare the following example from Anywa (Reh 1996: 133):

(1) *wàr* + */gV̄/   */wàrgV̄/*   */wàJJV̄/*   /wàɲɲ ̄/
     'shoes' + plural   →   reconstruction →   reconstruction →   'shoes of'
               modifier

To single out one object (e.g. 'one shoe, one ear, one piece of meat, a drop of liquid'), a singulative suffix is added. Singulatives and singulars differ in so far as the first is underlying plural. Singulatives are a rare phenomenon world-wide, but are characteristic of Nilotic as well as other Nilo-Saharan language families. Besides Nilo-Saharan, Arabic exhibits singulatives. Examples are:

(2) *šağar* 'wood, forest'   *šağara*   'tree'   *asğar*   'trees'
     fikr   'thought'   *fikra*   'idea'   *fikrayāt* 'thoughts'
     kalim 'speech'   *kalima*   'word'   *kalimāt*   'words'

The basic form consists of the three radicals (root consonants) plus a particular vocalisation pattern and denotes uncountable objects. The collective noun *šağar* morphosyntactically behaves as singular, i.e. verb agreement is in the 3rd sg. This parallels the behaviour of collectives in Western Nilotic. In Arabic, the noun cannot be modified by numerals, which differs from the Western Nilotic example (1).

The Arabic singulative is constructed with the feminine suffix *-a*. As in Nilotic, this form is grammatically and semantically singular. In Western Nilotic, a 'piece of liver or meat, bird, tooth' etc. behave morphosyntactically as singulars and take singular modifiers (c.f. Reh 1996: 132). The Arabic singulative form then can be transformed into a plural, e.g. with the feminine plural ending *-āt*.

On the Niger-Congo side of the contact area, in turn, singulatives do not occur. The Ubangian Banda-Ngbandi-Sere group exhibits remnants of noun classes, where the Mba languages are the only languages which still possess a fully functioning noun class system, and only use noun class suffixes (Boyd & Pasch 1988: 53). The Sere languages have not retained this system. Number is marked in the plural only, where a prefix appears. This prefix is not class- or gender-sensitive. Compare the following example:

(3)   'stone' (Behagel 1988: 129)
         dɪrɪ   pl. *ka-dɪrɪ*   (Bviri)   Sere group
         tɛ́mɛ́-le   pl. *tɛ́mɛ́-se*   (Ndunga-le)   Mba group

2. Patterns of Northern Lwoo noun morphology

The Lwoo languages form one of three coordinate branches of Western Nilotic according to the above classification model. Lwoo then divides into Northern and Southern Lwoo, where Southern Lwoo languages apparently are much more closely related to each other than Northern Lwoo. As shown by Dimmendaal (2001b: 97 ff.), certain morphological features of Southern Lwoo can be attributed to convergence with neighbouring Bantu languages. For Northern Lwoo, morphological convergence with various non-Lwoo languages is only briefly discussed in Ehret (2001) and Dimmendaal (2001b) as a possible explanation for the group's internal diversity.

Reh (1996) presents a detailed analysis of the nominal system of Anywa and systematizes the morphological elements involved in number marking. The grammatical number marking system of Anywa is bipartite, whereby nouns can either be singular or plural. Nouns ending in *-ɔ, -a,* or *-ʊ* are always singular, while nouns ending in *-ɛ* are always plural. Nouns ending in *-ɪ* or *-i* are either singular or plural. Prefixes never indicate number, but have derivative functions. The morphological number marking system in Anywa is tripartite. Anywa has singularized, pluralized and "opaque" nouns that are characterized by the absence of any number-marking morpheme; they consist of the nominal stem only. Reh (p. 96) distinguishes the following types of number-marking in Anywa:

Table 3: Anywa number marking.

grammatical:	singular	plural		
morphological:	singularized	opaque	pluralized	
type example				pattern
A	'body'		dèel	dèeddí	plural suffix
B	'eggs'	tɔ̀ŋɔ̄	tɔ̀ŋ		singulative suffix 1
C	'lover'	lùobò	lùob		singulative suffix 2
D	'paper'	wèelō		wɛ́ɛlí	replacement pattern 1
E	'fieldguard'	kùrì		kùyyè	replacement pattern 2

The singular suffixes in Anywa are -ɔ̀, -ì, ɔ̄, -ā, -ū. Non-segmental singular morphemes also occur, as example (D) in table 3 suggests. The vowel change from [-breathy] to [+breathy] observed in (D)[2] as well as in a large number of examples in Reh (p. 99 f.) are not necessarily due to regressive vowel assimilation (p. 100) and cannot be reconstructed as a result of suffix assimilation. Reh assumes that the observed vowel changes are the reflex of a third morpheme which, besides being a stem-forming and number suffix, has or had a yet unknown function. Another non-segmental morpheme appears e.g. in rɛ́nnhɔ́, pl. rìıdh 'fin', where the singularized form exhibits nasalization plus reduplication of the stem-final consonant. The vowel shortening apparently goes together with this morphophonological process. Reh suggests a morpheme -*VN*- as a possible cause for the observed changes.

The plural suffixes in Anywa are -*Yɛ̀, -ɛ̀, -Cī*, and -ì. Non-segmental formatives such as internal changes of the vowel (voice changing, shortening) or the consonant (deletion, reduplication, plosivization) are observed as well. Number marking in Anywa involves various strategies and techniques, whereby the different morphemes can be combined.

---

[2] Anywa vowels combine the phonological features [breathy voice] and [expanded pharynx], so that it is not necessary to mark both of these properties. The vowel qualities are therefore represented by the symbols for [+/- ATR].

The large variety of number marking devices of Anywa (and — according to Gilley 2000 — of Shilluk) is not found in the Southern Lwoo languages where plural marking is highly reduced and there are no productive patterns. While Gilley suggests a semantically based principle as a possible source of the manifold patterns of number marking, Reh (1996; Anywa) and Dimmendaal (2000; Surmic) assume that phonological features of the stem are in many cases, though not all, responsible for the evolution of the complex system such as found in Anywa. The basic principles of this system have not yet been fully worked out, but as the thorough analysis of other Western Nilotic languages advances, the regularities and common patterns of the languages will probably be better understood. One aim of this paper is to consider whether contact-induced reductions of the morphologically and morphophonologically rich system of many sub-branches of East Sudanic affect certain devices more than others, and to consider whether a general system or typological pattern is still mantained.

3. Modifications of the tripartite system

Before we take a look at the contact situation of the Belanda languages, it is necessary to understand the historical modifications to the number marking system which occur in Northern Lwoo of Bahr el-Ghazal. It will be shown in this section that a number of Lwoo languages are influenced by Western Nilotic Dinka (Luwo), Central Sudanic and Ubangi languages (Thuri), but there isn't any clear evidence that this has caused any change in the number marking systems of these languages.

Luwo ("Jur") is spoken west of Anywa in Bahr el-Ghazal. Speakers of Luwo claim to have always been bilingual in Dinka, a Western Nilotic language spoken to the north and east of Luwo. Other languages in contact with Luwo are Ndogo (Ubangi), Bongo (Central Sudanic) and Thuri (Western Nilotic).

Luwo has fewer number marking suffixes, when compared to Anywa.

(4)   Number marking in Luwo (Santandrea 1946)

		sg.	pl.
A	'chief'	ruoth	ruodhen
	'tongue'	lɛp	leben
	'head'	wic	wudhen
	'street'	yo	yedhen
	'leopard'	kwac	kwanyen

B   'fish'   reyo   rec
     'bone'   coo   cuu
C   'spear'   tɔŋ   tɔ́ŋ

Santandrea (1946) does not give any rules for plural formation in Luwo, but remarks that most of the recorded plurals are irregular (p. 7). Example (4) presents these forms in an order which makes it apparent that the morphological number marking system of Luwo is basically as in Anywa, but it seems to lack the large variety of morphemes. Plurals of group (A) are formed with a suffix *-en* that causes various changes of the final stem consonant. Group (B) singulatives are formed with a singulative suffix *-o*; the plural forms are morphologically unmarked. Group (C) simply employs tonal alternation to mark number.

According to recent research conducted by the author, the Luwo number marking system is tripartite. The recorded nouns are either marked as singulatives and have a bare root for collectives, or they are morphologically marked as plurals with a bare root for singulars; a third category marks both, singulars and plurals. When number is morphologically marked, this is always done with suffixes (plus vowel and/or tone alternations): prefixes never indicate number in Luwo.

Singulatives are constructed with a tone-copying suffix *-ɔ*, plurals are marked with a suffix *-e* (which copies the stem tone as well) or *-Ce* plus a possible morpheme *-V-*.[3] The two possible singular forms for 'hippopotamus' suggest that the system has begun to disintegrate, as affixes lose their semantic and functional load.

(5)   Tripartite number marking system

	sg.	pl.	
'meat'	rìŋɔ̀	rìŋ	singulative
'cheek'	pínɔ́	pìn	
'tooth'	lɛ́ɛyɔ́	làk	
'body'	kwɔm	kɔ̀me	plural
'hippopotamus'	páar	párré	
'giraffe'	wìir	wúrè	

---

[3] The suffix *-en* recorded by Santandrea is missing and could have been shortened to *-e*. As dialectal differences have not been explored, however, the possibility that two different dialects have been recorded cannot be excluded.

'gazelle'	tyɛ́dɔ́	tɛ́ɛnɛ̀	replacive
'hippopotamus'	páadó	párré	
'friend'	gɔ̀mɔ̀	gɔ̀mɛ́	
'cattle egret'	keen	kéen	

The inflectional affixes which are present in Northern Lwoo are not used at all in one of the languages in contact with Luwo, namely Dinka (Jiẹẹŋ), and are used to a much lesser extent in adjacent Nuer (Naath). In Dinka, the basic devices of plural formation are, according to Nebel (1948):

a) vowel lengthening
b) vowel shortening
c) vowel alternation and vowel changes
d) mutation of the stem-final consonant
e) suppletion

Data collected by the author largely support these observations. Luwo is characterized by convergence with Dinka in numerous ways. The many lexical loans from Dinka which were identified in the Luwo vocabulary, as well as similarities in the vowel systems of both languages, support our assumption that the gradual loss of number-marking suffixes in Luwo also results from intensive contact with Dinka, which itself exhibits a number marking system that does not use affixes.

But how else can the tripartite system of Lwoo be modified, and which other contact languages are involved? The Luwo system of number inflection strongly resembles that of Anywa, Shilluk and Päri, but the variety of suffixes is reduced due to convergence with Dinka. Further west and south of Luwo, intensive contact with Niger-Congo plays a significant part in the development of further modified number inflection systems of certain Lwoo languages.

The Northern Lwoo language Thuri and the Southern Lwoo language Acoli are examples of reduction of tripartite number marking patterns. Thuri is spoken by some 6000 individuals in small pockets in western Bahr el-Ghazal, around the towns of Deim Zubeir and Bora. The Thuri are surrounded by Ubangi-speaking groups — Zande, Bviri, Sere — and claim to be multilingual speakers of their own and the neighbouring languages. Convergence with Niger-Congo languages led to a gradual loss of the singulative noun forms, which are one category in Western Nilotic of the tripartite number marking system. Singulatives, however, do not exist in Niger-Congo. Thus, Thuri has lost its "classic" singulatives. It has a very few innovative singulatives which are constructed with a grammaticalized

prefix *ɲì-* 'child; daughter' instead of the old suffix *-O* (see example (6c)), and it employs a wide range of singular and plural suffixes in the two remaining grammatical patterns. Because singulatives have been defined as morphologically salient forms that are derived from morphologically unmarked collective forms (cf. section 1), the non-plural suffixes in the replacement-pattern forms have to be interpreted as singular markers and not as an additional category of singulatives.

