Studies in African Linguistics
Volume 32, Number 1, 2003

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.

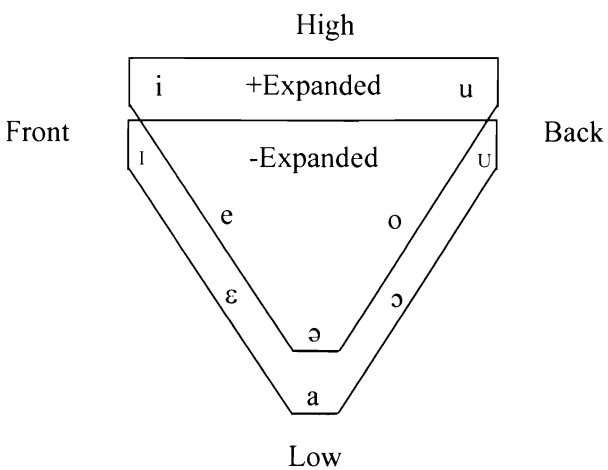
2. The vowel harmony feature

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 [rʊ̀ʒɪ̀t] ~ [rʊ̀ʒìt] 'food' or [ɾʊ̀jʊ̀k] ~ [ɾʊ̀jʊ̀k] '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'	ɾè	-kòŋ	'war'
					ɾè	-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		Stem V: ɔ	
Prefix V	ɛ	tɛ̀ -tɛ̀b	'house'	ɛ̀ -kɔ̀	'snail'
				ɛ̀ -wɔ̀m	'cow'
				ɾɛ́ -tɔ́ŋ	'mortar'
				ɾɛ̀ -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 -ɾən	'animal'	rə̀ -bèm	'chins'
ɛ	ɛ́ -fíá	'market'	tɛ̀ -tɛ̀b	'house'
	ɛ̀ -gà	'dog'		

b. [o] and [ɔ]

	Prefix		Stem	
o	ʊò -sè	'trees'	ì -kòb	'friends'
	ò -kòɣə̀	'cooking pot'	ù -sòkòrò	'orange'
			rə̀ -rò	'heads'
ɔ	ɔ̀ -tà	'witch'	ʊà -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-swallow-PST	'you swallowed'
		ɟə̀b	'steal'	ə́-ɟə́ʊ-ə́ you-steal-PST	'you stole'
	b.	jɛ̀ŋ	'cook'	á-jɛ́ŋ-á you-cook-PST	'you cooked'

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	-kə̀b	'seed'			
	tɛ̀	-kəb	'bone'			
ɔ	kɔ̀	-dùm	'mud'	ì	-kɔ̀	'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'
rè-kòrìbə̀	'well'	rə̀-kòrìbə̀	'wells'

(6) [-expanded] vowels in prefixes

a. [ɛ] in singular prefix		b. [a] in plural prefix	
rɛ̀-dɔ̀g	'tongue'	rà-dɔ̀g	'tongues'
rɛ́-tɔ́ŋ	'mortar'	rá-tɔ́ŋ	'mortars'
rɛ̀-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	rə̀ -jĩrì	'words'	rì -kə̀d	'neck'
	rə̀ -kùg	'navels'	ì -bə̀ì	'axe'
	rə̀ -bèm	'chins'	kù -bə̀m	'jaw'
	rə̀ -rò	'heads'	è -ɾə̀n	'animal'
	rə̀ -kòŋ	'wars'	rə̀ -də̀nì	'roads'
	rə̀ -kə̀d	'necks'		

a

rà -nɔ̀n	'birds'		ɪ̀ -kpàɪ̀	'crabs'
ʊà -nɔ̀n	'fowls'		ʊ̀ -gà	'doctor'
ʊà -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 -kə̀b	'bone'	ʊɔ̀ -kə̀b	'bone'
ɾɛ̀ -bə̀m	'fight'	kɔ̀ -tə̀d	'things'
ɛ̀ -ɾə́ŋ	'okra'		
ɛ̀ -kə̀b	'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'

rèbə̀m	'chin'	rèbə̀ŋkə̀m	'my chin'
rèwɔ̀n	'knee'	rèwɔ̀ŋkə̀m	'my knee'
kɔ̀ɾɔ̀g	'ear'	kɔ̀ɾɔ̀ːɣə̀m	'my ear'
ʊ̀ɪdə̀b	'hat'	ʊ̀ɪdəːɣə̀m	'my hat'

b. *-ɣà̀m* 'my'

tɛ̀kɛ̀b	'bone'	tɛ̀kɛ̀ːɣà̀m	'my bone'
rɛ̀dɔ̀g	'tongue'	rɛ̀dɔːɣà̀m	'my tongue'
kɔ̀bɔ̀	'hand'	kɔ̀bɔ̀ːɣà̀m	'my hand'
rɛsàn	'tooth'	rɛsàŋkà̀m	'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 you-swallow-PST	→	əménə́	'you swallowed'
		/dóm/	'bite'	ə́-dóm-ə́ you-bite-PST	→	ədómə́	'you (pl) bit'
		/ɟàb/	'steal'	ə́-ɟəb-ə́ you-steal-PST	→	əɟəʊə́	'you stole'
	b.	/jɛ̀ŋ/	'cook'	ájɛ́ŋá you-give-PST	→	ájɛ́ŋá	'you gave'
		/gɔ́d/	'drink'	á-gɔd-á you-drink-PST	→	ágɔrá	'you drank'
		/sáb/	'tear'	á-sáb-á you-tear-PST	→	ásáʊá	'you tore'

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'
kɔ̀ -kpàɪ̀ 'crab'
ɪ̀ -kpàɪ̀ 'crabs'
ɛ́ -fɪà 'market'

b. tí -ŋɑ̃́ɪ 'nail'

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	[ágʊ́ɣɪ́]	'you are digging'
				2S-dig-PRES		
				á-gʊ̀k-á	[ágʊ́ɣá]	'you dug'
b.	nʊ̀k	'weave'	→	á-nʊ̀k-ɪ̀	[ánʊ́ɣɪ́]	'you are weaving'
				2S-weave-PRES		
				á-nʊ̀k-á	[ánʊ́ɣá]	'you wove'

compare:

c.	dók	'lose'	→	ə́-dók-ì 2S-lose-PRES	[ə́dóɣì]	'you are losing'
				ə́-dók-ə́	[ə́dóɣə́]	'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	-bə̀ì	'axe'			
rə̀	-jɪ̀rì	'words	ɪ́	-jɛ́mì	'cassava'
rə̀	-dènì	'roads'	ɪ́	-kɔ́ːmí	'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	-nʊ̀a]	
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		
ʊù	-kpì	'rats'	ùː	