The vowel changes observed in (6a) and (6b) are due to vowel harmony. Thuri has two sets of [+/- advanced tongue root] vowels that are mutually exclusive within words.

(6)   Simplification in Thuri
        a.   Plural suffixes -ɛn/-en, -ɛ/-e, -ɪ/-i:
               'male'   cuów   cwɔ̀wɛn
               'name'   ɲíŋ   ɲíŋén
               'throat'   lúɔr   lúorì

        b.   Singular suffix -a, -o (replacement pattern):
               'heart'   àdúulá   àdúulén
               'thing'   gùbɔ́   gùbɛ́n

        c.   Singulatives (rare; 11 out of 230 lexical entries):
               'birds'   wêɲ   ɲìwɛɲɔ́

Even though singulatives in Thuri are not constructed with the Western Nilotic suffix but instead use a new prefix, they are still a valid category within the number inflection system. This is not necessarily the case in southern Lwoo.

Acoli is spoken in Equatoria Province of Southern Sudan and the adjacent parts of Uganda. Neighbouring groups with whom Acoli speakers seem to have been in close contact for a long time are speakers of Eastern Nilotic, Surmic, and Bantu, as well as others. Acoli — as well as most other Southern Lwoo languages — has almost entirely lost the morphologically rich and grammatically complex number marking system; most nouns have a morphologically unmarked singular and a periphrastic plural form with *lwàk* 'crowd; many items of'. Morphological plural formation has been given up to a large extent. A few morphologically number-marked forms have been recorded, and it seems that all of them fit into the replacement pattern. Singulars are mostly marked with an *-O* suffix as e.g. in Luwo and Thuri.

(7)   Simplification in Acoli

		sg.	pl.
productive periphrastic plural:	'jackal'	tɔ́ɔ́	lwàk tɔ́ɔ́
old replacement pattern:	'viper'	céró	cèrì

From this brief comparison we may conclude that besides morphological
changes, the tripartite pattern of number marking was gradually simplified in
Lwoo. Anywa with its complex structures of singular-, singulative- and plural-
marking may be taken as a typical system, as it corresponds to tripartite systems
in numerous groups of Eastern Sudanic or even Nilo-Saharan. Dimmendaal
(2000) suggests that tripartite number-marking systems of considerable morpho-
logical and morphophonological complexity are a charactistic feature of the
whole phylum and should be reconstructable for Nilotic as well as for many other
sub-branches within Nilo-Saharan. Examples from the Surmic language Baale are
taken from Dimmendaal (p. 220 ff.):

(8)   Tripartite number marking in Baale

	sg.	pl.		
A	mál	mal-ɲá	'oil'	plural
B	kaalɛ́-jí	kaalɛ́	'bird'	singulative
C	allá-n	alla-i(t̪)	'ruler, leader'	replacement

Intra- and intergenetic language contact led to intermediate stages of sim-
plification of the system (Luwo, Thuri) without necessarily involving fundamen-
tal typological changes. The diversity of affixes found in Anywa is lost in Luwo,
and Thuri lacks the singulative suffix found in most other Northern Lwoo lan-
guages, as well as in Burun and Nuer. Acoli, belonging to a different linguistic
area, typologically changes from the proto-Lwoo system as it gives up the singu-
lative category as such, as well as morphological plural formation for the greater
part of its vocabulary.

4. Structural borrowing in Belanda Bor

We have seen that the prototypical tripartite system of Northern Lwoo noun mor-
phology is basically kept in languages of the Western Bahr el-Ghazal. Although
different stages of reduction can be observed, tripartite number marking has not
been given up in the sample languages Luwo and Thuri, and a variety of suffixes

are employed to mark the different number categories. As an example for Southern Lwoo, Acoli, which belongs to a different subgroup as well as to a different contact zone, exhibits fundamental typological changes as it loses the old tripartite number marking system and uses periphrastic plurals and some old, unproductive replacement patterns.

Being in close contact with the Ubangian language Bviri, Belanda Bor, a Northern Lwoo language, has undergone more radical changes than Acoli, Thuri or Luwo. Besides morphological changes, several phonological and syntactic convergences with Bviri are observed which, together with a hybrid lexicon, characterize Belanda Bor as a contact language that has lost many of its Nilotic features. While intragenetic diffusion led to an impoverished inventory of number marking morphemes in Luwo and intergenetic contact results in the reduction of number marking strategies in Thuri and Acoli, Belanda Bor has basically lost the rich number marking system of Western Nilotic. As we shall see, tripartite number marking patterns have, however, been retained and are expressed by completely different devices.

Belanda Bor has been influenced in particular by Bviri, a Sere language (Ubangi). Bviri also has a highly reduced number-marking system using morphologically marked plurals, which would be the basic pattern of Ubangi and other families within Niger-Congo. Borrowing of number-marking devices as well as lexical items point to long-lasting contact with Northern Lwoo; there are, however, traces of diffusion that suggest that more languages of different genetic stocks have participated in this contact.

4.1 Morphologically marked plurals. Number inflection in Bor at first glance only seems to involve formation of plurals, as the following examples help to illustrate. The singular forms are morphologically unmarked, while the plurals exhibit a prefix *ká-* not found elsewhere in Northern Lwoo:

(9)   Prefixation in Belanda Bor

'skin'	deel	ká-deel	
'chest'	kóor	ká-kóor	
'woman'	dàkɔ́	ká-mon	< old suppletive plural in Lwoo: manh
'bone'	sògó	ká-sògó	
'voice'	yìit	ká-yìit	
'place'	fíŋ	ká-fíŋ	
'gazelle'	ródà	ká-ródà	
'fish'	réeo	ká-réeo	

The prefix appears with most plurals of nouns and never involves any tonal or phonological changes of the nominal stem (except the retention of an old suppletive plural for 'woman'). The suffixes normally employed in Lwoo number-marking have been lost or are no longer grammatically productive. The prefixing technique resembles that of neighbouring Niger-Congo groups, and most likely is due to convergence with Ubangi.

Bviri marks its plurals in the same way. Again, plurals are constructed with a prefix *ka-* while singulars are morphologically unmarked. *Ka-*, however, is not a grammatical element that can be reconstructed as a plural class marker in Ubangi. It is very likely that this morpheme is a feature of the *N/K* area classically defined by Bryan (1968). The other Sere languages do not use *ka-* as a plural marker, but employ *ndá-* as a uniform prefix for all nominal plurals, as can be seen in example (10a) below:

(10) a. Plural construction in Bviri (Santandrea 1961: 35 f.)

'man'	ɗáko	ka-ɗáko
'woman'	ni	ka-ni
'calabash'	féngo	ka-féngo
'knife'	mvàa	ka-mvàa
'name'	lè	ka-lè
'rat'	ju	ka-ju
'scorpion'	sènè	ka-sènè

  b. Plural construction in the remaining Sere group

Ndogo — Bai

'man'	ɗako	ndá-ɗako
'woman'	ni	ndá-ni

Sere — Tagbu

'man'	náko	ndá-náko
'woman'	ni	ndá-ni

It seems, from looking at the greater part of the vocabulary, that Bor and Bviri use morphologically marked plurals that are characterized by *ka-*. This grammatical element is present in a number of languages which are part of the

N/K linguistic area, namely in Didinga-Murle, Tama, Daju, Temein, Kadugli-Krongo and Nilotic languages (cf. Bryan 1968).

4.2 Replacement pattern. Bor also has a large number of nouns that employ the replacement pattern for number marking. These are mostly nouns for persons, and — again — the formatives are entirely prefixes and thus differ typologically from the formatives of the other Lwoo languages. In example (11), the singulars of nouns denoting a person are constructed with a prefix *jì-* or *jí-* that appears in other Lwoo languages as well. According to Reh (1985: 56, cit. Dimmendaal 2000: 247) this prefix is derived from a common Western Nilotic root **jal-* 'traveller'. The plurals substitute the *ji-* prefix with *jò-*. The former compound noun thus has been reanalyzed as a prefixed replacive morpheme 'person' plus a noun stem functioning as a specifier.

(11) Replacement pattern in Bor

	sg.	pl.
'liar'	jì-tòt	jò-tòt
'owner'	jí-fâsí	jò-fâsí
'friend'	jí-wòdò	jò-wòdò

The replacement pattern is also employed as a number marking principle in the following example (12a). Here, the nominal derivative prefix *di-* 'child of' (Proto Nilo-Saharan **dì* 'young'; Ehret 2001: 299) alternates with the areally distributed plural prefix *ká-*. In other Lwoo languages, *di-* does not appear within the replacement pattern; compare Anywa in example (12b, cf. Reh 1996: 158).

(12) a. Bor   sg.   pl.
             'man'   dì-só   ká-sò

      b. Anywa   sg.   pl.
             'man'   dì-cúↄↄ   cùↄw

4.3 Singulatives. The third pattern prototypical of the Western Nilotic number marking system is the construction of singulatives. Again, Belanda Bor innovatively employs prefixes to construct this ancient Western Nilotic grammatical category. An item singled out of a mass of similar items is marked by a prefix *ɲí-* which goes back to a Western Nilotic root 'daughter of' (Reh 1996: 152). The

collective is the morphologically unmarked form, from which the singulative is derived. The singulative in example (13) has the meaning of 'a drop of water'.

(13)   Singulative in Bor

	singulative	collective
'water'	ɲí-fìì	fìì

Interestingly, both the underlying collective as well as the singulative noun have plurals. In both cases the additional general plural prefix *ká-* is employed:

(14)   Innovative plural patterns in Bor

'quantities of water'	*ká-fìì*
'drops of water'	*ká-ɲí-fìì*

4.4 Innovations in Bviri. The fact that the three categories of the tripartite system in Bor have been retained, even though they use innovative strategies, shows that language contact does not necessarily include typological changes as we observed in Acoli. But which are the contact phenomena on the Ubangi (Bviri) side?

It seems that Bviri is incipiently developing into a singulative-marking language. As singulatives are not a historically original category within Niger-Congo the presence of the grammatical technique of constructing singulatives is interpreted as a result of structural borrowing from Nilotic. In the lexicon of Bviri, a number of nouns denoting items singled out from a mass of similar items are characterized by the prefix *vo-*. Examples are:

(15)   Singulatives in Bviri (Santandrea 1961)

	singulative	collective/root	
'bean'	vo-kùlù	°kùlù[4]	
'bee'	vo-li	°li	
'groundnut'	vo-kpolo	°kpolo	
'sand'	vo-kuyo	kuyo	(< Belanda Bor *kúyó*)
'grain, seed'	vo-ŋa	°ŋa	
'sesame'	vo-tú	°tu	
'star'	vo-sírí	siri	

[4] Forms that are marked with ° are the roots given by Santandrea. It is not clear to the author whether they take a prefix in the collective form.

Santandrea (p. 34) remarks that the prefix *vo-* is derived from the noun 'seed of ...'; *vo-li* 'bee' literally means 'seed of honey'. Elsewhere in the Sere group, a root *nji-* is found for 'seed'. For 'edible grain', Ehret (2001) reconstructs a Proto-Nilo-Saharan root **waːy* or **'waːy*. Whether *vo-* and **(')waːy* are etymologically related is not yet clearly understood. It is, however, certain that Bviri borrowed the grammatical feature from Nilotic.

Other productive categories within the nominal system of Bviri are diminutives marked by the prefixes *wi-* (for persons) and *ju-* 'daughter' (for things; ← Western Nilotic *jo-* ?), and agent nouns that are constructed with *mve-* 'owner of' (< Western Nilotic *wun* ~ *won* ~ *wi* ?). It is likely that Bviri here employs morphemes borrowed from neighbouring Nilotic languages, even though the respective grammatical categories have not necessarily been borrowed as well.

Bviri singulative constructions are the reinterpretation of the first component of a compound noun as a grammatical affix — a strategy that also occurs among noun class languages elsewhere (cf. Storch (forthcoming) for a similar case in Jukun). Unlike the nominal derivations with *wi-*, *ju-* and *mve-*, these forms are functionally different from the nominal categories found elsewhere in Niger-Congo. Heavy reduction of a formerly rich nominal morphology can be compensated for in different ways, e.g. by convergence with Nilotic as well as rebuilding of genetically inherited grammatical categories. This leads to the assumption that contact-induced changes in the nominal system of Bviri occur in four strata:

1. Loss of the prototypical noun class system;
2. Convergence to areally distributed linguistic patterns (*N/K* linguistic area);
3. Structural borrowing of the Western Nilotic singulative category;
4. (?) Borrowing of Nilotic derivational prefixes.

4.5 Other convergence phenomena. In Belanda Bor, we observe heavy structural borrowing in the nominal system insofar as the language has changed to the prefixing Ubangi type and has completely given up the suffixation of number-marking morphemes. However the prototypical tripartite number marking system is retained and seems to have been restored several times by employing morphemes of different genetic origins. We distinguish:

1. Plural (*ká-*): an areally distributed morpheme; possibly borrowed from Bviri;
2. Replacement pattern (*jì-/jò-*): a Western Nilotic root with derivative functions, reanalyzed as purely number marking morphemes;
3. Singulative (*ɲí-*): a Western Nilotic root, reanalyzed as a number marking morpheme.

Diffusion affected not just the nominal morphology of the languages; phonological features, patterns of verbal inflection, as well as syntactic patterns also diffused. Again, a multilateral direction of diffusion is observed; both Bor and Bviri developed morphological patterns (prefixation in Bor) and grammatical categories (singulative in Bviri) different from those of their respective close relatives. This is best illustrated by some of the commonest sound shifts in both languages:

(16)   a. Affrication *(p → pf → f)*

gloss	Western Nilotic	/*p/	→	Belanda Bor /f/
'ground'	piɲ	fíɲ		
'water'	pi-V	fî		
'shadow'	tɪpo	tùfó		

gloss	Sere group	/*p/	→	Bviri /f/
'moon'	p(f)ì	fî		

b. Spirantization *(c → s)*

gloss	Western Nilotic	/*c/	→	Belanda Bor /s/
'milk'	cak	sak		
'bitter'	kɛc	kês		
'bone'	cɔGɔ	sògó		

gloss	Sere group	/*c/	→	Bviri /s/
'durra'	cu(u)	su		

Whether the contact-induced changes described here are the results of a long-lasting coexistence of two ethnic groups, or are the consequence of recent and fast progressing pidginization processes cannot be answered satisfactorily at the present moment. Substantial data is lacking on most aspects of the deriva-

tional morphology, the verbal system, syntactic patterns and discourse in both languages.

No interference has taken place in Bor in terms of the categories of number marking. Transfer of vocabulary, nominal morphology and phonological material from Bviri into Bor did not include or lead to the transfer of the nominal system, i.e. of Ubangi-Sere uniform plural marking. Whereas Acoli has only a few plurals for persons and hardly preserves any traces of the prototypical tripartite number marking system, Belanda Bor perfectly preserves this system even though it employs innovative strategies.

Bviri has not borrowed the Nilotic number suffixes, but transfer of derivational prefixes and the singulative number category seems to have taken place. Both languages converge in different domains of their number inflection system and noun morphology. The phonological findings fit well into this pattern: steady convergence makes Bor and Bviri phonologies more and more similar, while languages closely related to them do not converge or even exhibit a tendency towards borrowing any features from the Belanda amalgam.

5. Historical perspectives

The linguistic situation most certainly reflects the nature of contact in the area. Oral accounts of the Luwo and Shilluk indicate that there have been several migrations which led to the present geographical distribution of Lwoo-speaking peoples. Luwo tradition claims that after their ancestors had migrated from the south, three brothers — *ɲùkáŋ*, *dìmò* and *àcóol* — quarrelled and separated. As the group split into three, everybody went his own way, and while *ɲùkáŋ* became the forefather of the Shilluk and *àcóol* became the ancestor of the Acoli, *dìmò* became the ancestor of the Luwo and Thuri. The three groups did not share a close relationship anymore and began to live with people of different origin (author's field data). According to oral traditions interpreted by Tucker (1931: 50), the Luwo very successfully settled around Aweil where they assimilated other ethnic groups. Slave raids later made a large group of Luwo break away and migrate southwards, where they settled west of the Dinka country. The Dinka called them *jùur* (sg. *júr*) 'strangers' and refused to let them settle among them or to intermarry with them. The Jur-Luwo were taken as slaves and were generally regarded as inferior since they had no cattle. The Jur-Luwo groups eventually came under the rule of Dinka chiefs and partly assimilated to the Dinka.

Tucker further states:

> The Jur are excellent iron-workers, and still supply the Dinka with spears, where
> the two races meet. Although still regarded as the inferior race, they intermarry to
> a certain extent with the Dinka, the woman taking the nationality of her husband;
> there is also a fair amount of assimilation of Dinka customs (e.g., the tribal
> marking of boys' heads). They answer readily to the name of 'Jur' (the name no
> longer carrying with it its former insult), but among themselves they are still the
> *Jo Luo*. [p. 50]

The Thuri ("Shatt") split from the Luwo — possibly due to slave-raids —
and settled west of them, where they basically lived from hunting and farming,
"the presence of 'fly' in their country preventing their having cattle" (Tucker
1931: 50). Other groups who split off from the Luwo are the Manangeer who
largely became assimilated by the Dinka and now speak Dinka (author's field
data), and the Demo or Dembo who apparently still speak Luwo.

The Bor also split off from the main body of the Luwo, according to their
own traditions. Evans-Pritchard (1931) reconstructs a history of several waves of
southward migrations. The last groups to reach the Bor area broke away from the
Luwo only during the 19th century. Earlier waves of migration into the area, how-
ever, seem to have taken place around the time of the Shilluk migrations of the
16th century under chief *ɲikáŋ*. Evans-Pritchard remarks on the Belanda amalgam:

> Between the Pongo and the Iba there are settlements of people who have long
> been known as Belanda. This name comprises two distinct races and cultures,
> Shilluk [*sic*] and Basiri [*sic*], but through long residence in the same area there
> has been considerable cultural and probably racial admixture between them. Both
> have been repeatedly raided by the Azande [during the Azande invasions since
> the late 18th century, A.S.] and have been partially absorbed by Zande political
> organization. [...] Our knowledge of the Bor is negligible, but one may hazard a
> conjecture that very little besides language is left of their Nilotic culture. [...] The
> other element of the Belanda amalgam are the Mbegumba. [...] They suffered se-
> vere shocks from the Zande invasion at the beginning of the 19th century, and this
> invasion, aided by Arab slave-raiding activities, caused dispersion. The main
> body of Basiri [i.e. the group from which the Mbegumba have split off, A.S.]
> submitted to Zande rule and remained a cohesive group. [...] Others migrated
> north-eastwards and settled in the hills between Tembura post and the Bo river.
> Here they were again disturbed by Azande and Arabs and a secondary dispersion
> took place, resulting in the formation of pockets widely separated from each
> other. [p. 42]

This account of oral history helps to illustrate the nature of "lingualism" in
the research area. The Luwo — in spite of the assimilation of other groups during

their early migrations — have remained a stable and comparatively large group and only a few generations ago came into close contact with the Dinka. This led to a high degree of bilingualism in Luwo and Dinka which also resulted in the reduction of the rich inflectional morphology which Northern Lwoo languages otherwise have. However the language retained its suffixing number-marking system. The Thuri have become a very small group of migrant hunters and farmers who have been exposed to numerous groups speaking genetically unrelated, typologically different languages. As a result of contact with prestige languages such as Ndogo, and because of the small number of Thuri speakers who must have been bi- or trilingual, Thuri changed considerably, resulting in a reduced but still tripartite number-marking system.

The Belanda Bor in turn were cut off from the main Luwo body so completely in the middle of the 19th century, that their social system as well as their cultural heritage seems to have rapidly vanished when the group was dominated by Ubangi-speaking peoples. It is intriguing that the language seems to have been the only Nilotic feature of the people's cultural and social heritage to have been preserved. Its special functions in the religious life of the people might have prevented it from being given up in favour of Bviri or Sere. The possibly symbiotic relationship with the Bviri lasted at least two centuries, and the enormous pressure from outside (Zande invasions, slave raids) could have led to the amalgamation of the groups. What role language played in the construction of an ethnic identity remains unclear.

Unlike Luwo-speaking groups, where bilingualism could have been sporadic for a long time and involved genetically related languages, the Belanda have developed into a strictly bilingual society where it was obligatory to speak at least one additional, genetically unrelated language. An important factor explaining the heavy structural and lexical borrowing in Belanda Bor seems to have been the low prestige this language has in the area ("The Jur despised by the Dinka and despising the Bor" (Tucker 1931: 59)). Being affiliated to a culturally prestigious, powerful group such as the Zande and Sere could have been a crucial strategy for survival.

6. Aspects of change in Western Nilotic number marking

The diversity in number marking morphology and morphophonology within Western Nilotic has not yet allowed for reconstruction of the proto-system. Poor documentation of many Western Nilotic languages as well as inappropriate descriptive techniques in many of the earlier, pioneering studies of this family have

led to the common impression that this sub-family has undergone changes radical enough to completely erode the formatives and patterns of the proto-system. Once language contact situations such as between Bviri and Belanda Bor are better understood, the elements that disrupt regular historical correspondences can be defined and controlled for purposes of reconstruction.

Patterns of tripartite number inflection are found almost everywhere in Western Nilotic — fully developed in Anywa and rudimentary in Southern Lwoo. It is not easy to decide whether simple memorizing of the "irregular" plurals in Western Nilotic languages would have conserved the system. Dimmendaal (2000) shows that the tripartite number marking system is present in almost all branches of Nilo-Saharan and should be consideration to be genetically inherited by the languages within this phylum. Our own findings from Belanda Bor and the Belanda Bviri data suggest that the prototypical system could have spread dynamically in areas of intensive language contact.

If the tripartite system is assumed to have originated in a Nilo-Saharan or even Western Nilotic proto-language, reconstruction should be possible. Gilley (2000) is able to show that Shilluk singulars and plurals are constructed according to a system of phonological and semantical rules. Some of the singular-plural patterns seem to go with particular semantic concepts, an observation also made by Andersen (1998) for Mabaan, where a certain pattern of plurals occurs with nouns denoting longish objects.

Dimmendaal (2000) also suggests that phonological patterns of the noun stem are responsible for the choice of a particular number marking morpheme. This seems particularly to hold true for Surmic and Eastern Nilotic (pp. 220 ff.; 233 ff.). This latter approach is likely to produce interesting results in the Western Nilotic Burun languages which have a very rich inflectional morphology, but as far as Dinka, Nuer and probably a number of Lwoo languages are concerned, the extremely complex phonological systems of these languages do not easily allow for a (re-)construction of the phonological rules of number marking strategies.

Besides exploring the semantic and phonological dimension of Western Nilotic number marking, the history of language contact and the understanding of linguistic areas in the Western Nilotic zone are of crucial importance. Language contact as one possible reason for modifications of the proto-system has not yet been studied intensively. Our understanding of the nature of modifications in the proto-system of the respective languages could be deepened if language contact in the highly heterogeneous area of Western Nilotic were better described and strata of intergenetically borrowed features were identifiable. The semantic patterns governing plural classes as well as the set of morphophonological rules could

then be compared to the strategies of number marking in the contact languages in order to understand the dynamics and development of the system.

For the Belanda case, further research on bilingualism is urgently needed. During the last thirty years much of Bahr el-Ghazal has been devastated by war, and according to Belanda Bor speakers interviewed in Khartoum, most of the Belanda have been dispersed or have fled from the area. In Haj Yusif quarter of Khartoum, where displaced Southern Sudanese settle, Belanda Bor and Belanda Bviri live in different areas and do not speak each other's language any more. Their children still grow up bilingually, now speaking Bor or Bviri respectively and a pidginized Arabic. It is likely that Belanda Bor and Bviri bilingualism in Bahr el-Ghazal will come and the villages will become uninhabitable due to the ongoing civil war. It is only after more research on these fast disappearing languages and linguistic areas has been conducted, that we will come to a better understanding of the factors that determine the modification of noun morphology in Western Nilotic.

REFERENCES

Andersen, Torben. 1987. "The phonemic system of Agar Dinka". *Journal of African Languages and Linguistics* 9: 1-27.

Andersen, Torben. 1988a. "Consonant alternation in the verbal system of Päri" *Afrika und Übersee* 71: 63-113.

Andersen, Torben. 1988b. "Downstep in Päri: The tone system of Western Nilotic language". *Studies in African Linguistics* 19: 261-315.

Andersen, Torben. 1988c. "Ergativity in Päri, a Nilotic OVS language". *Lingua* 75: 289-324.

Andersen, Torben. 1989. "The Päri vowel system with an internal reconsruction of its historical development". *Journal of African Languages and Linguistics* 11: 1-20.

Andersen, Torben. 1992. "Aspects of Mabaan tonology". *Journal of African Languages and Linguistics* 13: 183-204.

Andersen, Torben. 1995. "Morphological stratification in Dinka: On the alternations of voice quality, vowel length and tone in the morphology of transitive verbal roots in a monosyllabic language". *Studies in African Linguistics* 23: 1-63.

Andersen, Torben. 1998. "Layers of number inflection in Mabaan (Western Nilotic)". Handout. 7th Nilo-Saharan Conference. Vienna.

Andersen, Torben. 1999a. "Layers of number inflection in Mabaan". Ms. Nilo-Saharan Conference. Vienna.

Andersen, Torben. 1999b. "Consonant alternation and verbal morphology in Mayak (Northern Burun)". *Afrika und Übersee* 82: 65-97.

Andersen, Torben. 1999c. "Vowel harmony and vowel alternation in Mayak (Western Nilotic)". *Studies in African Linguistics* 28: 1-29.

Andersen, Torben. 1999d. "Vowel quality alternation in Mabaan and its Western Nilotic history". *Journal of African Languages and Linguistics* 20: 97-120.

Andersen, Torben. 2001. "Number Inflection in Mayak (Northern Burun)". *"Mehr als nur Worte..." Afrikanistische Beiträge zum 65. Geburtstag von Franz Rottland*, ed. by Rainer Vossen, Angelika Mietzner and Antje Meissner. Cologne: Koeppe. Pp. 29-43.

Behagel, A. 1988. "Lexique". *Lexique comparatif des langues oubanguiennes*, ed. by Yves Monino. Paris: Geuthner Pp. 98-146.

Boyd, Raymond. 1989. "Adamawa-Ubangi". *The Niger-Congo Languages*, ed. by John Bendor-Samuel. Lanham. New York: University Press of America. Pp. 178-215.

Boyd, Raymond and Helma Pasch. 1988. "Le groupe sere-ngbaka-mba". *Lexique comparatif des langues oubanguiennes*, ed. by Yves Monino. Paris: Geuthner. Pp. 50-58.

Bryan, Margaret. 1968. "The *N/*K languages of Africa". *Journal of African Languages* 7.3: 169-217.

Buth, Randall. 1981a. "Ergative word order — Luwo is OVS". *Occasional Papers in the Study of Sudanese Languages* 1: 74-90.

Buth, Randall. 1981b. "The twenty vowels of Dhe Luwo (Jur Luo, Sudan)". *Nilo-Saharan*, ed. by Thilo Schadeberg and Lionell Bender. Dordrecht: Foris. Pp. 119-132.

Dimmendaal, Gerrit. 1988. "The lexical reconstruction of Proto-Nilotic: A first Reconnaissance". *Afrikanistische Arbeitspapiere* 16: 5-67.

Dimmendaal, Gerrit. 2000. "Number marking and noun categorization in Nilo-Saharan languages". *Anthropological Linguistics* 42.2: 214-261.

Dimmendaal, Gerrit. 2001a. "Areal diffusion versus genetic inheritance: An African perspective". *Areal Diffusion and Genetic Inheritance*, ed. by A. Y. Aikhenvald and R.M.W. Dixon. Oxford: OUP. Pp. 358-392.

Dimmendaal, Gerrit. 2001b. "Language shift and morphological convergence in the Nilotic area". Cologne: Koeppe. *SUGIA* 16/17: 83-124.

Ehret, Christopher. 2001. *A Historical-Comparative Reconstruction of Nilo-Saharan.* Cologne: Koeppe.

Evans-Pritchard, Edward. 1931. "The Mberidi (Shilluk group) and Mbegumba (Basiri group) of the Bahr-el-Ghazal". *Sudan Notes and Records* 14: 15-48.

Gilley, Leoma. 1991. "Underlying representations in Shilluk: Is one enough?". *Proceedings of the Fourth Nilo-Saharan Conference, Bayreuth, Aug. 30. - Sep. 2., 1989*, ed. by Lionel Bender. Hamburg: Buske. Pp. 165-174.

Gilley, Leoma. 1992. *An Autosegmental Approach to Shilluk Phonology.* Dallas: SIL.

Gilley, Leoma. 2000a. "Singulars and plurals in Shilluk". *Occasional Papers in the Study of Sudanese Languages* 8: 1-21.

Gilley, Leoma. 2000b. "Some aspects of stress and tone in Shilluk". Unpubl. ms., SIL Khartoum.

Jungraithmayr, Herrmann and Rudolf Leger. 1993. "The Benue-Gongola-Chad Basin — Zone of ethnic and linguistic compression". *Berichte des Sonderforschungsbereichs 268*, Vol. 2, ed. by Guenter Nagel. Frankfurt / Main: University of Frankfurt. Pp. 161-172.

Knappert, Jan and Joseph Ukoko. 1964. *Essai de dictionnaire dho alur*. Ghent: Rijksuniversiteit te Gent.

Kohnen, B. Frater. 1933. *Grammar of Shilluk*. Verona: Missioni Africane.

Leslau, Wolf. 1945. "The influence of Cushitic on the Semitic languages of Ethiopia". A problem of substratum. *Word* 1: 59-82.

Nebel, Arturo. 1948. *Dinka Grammar (Rek-Malual Dialect) with Texts and Vocabulary*. Verona: Missioni Africane.

Noonan, Michael. 1992. *A Grammar of Lango*. Berlin: De Gruyter.

Reh, Mechthild. 1996. *Anywa Language: Description and Internal Reconstruction*. Cologne: Koeppe.

Reh, Mechthild. 1999. *Anywa-English and English-Anywa Dictionary*. Cologne: Koeppe.

Rottland, Franz. 1981. "Die nilotischen Sprachen". *Die Sprachen Afrikas*, ed. by Bernd Heine, Thilo Schadeberg and Ekkehard Wolff. Hamburg: Buske. Pp. 267-277.

Santandrea, Stefano. 1931. "The Belanda, Ndogo, Bai and Sere in the Bahr-el-Ghazal". *Sudan Notes and Records* 14: 161-179.

Santandrea, Stefano. 1946. *Grammatichetta Giur*. Verona: Missioni Africane.

Santandrea, Stefano. 1961. *Comparative Outline-Grammar of Ndogo — Sere — Tagbu — Bai — Bviri*. Bologna: Nigrizia.

Simeoni, Antonio. 1978. *Päri: A Luo Language of Southern Sudan*. Bologna: Nigrizia.

Storch, Anne. 2003. "Layers of Language Contact in Jukun". *Dynamics of Language Systems in the West African Sahel*, ed. by Petr Zima, Jan Jenik and Vladimir Tax. Prague: SOFIS. Pp. 176-196.

Thomason, Sally. 2001. *Language Contact. An Introduction*. Edinburgh: Edinburgh University Press.

Tucker, Archibald N. 1931. "The tribal confusion around Wau". *Sudan Notes and Records* 14: 49-60.

Tucker, Archibald N. 1994. *A Grammar of Kenya Luo (Dholuo)*. 2 Vols. Cologne: Koeppe.

Westermann, Dietrich. 1927. *Die westlichen Sudansprachen und ihre Beziehungen zum Bantu*. Berlin: De Gruyter.

Westermann, Dietrich. (n.d.). *A Short Grammar of the Shilluk Language*. Philadelphia - Berlin: Vohsen.

Williamson, Kay. 1985. "How to become a Kwa language". *Linguistics and Philosophy. Essays in Honour of Rulon S. Wells*, ed. by Adam Makkai and Alan Melby. Amsterdam & Philadelphia: John Benjamins. Pp. 427-443.

Institut für Afrikanische Sprachwissenschaften
Johann Wolfgang Goethe-University
Dantestr. 4-6
60054 Frankfurt
Germany
storch@em.uni-frankfurt.de

Review Article: The Role of Perception in Loanword Phonology.
A review of *Les emprunts linguistiques d'origine européenne en Fon* by Flavien Gbéto, Köln: Rüdiger Köppe Verlag, 2000.[*]

Michael Kenstowicz
MIT

1. Introduction

At least three factors have motivated the study of loanword phonology. First, loanwords have been used to test the productivity of phonological rules and constraints. In some cases loans provide crucial evidence to decide the analysis of data that otherwise remain inconclusive from the standpoint of the native L_1 system (Hyman 1970, Shinohara 1997). Second, when borrowing takes place on a massive scale, the donor language may impart aspects of its phonology to the native system that engender distinct sectors of the lexicon with their own miniphonologies (Fries & Pike 1949, Lees 1961, McCawley 1968). There is debate as to what extent this challenges the notion of a single grammar (Weinreich 1953, Itô & Mester 1995) and represents the intrusion of accidents of history into an otherwise clean, uniform system. Finally and most recently, adaptation patterns have been discovered for which the native system at best provides no guidance or at worst flatly contradicts, posing a learnability puzzle similar to the one Stampe's (1972) natural processes raise for primary language acquisition. Since these modifications typically coincide with cross-linguistically natural and well-

attested processes and constraints, it is rational to attribute them to Universal Grammar (UG), with the implication that speakers can call on aspects of UG in adulthood (Shinohara 2004). Some researchers (Steriade 2000) have postulated the existence of a special module of phonological perception that plays a major role in loanword adaptation by helping to calculate the minimal modification of the input required to make the foreign lexical item conform to native system phonotactics. When viewed from this broader perspective, loanwords are no longer just a minor phonological curiosity or nuisance and merit the serious attention of theoretical research.

It is in this general context that Flavien Gbéto's (G) recent study is cast and should be judged. Availing himself of the latest tools from Autosegmental Phonology and Optimality Theory (OT), G utilizes data from Fon to address the questions of how loanwords are adapted to conform to regularities of the native system, to what extent the adapted forms are different from the native system and where the differences come from (pp. 13-14). Fon is one of the five subgroups of Gbe (Ewe); it is spoken in Benin and Togo. The study is based on a corpus of loanwords (predominantly from French but also containing items of Portuguese and English origin) that G has collected for almost twenty years and complements his recent description of the phonology of the Maxi dialect (Gbéto 1997). The size and nature of the corpus are not described.

Following Paradis (1996), G distinguishes between *adaptations* (forms used in bilingual conversation) and *loanwords* (lexical items incorporated into the native system to the extent that they can be used by monolinguals). Both adaptations and loanwords are of theoretical interest (the former a type of interlanguage) and are often difficult to distinguish from one another. The corpus for the present study contains loanwords so defined.

The phonetic inventory of Fon appears in (1). The tilde denotes nasality; tonal distinctions comprise high ($\acute{a}$), mid ($\bar{a}$), low ($\grave{a}$), rising ($\check{a}$), and falling ($\hat{a}$). Fon is an open-syllable language with a *CCV* maximal syllable template.

(1)   *consonants*

p	t			k	kp
b	d	ɖ		g	gb
			tʃ		
			dʒ		
m		n	ɲ		
f	s				χ χʷ
v	z				ʁ ʁʷ
		ɾ			
		l / l̃			
			j / j̃		w / w̃

vowels

i/ĩ	u / ũ
e	o
ɛ / ɛ̃	ɔ / ɔ̃
	a / ã

Given Fon's relatively rich phonemic inventory, most sounds of the donor language easily find a correspondent. However, there are enough mismatches, particularly when the context is taken into account, to make loanword adaptation into Fon worthy of systematic investigation. In what follows we single out some of the most noteworthy and theoretically challenging cases in Gbéto's study.

2. Liquids

Fon has one liquid phoneme whose principal allophone is a lateral. It is optionally realized as a flap after an apical occlusive: *lĩ* 'think', *àlɔ* 'hand', *dʒɾǒ — dʒlǒ* 'volonté'. In the adaptation of loanwords, a lateral is realized as /l/. Rhotics have a more complex translation: prevocalically they appear as /l/ with an additional dorsal component word-initially /ʁl/. Preconsonantal and word-final rhotics are realized as zero.[1]

---

[1] Loanwords from English and Portuguese are labeled E and P. The vast majority of loans are from French.

(2)   lame   lămũ   rideau   ʁl̃idô
       dollar E   dălà   bureau   bīlô
       flower E   flówà   grève   glĕvù
       col   kɔ́lù   gare   gă
       vilebrequin   vīblēkẽ̄   torche   tɔ́tʃɪ

G posits loan translation rules effecting these realizations and devotes consider-
able discussion to the [ʁl] realization of the initial rhotic (additional examples:
radio > [ʁlādjô], *rayon* > [ʁlɛ̃nɔ̃], *raie* > [ʁlɛ̃]). His hypothesis (p. 27) is that
"ceux qui ont introduit le français en milieu Fon réalisaient deux constrictions,
l'une à l'avant, l'autre à l'arrière de la cavité buccale pour la pronunciation du R
français". The idea is that the uvular (dorsal) feature of French /R/ (a trill) is
matched by native /ʁ/. But /ʁ/ is an obstruent in Fon and so the [+sonorant] fea-
ture of the French source /R/ it is split off as a separate segment and realized as
the closest sonorant in the native inventory — the lateral /l/. Such reconfiguration
("unpacking" in the terminology of Paradis & Prunet 2000) is common in second
language perception: e.g. Russian palatalized consonants like /p'a/ are interpreted
as consonant glide sequences [pya] by English speakers. Being a complex seg-
ment, the /ʁl/ sequence is only realized word-initially; medially, it is simplified to
[l] and in preconsonantal and word-final position it is deleted.

Following Silverman 1992, G assumes an initial stage in the adaptation
process where segments of the source word are matched with corresponding seg-
ments of the native inventory in essentially context-free fashion. In a second stage
the phonotactic constraints of L_1 are imposed and the input is modified to satisfy
these constraints by a combination of loanword specific and native L_1 processes.
However, we might well question this two-stage model. There is no evidence that
the perception of L_1 segments is free from the influence of context and so there is
little reason to suppose that contextual influence is suspended in loanword adap-
tation.

Instead of seeing the simplification of medial /ʁl/ to /l/ as a matter of ar-
ticulation, it can equally well be considered in perceptual terms: the dorsal feature
is only perceived word-initially (a "prominent" position) and otherwise is sup-
pressed. This interpretation implies that the dorsal component is lexicalized only
in initial position. More generally, following in part the model outlined in Pater
(2004) for first language acquisition, we might consider that the grammar (both
L_1 and UG aspects) can intervene at two different points in the loanword adapta-
tion process, as sketched below in (3): a so-called "perception" grammar and a
grammar of "production".

(3)   *Perception*   *Production*
    [xxx]   →   [UG+ L₁] →   / yyy /   →   [UG+ L₁] → [zzz]
    loan   lexical   output
    source   rep.

This way of looking at things is helpful in explaining various aspects of the loan phonology in Fon. As we have just seen, French /R/ is mapped to /l/ prevocalically but is deleted in preconsonantal and word-final position. This behavior contrasts sharply with preconsonantal and word-final /l/ which is systematically realized as [l] plus an epenthetic vowel–the general pattern of adaptation for other consonants into Fon.²

(4)   Samuel   sāmjɛ̃lì   cigarre   sīgâ
      tuile   twílù   chaffeur   tʃōfɛ̂
      col   kɔ́lù   voiture   vātwǐ
      Sylvestre   sīlūvɛ́sì   Bernadette   bɛnãdɛ́tì
      Delphine   dɛlūfínì̃   sardine   sādínì̃

G accounts for this contrast between the lateral and the rhotic by mapping the latter to /ʁl/ and then positing a loan rule that deletes the latter in preconsonantal and word-final position. There are however other cases in the loanword literature where languages with a single liquid phoneme distinguish between the donor language's lateral and rhotic. For example, in Korean the liquid phoneme is realized as a lateral word-finally and preconsonantally and as a rhotic word-initially and intervocalically. In adaptations from English and other western languages (Kenstowicz and Sohn 2001), a #ClV cluster may be rendered more or less faithfully by optionally geminating the liquid. Thus, *glass* is adapted as [kɨrasɨ] or as [kɨllasɨ]. Such gemination never applies to a #CrV cluster so that *dry* has just a single option [tɨrai] and never *[tɨllai]. In Mawu (Moussa 1996), a Manding language of Côte d'Ivoire, there is just a single liquid–the lateral /l/. Nevertheless, *Cr* and *Cl* clusters are systematically distinguished in loan adaptation by the type of epenthetic vowel: *Cr* clusters are broken with a copy vowel and *Cl* clusters with a high (default) vowel: *brosse* [bɔlɔ́sí], *France* [fàlã̀zí] vs. *bloque* [búlɔ́kí],

---

² There are two examples where preconsonantal [l] deletes–both after a back vowel: *soldier* (E) → [sódʒà] and *bolso* (P) → [bǔsù].

plan [pìlã́].[3] These examples are inconsistent with the model in which loanword adaptation begins with a context-free matching of segments followed by the imposition of phonotactic constraints and raise doubts as to whether the Fon adaptation of the liquid in *cigarre* > [sīgâ] passes through /ʁl/ on its way to zero.

    From an OT perspective the contrasting behavior of /l/ and /r/ seen in (4) is also puzzling. The adaptation of the rhotic calls for the constraint ranking of (5a) in which Max-C is demoted. This ranking selects deletion as the solution to the phonotactic violation. But a preconsonantal or word-final lateral engages epenthesis by demoting the Dep-V constraint (5b). As we shall see, epenthesis is the general repair strategy for other consonants in these positions.[4]

(5)   a.   Dep-V, *r/_#,C >> Max-C
         b.   Max-C, *C/__ #,C >> Dep-V

It is not clear how to reconcile these inconsistent constraint rankings. Stating the question in more theory-neutral terms, if epenthesis is the general repair strategy to realize consonants not followed by a vowel, and if moreover /r/ can be realized as a lateral, why doesn't Fon employ the same strategy (epenthesis) for word-final and preconsonantal rhotics and realize /gar/ as [gali]? If there is a separate, Perceptual Mapping from the loanword to the lexicon, a different ranking of faithfulness constraints around the same set of markedness constraints could be at play. This hypothesis would be analogous to the one Itô & Mester (1995) adopt for different sectors of the Japanese lexicon, which, according to them, differ solely in the ranking of faithfulness constraints. Hence, our suggestion is that the Dep-V , *r/_#,C, >> Max-C ranking of (5a) holds for the Perception Mapping while Max-C, *C_#,C, >> Dep-V (5b) holds for the Production Mapping.

(6)   *Perception Mapping*

/gar/	*Dep-V*	**r/_ #,C*	*Max-C*
gar		*!	
gari	*!		
→ ga			*

---

[4] In OT a ranked set of UG markedness and faithfulness constraints evaluate candidate input-output pairings. The Dep-V constraint penalizes vowel epenthesis while the Max-C constraint penalizes consonant deletion. The markedness constraint *C/ __ #,C penalizes a consonant that is not prevocalic.

/kɔl/	Dep-V	*r/_ #,C	Max-C
→ kɔl			
kɔlu	*!		
kɔ			*!

Production Mapping

/ga/	Max-C	*C/__ #,C	Dep-V
→ ga			
gari			*!

/kɔl/	Max-C	*C/__ #,C	Dep-V
kɔl		*!	
→ kɔlu			*
kɔ	*!		

This analysis implies that the rhotic of French *gare* is not lexicalized in Fon adaptation and should in principle be testable.

There are other cases where Fon deploys both deletion and epenthesis as adaptation strategies. One concerns the treatment of *sC* clusters. Medial and final /s/ goes in the onset of an epenthetic syllable (*whisky* > [wīsīkí], *tournevis* > [tūnɛ̃vísì]) as do word-final stops (*pompe* > [pɔ̃pù], *bic* > [bíkì]; *bread* > [blĕɖì]). These are the expected outcomes under the Max-C, *C/__ #,C >> Dep-V ranking.

(7)	/wiski/	Max-C	*C/__ #,C	Dep-V
	wiski		*!	
→	wisiki			*
	wiki	*!		

	/bik/	Max-C	*C/__ #,C	Dep-V
	bik		*!	
→	biki			*
	bi	*!		

According to this analysis word-final consonant clusters should receive a double epenthesis. But in the majority of cases (8), just the first consonant surfaces and the second one is suppressed. Such a pattern was also found by Silverman (1992) for Cantonese loans from English.

(8) poste   pósù   Auguste   ōgʷísù
     Christ   kĺisù   Ministre   mĩ́nĩ̀sì

G cites Côté (1998) (cf. also Côté 2000) who observes that perceptual cues to a word-final stop are diminished after an obstruent in comparison to after a sonorant; hence obstruent clusters are frequently the site of a phonological repair — deletion or epenthesis. If there is a separate Perception Mapping in loanword adaptation, then the Dep and Max constraints can be reranked so as to promote the deletion strategy for the stop consonant in the *sC* cluster.

(9)   *Perception Mapping*

	/post/	Dep-V	*stop/ obstruent __ #	Max-C
	post		*!	
→	pos			*
	postu	*!		
	posut	*!	*	
	posutu	*!*		

Production Mapping

	/pos/	Max-C	*stop/ obstruent __ #	Dep-V
	pos		*!	
→	posu			*
	po	*!		

Once again, this analysis claims that French *poste* has been lexicalized as /pos/ and hence predicts for example that the final stop should not appear under affixation. In principle it should be possible to test this implication.

G's corpus also contains lexical items in which the first consonant in a medial cluster is suppressed: *Nestor* > [nɛ̃tɔ̃], *Victor* > [vĩtɔ̃], *électrique* > [lɛtríkì]. These data indicate variation in the location of the Max-C constraint that engenders deletion with respect to the prevocalic >> postvocalic positions in Steriade's (1999) cue hierarchy. In many cases the clusters are homorganic, another factor that Côté (1998, 2000) finds to diminish the salience of a consonant.

3. Vowel Epenthesis

There is no indication that epenthesis is an active process in the phonology of Fon (Gbéto 1997). Its systematic appearance in loanword phonology is thus an Emergence of the Unmarked phenomenon (McCarthy & Prince 1994). As observed by Shinohara (1997) and Steriade (2000), the selection of the epenthetic vowel is typically determined by a principle of Minimal Saliency. The goal is to syllabify the consonant so as to satisfy native language phonotactics (for Fon, an open syllable) but in a manner that departs minimally from the input. For an epenthetic vowel, its input correspondent is zero; hence short, unobtrusive vowels such as schwa are favorite choices. Minimal Saliency also explains why epenthetic vowels typically shun accent, and tend to assimilate to the surrounding context–another strategy that minimizes their saliency. All these factors are active in Fon adaptation. G provides a thorough and insightful analysis of the phenomenon.

If epenthetic vowels are optimally the shortest ones that the phonemic system allows then we expect high vowel vowels to be chosen in Fon adaptation. And that is precisely what is found. The prominence of the epenthetic vowel is further diminished by coarticulation: [u] appears in the context of a labial and otherwise [i] is chosen to break up a consonant cluster (10a). After word-final labial consonants, [u] appears (10b). If the final consonant is dental or velar then the choice between [i] and [u] is determined by the preceding vowel, with a round vowel requiring [u] (10c). But this choice is overruled if the final consonant is palatal, which demands [i] (10d).

(10)   a. parfum   pālūfɛ̃̃ — pāfɛ̃̃   Egypte   ēdʒípùtì
           échappement   tʃāpūmã̃   whisky   wīsīkî

       b. pompe   pɔ̃̃pù   limbe   lɛ̃̃bù
           lame   lămũ̃   grève   glɛ̃̃vù

       c. col   kɔ́lù   poste   pósù
           cook E   kúkù   bonne   bŏnũ̃
           essence   săsì   bread   blɛ̃̃ɗì
           brique   blíkì   pan E   kpáni̋

       d. torche   tɔ́tʃì   Georges   dʒɔ̃̃dʒì

G sees the palatal consonants as blocking labial harmony. Hence [i] is present in *torche* > [tɔ́tʃì] by default. But it is also possible that postpalatal [i] is the product of active coarticulation between the consonant and the following epenthetic vowel. (See Shinohara 1997 and Kim 1999 for examples of palatal coarticulation from Japanese and Korean loanword phonology). This question could be decided if a word like *cauchemar* were borrowed into Fon. Palatal coarticulation predicts epenthetic [i] (assuming that CV coarticulation dominates VC coarticulation). G's analysis predicts epenthetic [u] in virtue of [m].

Finally, G's corpus contains a few cases of apparent long distance labialization such as *pince* > [pɛ̃sì] — [pɛ̃sù] and *bobin* > [bōbínĩ] — [bōbínũ]. Just as epenthesis is not an active process in Fon L₁ phonology, neither is the labialization of vowels: [i] freely appears in the context of labial consonants: [àfí] 'pleurs', [wìlí] 'attraper', [bĩ] 'moi'. The labial harmony seen in adaptation is thus another UG-emergent phenomenon–one governed by the principle of Minimal Saliency.[5]

4. Nasality

Fon contrasts oral versus nasal vowels. Moreover, the consonants [b, ɖ, l, w, j] and [m, n, l̃, w̃, ɲ] are in complementary distribution: the former appear before oral vowels and the latter before nasal vowels. Fon has a nasal-vowel harmony system and the [nasal] feature survives in vowel truncation/coalescence supporting its analysis as an autosegment (Gbéto 1997). In loanword adaptation it is thus no surprise that French nasal vowels are mapped to corresponding nasal vowels in Fon and oral vowels are paired with oral vowels. But G finds that there is only limited nasal harmony–just when the vowels are identical. As explained below, vowels are adapted nasalized after a nasal consonant. Thus Portuguese *cama* > [àkãmã] 'bed' and English *German* > [dʒãmã] 'German' show right-to-left nasal vowel harmony (cf. *bonne* > [bõnũ] where the identical vowel condition is not

---

[5] There are well-known cases such as Spanish *estop* 'stop' in which the epenthetic vowel is not high and hence an apparent exception to the Minimal Saliency principle. But such examples cannot necessarily be taken at face value. Suzanne Assadi (personal communication) points out that in Farsi, where the epenthetic vowel is also /e/ (cf. *esport* 'sport', *estudyo* 'studio', *eskelet* 'skeleton), /e/ (along with /o/ and /a/) belongs to a series of unstable vowels that are opposed to the stable series /i,u,ɑ/. The former are of variable duration and timbre in contrast to the /i,u,ɑ/ series and are the ones utilized in the adaptation of initial clusters: *club* > [kolub], *France* > [ferɑnse], [farɑnse].

satisfied and hence there is no nasal harmony). And *chemise* > [tʃĕmĭzĭ] (cf. *Samuel* > [sāmjĕlĭ]) shows left-to-right nasal harmony.

More interesting is the behavior of the two sets of consonants [b, ɗ, l, w, j] and [m, n, l̃, w̃, ɲ] that are in complementary distribution in Fon grammar. Given a nasal consonant plus oral vowel, as in *ministre* 'minister', three adaptations are possible: [mi] with no change in nasality and thus contradicting the native constraint/pattern; nasalization of the vowel [mĩ]; or denasalization of the consonant [bi]. Fon systematically takes the second path [mĩ]. From a purely formal standpoint, the adaptations of [mi] as [mĩ] or as [bi] seem equivalent: a single change in the feature [nasal]. If nasality is privative then the adaptation of [mi] as [bi] would involve deletion of a feature while the adaptation of [mi] as [mĩ] would involve addition of an autosegmental link. The latter might be favored under a principle of conservation of information. From a perceptual point of view, we are led to ask if [mi] is closer to [bi] or to [mĩ]. Intuitively, it seems that a change of nasality in the consonant is more noticeable than a change in the vowel. Consequently, adaptation of [mi] as [mĩ] would correctly be predicted as the perceptually minimal change.[6]

The adaptational response to an incompatible sequence of oral consonant plus nasal vowel such as [bã] can also be tested for Fon. Once again there are three possibilities: no change, nasalization of the consonant [mã], or denasalization of the vowel [ba]. Given the conjecture that the contrast between [b] and [m] is relatively more salient than the contrast between [a] and [ã], we do not expect nasalization of [b]. In fact, Fon selects the first option: *bandit* > [bãdĭ], *banc* > [bã]. The result is a violation of the native phonotactic and an extension the oral-nasal contrast to the voiced consonants.

The general pattern thus seems to be that the oral-nasal contrast in vowels is preserved when contrast in the consonants is not at stake (*pain* → [pɛ̃]). But when the contrast between [m, n] vs. [b, d] is in play then preservation of the consonantal opposition takes precedence (*chemise* > [tʃĕmĭzĭ], *bandit* > [bãdĭ]). This raises the question whether general UG asymmetries of phonological perception can override language particular contrasts and constraints. Clearly, much more study of this question is needed.

---

[6] But in the Eastern Tukanoan language Barasana (Gomez-Imbert 1997), which is also a nasal harmony system in which nasal consonants and voiced stops are in complementary distribution, Spanish *Miguel* is adapted as [bigel] with denasalization.

5. Breaking of /y/

As the examples in (11) show, the high front rounded vowel /y/ of French is adapted as a labial-palatal sequence.

(11) ludo   lwīdô
      culasse   kwīlásì
      juif   dʒwǐfù
      Auguste   ōgwísù
      tuile   twílù

G treats this adaptation as the "scission" of the Place node's Labial and Coronal components; the /ui/ sequence is realized as [wi] via a general devocalization process operating in Fon phonology. He also reports that the labial component is suppressed when preceded by a labial consonant, as seen in (12).

(12) bureau   bīlô
      but   bǐ
      deputé   dēpītê

The delabialization in (12) is attributed to Leben's (1973) Obligatory Contour Principle (OCP) barring adjacent identical elements. It is another emergent phenomenon unknown to the native system. Fon has an active process of devocalization in hiatus that produces consonant-glide sequences (Gbéto 1997). There appears to be no prohibition of the process in the context of labial consonants: /bɔ̃ ɛ́/ > [mwɛ̃] 'art de voyance', /à ˋvũ étɔ̃ / > [àfwĩtɔ̃] 'son chien'. It might make sense to assign suppression of the labial element to the Perceptual Mapping: in effect, the labial component of the [y] is not lexicalized after a labial consonant in virtue of the OCP.

Fon adaptation thus presents us with another puzzle. The epenthetic vowel is [u] after a labial consonant, showing a preference for [bu] over [bi]. But the breaking of [y] to [ui] is disrupted after labials, showing a dispreference for [bu] as opposed to [bi]. Once again the difference makes sense in perceptual terms. In the first case the epenthetic vowel substitutes for zero and so coarticulation is optimal in minimizing the salience of the vowel and thus maximizing its similarity to its zero input correspondent. In the second case mapping [by] to [bui] is avoided because the [u] masks and equivocates the CV F2 transitional cues for [b]. In effect, the listener does not know if the labialization in [bui] is to be traced

back to the preceding consonant or to the following vowel. The solution is to delete the [u] fragment of [y]. Here again the consonantal cues dominate the vocalic ones.

The breaking of [y] (and of [R] discussed earlier) in Fon loanword adaptation constitute rather clear counterexamples to the Isomorphism hypothesis of Paradis & Prunet (2000:332) according to which "a one-root-node segment in L2 is adapted as a one-root-node segment in L1 and a two-root-node segment in L2 is adapted with two root nodes in L1". On this hypothesis, all cases of breaking must arise from independent processes active in the native system. But there is no evidence for the breaking of [y] and [R] internal to the grammar of Fon.

Paradis and Prunet (2000) present extensive evidence that nasal vowels are adapted as oral vowel plus nasal consonant sequences in languages that lack an oral-nasal vowel contrast. For example, in Fula French *ingénieur* [ɛ̃ʒenjœR] is adapted as [ɛnsɛnjɔr]. Given their hypothesis of isomorphism, Paradis and Prunet conclude from such data that the loanword phonology is telling us that contrastive nasal vowels are best analyzed as *VN* sequences universally. An alternative scission analysis of the $\tilde{V} > VN$ adaptation along the lines of G's treatment of the Fon adaptation of French [R] and [y] faces the question of why the vowel and nasal consonant segments are ordered as *VN* rather than *NV*. Here once again perceptual factors may be at play. We can pose the question as follows. Given French [ɛ̃], does [ɛn] or [nɛ] sound closer? It seems that the answer is clearly in favor of the former option. Place of articulation cues to postvocalic nasals are much weaker than the cues to prevocalic ones; this helps to explain the ubiquity of regressive nasal assimilation. Thus, [ɛn] is a more minimal deformation of [ɛ̃] than is [nɛ].

Since vowel nasality is contrastive in Fon, the $\tilde{V} > VN$ translation does not apply and hence the single root-node clause of Paradis and Prunet's Isomorphism hypothesis cannot be tested. The two-root-node clause of the hypothesis does not seem to hold, however. While final nasals are preserved by epenthesis (13), preconsonantal nasals are suppressed with the nasal feature appearing in the preceding vowel. G posits loan rules spreading [+nasal] from a preconsonantal nasal to the preceding vowel and then deleting the nasal consonant.

(13) pan   E   kpáñ̃   bonne   bɔ̃nũ

      lame   lǎmũ   change   E   tʃɛ̃dʒì

      pound E   kpɔ̃wũ   accounter E   àkɔ̃tà

For the reasons mentioned above, the *VNC > ṼC* mapping seen in (13) is a natural one in perceptual terms. It is another emergent phenomenon of Fon loanword adaptation.

6. Tone

Fon distinguishes three tonal levels as well as rising and falling tones. There is also a general rule realizing high tone as rising after a voiced consonant. Since Fon is a tone language some decision must be made as to which tones to assign to a loanword. Similar to Cantonese (Silverman 1992) and many other systems, the accented syllable of the source is identified with a high tone in Fon. Pretonic syllables take a mid tone while posttonic syllables are low. A word-final tonic syllable is realized with a fall. Lastly, word-initial accented syllables with a voiced onset have a rising tone.

(14) saˈlada (P)   sāládà   ˈsoldier (E)   sɔ́dʒà
      ˈgoma (P)   gɔ̌mâ   ciˈgarre   sīgâ
      batteˈrie   bātēlĭ   cheˈmise   tʃēmǐzĩ
      Eˈgypte   ēdʒípùtì   bonne   bɔ̌nũ
      ˈdollar (E)   d̥ǎlà   lame   lǎmũ
      miˈnistre   mĩnĩ̌sì

G posits a LH*L tonal melody in which the H is mapped to the accented syllable of the source word and the low tones to syllables on either side of the accented one. Final accented syllables are realized with a fall (e.g. *briquet* > [blĭkê]) and so another rule links the right-hand floating low of the LH*L melody to the final vowel. Additional rules not discussed raise pretonic low to mid and spread a low tone from a word-initial voiced consonant to the following high creating a rising tone.

        In languages such as English the primary stressed syllable can be associated with a variety of tonal pitch accents (Beckman & Pierrehumbert 1986) and so the uniform association with a high tone in loanword adaptation cannot be taken for granted and requires some explanation. Perhaps the equation of stress with high tone can be explained if loanword adaptation takes place via a citation form (see Kenstowicz & Sohn 2001) which typically has a H*L pitch accent. This would also account for the obligatory final fall. However, it is likely that there is a more inherent connection between a peak of prominence and a pitch peak. In many pitch-accent languages accent is realized as a HL tonal sequence. HL is also

a common realization of focal accent. It is interesting that pretonic syllables are assigned a mid-tone in Fon adaptation. The same pattern occurs in Cantonese adaptations (Silverman 1992) and seems plausible in perceptual terms, choosing the least distinct tone for the syllables of weakest prominence.

7. Other Patterns

There are a couple of other Fon adaptations worth mentioning. In the native lexicon the bilabial voiceless stop is restricted to ideophones. Older loans from Portuguese and English adapted [p] as the labio-velar [kp]: *padre* (P) > [kpádrì], *pan* (E) > [kpánĩ]. But with the more recent influx of borrowings from French, [p] has been imported into Fon: *pain* > [pɛ̃], *poste* > [pósù].

The Fon obstruent system lacks the palatal fricatives [ʃ] and [ʒ]. But it possesses [s] and [z] as well as the affricates [tʃ] and [dʒ]. In terms of features [ʃ] and [ʒ] stand equidistant between the alveolar fricatives [s] and [z] and the palatal affricates [tʃ] and [dʒ]. Yet they are systematically adapted as affricates.

(15) chaffeur   tʃōfɛ̃   shale (E)   tʃélù
      torche   tɔ́tʃì   chemise   tʃēmízì
      gendarme   dʒã̄dámũ̄   Georges   dzɔ̃dʒì

This leads us to ask if [ʃ] and [ʒ] are closer in perceptual space to the affricates than to the alveolar fricatives. This question, like many others raised in this essay, requires further study.

8. Conclusion

It is clear that Flavien Gbéto's study of loanword adaptation in Fon sets a high standard for further investigation of this intriguing phenomenon. There is much to be gained by exploiting this line of research in a systematic fashion in the hopes of ultimately reconciling it with experimental results in speech perception (e.g. Dupoux et al. 1999).

REFERENCES

Beckman, Mary & Janet Pierrehumbert. 1986. "Intonational structure in Japanese and English". *Phonology Yearbook* 3: 255-310.

Côté, Marie-Hélène. 1998. "Salience phonétique et contraste dans la réduction des groupes consonantiques: le cas du français québécois". *Langues & Grammaires* (II-III) Patrick Sauzet, ed. *Phonologie. Documents de Travil Languages & Grammaire* 6. Saint-Denis: Université Paris 8. Pp. 25-42.

Côté, Marie-Hélène. 2000. *Consonant Cluster Phonotactics: A Perceptual Approach*. Cambridge: MIT, PhD. dissertation.

Dupoux, Emmanuel, H. Kakehi, Y. Hirosi, Christophe Pallier, & Jacques Mehler. 1999. "Epenthetic vowels in Japanese: a perceptual illusion". *Journal of Experimental Psychology, Human Perception and Performance* 25 (6): 1568-1578.

Fries, Charles & Kenneth Pike. 1949. "Co-existent phonemic systems". *Language* 25: 29-50.

Gbéto, Flavien. 1997. *Le Maxi du Centre-Bénin et du Centre-Togo*. Köln: Rüdiger Köppe Verlag.

Gomez-Imbert, Elsa. 1997. *Morphologie et phonologie barasana: approche non-linéaire*. Saint-Denis: Université Paris 8, doctorat d'État.

Hyman, Larry. 1970. "The role of borrowing in the justification of phonological grammars". *Studies in African Linguistics* 1: 1-48.

Itô, Junko & Armin Mester. 1995. Core-periphery structure of the lexicon and constraints on reranking. *University of Massachusetts Occasional Papers in Linguistics* 18: 181-209. GLSA: Amherst.

Kenstowicz, Michael & Hyang-Sook Sohn. 2001. "Accentual adaptations in North Kyungsang Korean". Michael Kenstowicz, ed. *Ken Hale: a Life in Language*. Cambridge: MIT Press. Pp. 239-270.

Kim, Hyunsoon. 1999. "The place of articulation of Korean affricates revisited". *Journal of East Asian Languages* 8: 331-347.

Leben, Will. (1973). *Suprasegmental Phonology*. Cambridge: MIT, PhD. dissertation.

Lees, Robert. (1961). *The Phonology of Modern Standard Turkish*. Bloomington: Indiana University Press.

McCarthy, John & Alan Prince. 1994. "The emergence of the unmarked: optimality in prosodic morphology". *Proceedings of the Northeast Linguistics Society* 24, ed. by Mercè Gonzalez. Pp. 333-379.

McCawley, James. 1968. *The Phonological Component of a Grammar of Japanese*. The Hague: Mouton.

Moussa, Bamba. 1996. "Mawukakan loanword phonology". Ms., University of Pennsylvania.

Paradis, Carole. 1996. The inadequacy of filters and faithfulness in loanword adaptation. *Current Trends in Phonology: Models and Methods*, ed. by Jacques Durand & Bernard Laks. Salford: European Studies Research Institute, University of Salford. Pp. 509-534.

Paradis, Carole & Jean-François Prunet. 2000. "Nasal vowels as two segments: evidence from borrowings". *Language* 76, 324-57.

Pater, Joseph. 2004. "Bridging the gap between receptive and productive development with minimally violable constraints". *Constraints in Phonological Acquisition*, ed. by René Kager, Joe Pater, & Wim Zonneveld. Cambridge: Cambridge University Press. Pp. 219-44.

Silverman, Daniel. 1992. "Multiple scansions in loanword phonology: evidence from Cantonese". *Phonology* 9: 298-328.

Shinohara, Shigeko. 1997. *Analyse phonologique de l'adaptation japonaise de mots étrangers*. Paris: Université de la Sorbonne Nouvelle III, Thèse de doctorat. [ROA-234-0298, http://ruccs.rutgers.edu/roa.html]

Shinohara, Shigeko. 2004. "Emergence of Universal Grammar in foreign word adaptation". *Constraints in Phonological Acquisition*, edited by René Kager, Joe Pater, & Wim Zonneveld. Cambridge: Cambridge University Press. Pp. 292-320.

Stampe, David. 1972. *How I Spent My Summer Vacation*. Chicago: University of Chicago, Ph.D. dissertation.

Steriade, Donca. 1999. "Phonetics in phonology: the case of laryngeal neutralization". *UCLA Working Papers in Linguistics* 2, Papers in Phonology 3, ed. by Matthew Gordon. Pp. 25-146.

Steriade, Donca. 2000. "The phonology of perceptibility effects: the P-map and its consequences for constraint organization". Ms., University of California, Los Angeles.

Weinreich, Uriel. 1953. *Languages in Contact: Findings and Problems*. Publications of the Linguistics Circle of New York, no. 1.

Department of Linguistics
MIT
Cambridge, MA 02139
kenstow@mit.edu

PUBLICATIONS RECEIVED

Bromber, Katrin & Birgit Smieja (eds.). *Globalization and African Languages: Risks and Benefits*. (Trends in Linguistics Studies and Monographs 165). Berlin & New York: Mouton de Gruyter. 2004. Pp. xvii, 326. ISBN 3-11-018099-5. Hardcover. €98.00

Dedicated to the 60th birthday of Karsten Legère, this volume begins with a brief biography by the editors plus a list of Legère's publications. Section I "Language use and attitudes" contains 6 papers on language conflict, minority languages, the growing importance of Setswana in Botswana, the problem of English as national language of Namibia, language shift, and the necessity of triglossia in Africa. Section II "Language policy and education" has 3 papers, covering the use of Northern Sotho in vocational training, Malawian language policy in education, and the question of how official policy affects attitudes of students. The final section "Language description and classification" has 9 contributions. These range over more synchronic descriptive areas — noun classes and phrases in Kerebe, the syntax of the Swahili infinitive, and the syntactic typology of !Xun — to historical and cultural areas such as how Swahili has influenced Luguru through historical and modern contact, the frequency of loan words from various languages in Swahili, Swahili and Midzichenda plant names, historical classification of Bole-Tangale languages in terms of their vowels, the problem of estimating the number of languages in Africa, and the identification of Mozambican languages in the historical record.

Childs, G. Tucker. *An Introduction to African Languages*. Amsterdam & Philadelphia: John Benjamins Publishing. 2003. Pp. xiv, 265. ISBN 90-272-2606-7, 1-58811-422-8. Paperback, with CD; 14 maps, 14 figures, 19 tables. $59.95.

This book provides an overview of the main structural and historical features of African languages especially from a descriptive and typological perspective, with emphasis on the unique properties of African languages. There are six main chapters. Ch. 2 "The classification of African languages" [19-53] covers the four classical phyla, indicating their historical depth, geographical extent and main subdivsions, and discusses methodological issues, in particular the method of mass comparison. Ch. 3 "Phonetics and phonology" [55-95] presents the best-known unique phonetic characteristics of African languages, explaining clicks, prenasalization, syllabic nasals; it presents typical patterns of vowel harmony, consonant alternation as found in North Atlantic languages, and ends with an extensive discussion of how tone operates. Ch. 4 "Morphology" [97-115] presents root and pattern morphology in Arabic and Yoruba, noun classes in Niger-Congo, verb structure in Swahili and the complexity of tense marking systems

in Africa, and the functioning of verb extensions in languages such as Bantu and Atlantic.

     Ch. 5 "Syntax and semantics" [117-151] covers ideophones, valency and object syntax in Bantu and other languages, a variety of means for negating sentences, focusing, serialization, agreement and animacy, gender polarity, logophoricity and switch-reference. Ch. 6 "Historical and typological issues" [153-174] compares African languages to each other and to other languages, especially concentrating on diachronic typology in the works of Greenberg and Heine, discussing a number of grammaticalization paths; the chapter covers problems in word order reconstruction, and the problem of linguistic genetic relations and historical movements of people. Ch. 7 "Social effects on the languages of Africa" [175-216] focuses on the role of social factors in changing African languages, including the relevance of multilingualism, respect languages (with an extended presentation of the main feature of Hlonipha), play languages, and ends with a discussion of language contact, and pidgins and creoles.

Cysouw, Michael. *The Paradigmatic Structure of Person Marking.* Oxford Studies in Tyoplogy and Linguistic Theory. Oxford: Oxford University Press. 2003. Pp. xiii, 375. ISBN 0 19 925412 5. Hardcover. £50.

A revision of the author's doctoral dissertation, Cysouw's book provides a survey and typology of person marking across languages. The book is not exclusively about African languages, but it does provide representation of approximately 80 African languages from all 4 phyla and all of the main subgroups of each phylum, in the course of covering around 400 of the world's languages. The chapters of the book are as follows: Ch. 1 "Introduction: objective, definitions, method, and some history" [1-35]; Ch. 2 "One among the crowd: the marking of singular participants" [39-65]; Ch. 3 "Group marking: redefining plurality in the pronominal domain" [66-98]; Ch. 4 "The diversity of the core: a survey of patterns of singular and group marking" [101-165]; Ch. 5 "Compound pronouns: other person categories disqualified" [166-184]; Ch. 6 "Cardinality: redefining number in the pronominal domain" [187-203]; Ch. 7 "The diversity of restricted groups: a survey of dual person marking" [204-241]; Ch. 8 "Connecting paradigms: person paradigms through time and space" [245-268]; Ch. 9 "Cognate paradigms revisited: connecting the dual" [269-294]; Ch. 10 "Finale: Summary and prospects" [295-321].

Kari, Ethelbert E. *Clitics in Degema: A Meeting Point of Phonology, Morphology, and Syntax.* (ILCAA Language Monograph Series 1). Tokyo: Research Institute for Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies. 2003. Pp. xviii, 261. ISBN 4-87297-850-1. Hardcover.

This volume, which introduces a new monograph series published by ILCAA on the description of non-major and little-known languages, provides an extensive account of the grammar of clitics in the Edoid language Degema. Ch. 1 "Introduction" [1-5] explains the transcription and overall plan of the book, and Ch. 2 "Aspects of Degema Grammar [6-38] lays out the phonology (segment inventory), noun class morphology and agreement, verb extensions, subject and object pronouns, and tense-aspect marking auxiliaries. Ch. 3 "Clitic typology and phenomena" [39-66] covers typological properties of clitics such as clitic doubling and clitic climbing, and

the problem of identifying clitics, and Ch. 4 "The source of Degema clitics" [67-86] discusses the historical origin of Degema clitics. The fifth chapter "Clitics in Degema [87-143] lays out the essential syntactic properties of the subject proclitics and modal enclitics, where they attach, clitic metathesis and endocliticization, and their role in tense, aspect and mood marking. Ch. 6 "Derivation and inflection, and Clitic-affix-word distinctions in Degema" [144-185] considers many factors relevant to classifying the clitics along the word-affix continuum, arguing phonologically for an affinity between affixes and clitics, and syntactically for affinity between word and clitic based on the extent to which the clitic's host is restricted. Ch. 7 "Cliticization, movement, and second position" [186-212] takes up the mechanism for placing clitics, arguing that subject and non-subject clitics are base-generated in their surface position, using verb movement and subject movement in a Principles & Parameters framework to account for the surface order of elements. Ch. 8 "Degema clitics and Klavans's five parameters" [213-220] considers how Degema clitics fit into the Klavans 1980 parametric typology, and Ch. 9 "Subject clitics and the null-subject parameter" [221-233] presents the relevance of clitics to pro-drop in Degema.

Kießling, Roland & Maarten Mous. *The Lexical Reconstruction of West-Rift Southern Cushitic*. (Cushitic Language Studies, Band 21). Cologne: Rüdiger Köppe Verlag. 2003. Pp. x, 358, 21 tables. ISBN 3-89645-068-4, ISSN 0721-4340. Paperback. €42.

This volume presents a reconstruction of the lexicon of the proto-West Rift branch of Southern Cushitic, focusing mainly on the presentation of the reconstructions and supporting data. Ch. 1 "Introduction" [1-5] discusses the genetic relationships of the Southern Cushitic languages and the sources for the data used in the reconstruction. The phoneme inventory of the proto-language is presented in Ch. 2 "Phonology" [5-10], along with the main sound shifts, and Ch. 3 "The historical application of morphophonological rules [10-21] lists nearly 140 phonological processes that are associated with morphology at various stages of the reconstruction. Ch 4 "The derivational morphemes of West-Rift" [21-26] lists the numerous derivational morphemes in proto-West Rift and later stages, and Ch. 5 "The history of the West-Rift languages and their communities" [26-40] discusses the most important innovations at each stage of development including lexical influences from outside Cushitic, especially Datooga and Bantu, and some hypothesized relations between PWR and proto-Eastern Cushitic. References are given in Ch. 6 [40-43]. The bulk of the book consists of reconstructions [44-332]. Reconstructions are presented at various levels (e.g. Proto-West Rift, Proto-Iraqwoid etc.), entries for derivative forms are grouped together according to their common root, and the attested forms that the reconstructions are based on are all listed. The index [333-358] includes a list of English glosses, followed by the reconstructed West-Rift form.

Lébikaza, Kézié (ed.) *Actes du 3e Congrès Mondial de Linguistique Africaine, Lomé 2000.* Cologne: Rüdiger Köppe Verlag. 2003. Pp. 443. ISBN 3-89645-335-1. Hardcover. €49.80

A selection of 31 papers, presented at the 3rd World Congress of African Linguistics held at the University of Lomé (Togo) 21-26 August 2000, are presented in this book. Six of the papers are in the area of phonology and morphology, covering sonorant nasalization in Yoruba (Akinlabi), the root in Bemba (Chongo Kula), a non-rhotic dialect of Fula (Gottschligg), central vowels in the central Sudanic language Gor (Roberts), the vowel system of Kotoko (Tourneux) and Igbo syllables (Ugorji). Twelve papers focus on grammar and lexicon, discussing object shift in Gbe (Aboh), topicalization in Sango (Diki-Kidiri), the definiteness asymmetry in double object constructions (Essegbey), the importance of Bantu languages for contemporary syntactic theories (Gedelii), locative prepositions and extensions in Malgwa (Löhr), the syntax-pragmatics of the Bantu applied (Marten), and tense and aspect in Ditammari (Reineke). Historical and comparative topic occupy five papers ranging over Zaar Chadic historical relations (Caron), the diachrony of Bantu grammatical gender (Maho), the structural features of Plateau Hausa (Pawlak), the status of the Bijogo language reported in Koelle's *Polyglotta Africana* (Segerer), and the comparative noun class system of Moba, Ncàm and Gurma-Tône (Takassi), The final section presents 8 papers in sociolinguistics, on the threatened status of Urhobo (Aziza), urban multilingualism (Bamgbose), African languages, development and national culture (Capo), the African substrate of Guinea French (Childs), national languages and education in Niger (Mallam Garba), language engineering in Cameroon (Mbuagbaw), a linguistic ethnomethodological study of the supernatural in Nso culture (Mutaka & Lenaka), and African features of "secret" languages of Brasil (Petter).

Mills, Richard. *Dictionaire Sénoufo-Français. Sénanri — parler tyébara (Côte d'Ivoire)* (Gur Monographs, vol 5) Cologne: Rüdiger Köppe Verlag. 2003. Pp. xvi, 1502 (published as two volumes). ISBN 3-89645-115-4. Hardcover. €148.00

Drawing on the author's nearly half century of experience in Côte d'Ivoire, this dictionary of Senari covers the largest Senoufo language of that country. The preface and introduction cover the location of the Senoufo languages and background on the research, the hierarchical structure of entries (which may include verbs and nouns from a single root, morphological derivatives, and multiple senses of a given word), transcriptional and phonetic notes, discussion of phonological alternations, and a brief note on grammar. The dictionary contains roughly 6,000 main entries, each of which may contain around 4 specific words (derivatives, different grammatical categories), which in turn can have a number of entries for specific senses. The main Senoufo-French part of the dictionary is followed by a 96 page French-Senoufo glossary and 29 pages covering flora, fauna, months, and numbers.

UPCOMING MEETINGS
ON AFRICAN LANGUAGES / LINGUISTICS

2004

August 23-25
COLLOQUIUM ON AFRICAN LANGUAGES AND LINGUISTICS, 34TH. Leiden University, The Netherlands. (Contact: Maarten Mous, Sander Steeman; email call@let.leidenuniv.nl).

2005

March 18-25
THE NORTH AMERICAN CONFERENCE ON AFROASIATIC LINGUISTICS, 33RD. Philadelphia, Pennsylvania. (Conference website: http://www.NACAL.org). Abstract deadline: December 1, 2004.

March 31-April 3
ANNUAL CONFERENCE ON AFRICAN LINGUISTICS, 36TH. Georgia Southern University, Savanna. (Conference website: http://conted.georgiasouthern.edu/ACAL.html). Abstract deadline: December 3, 2004.

Oct 6-8
INTERNATIONAL CONFERENCE ON FOCUS ON AFRICAN LANGUAGES. ZAS, Berlin, Germany. Contact: Laura Downing; email downing@zas.gwz-berlin.de). Call for papers circulated early October 2004, abstract submission deadline early April 2005.

2006

July 10-12
WORLD CONGRESS ON AFRICAN LINGUISTICS, 5TH. Addis Ababa University, Addis Ababa, Ethiopia. Abstract acceptance dates: July 10-Dec 10, 2005. 1 page 12 pt. abstract as PDF or postscript attachment emailed to afriling@dling.aau.edu.et) or Word document on 3.5 in. floppy mailed to WOCAL 5, Department of Linguistics, Addis Ababa University, P.O.Box 1176, Addis Ababa, Ethiopia.

Format Specification

The final document should be set up for letter-size (8.5 in. x 11 in.) paper, with the margins set at 1 in. top, bottom and left, and 1.1 in. right and pages numbered at the top. Text is in 14 pt Times Roman (plus any required symbol fonts), except that the abstract, footnotes, morpheme and word glosses aligned underneath data in displays, and any extended quotes are 12 pt. Paragraphs are single spaced, and indented .5 in. except after a full-section header. Please use consecutively numbered footnotes (not endnotes).

Displays are serially numbered with the number in parentheses in the upper left corner of the display; the data is presented starting .5 in. after that. Displays with letter subdivisions place the appropriate lowercase letter (a, b, c) in that column, and there is a second indent so that the left edge of the data in subdivided displays begins at 3/4 in. Figures, maps, and tables also have an appropriate header in bold at the top, indented .5 in. In all cases, please use tabs and tab settings to control column spacing.

Section and subsection headers are in bold, and are numbered starting with 1. Please restrict the number of subdivisions to one level of subsectioning. Full section headers stand on a line of their own; sub-section headers are continuous with the following text.

Glosses are contained in single quotes. Linguistic forms in the text are either enclosed in brackets such as [...], /.../ or are in italics. Dates for references are in parentheses, except when the text is already inside parentheses.

Extended quotes are preceded by a mention of the source in the main text, followed by the quote in 12 pt. type, with left and right margins adjusted inwards an additional .5 in. At the end of the quote, the page number should be given in square brackets.

References are doubled-spaced between paragraphs and single-spaced within the paragraph, and have a hanging indent of .25 in. The form of references follows these models:

Andersen, Torben. 1988c. "Ergativity in Päri, a Nilotic OVS language". *Lingua* 75: 289-324.

Clark, Mary M. 1993. "Representation of downstep in Dschang Bamileke". *The Phonology of Tone: The Representation of Tonal Register*, ed. by Harry van der Hulst and Keith Snider. Berlin & New York: Mouton de Gruyter. Pp. 29-73.

Elugbe, Ben. 1989. *Comparative Edoid: Phonology and Lexicon*. Port Harcourt: University of Port Harcourt Press.

Goldsmith, John. 1976. *Autosegmental Phonology*. Cambridge: MIT, PhD. dissertation. Distributed by IULC.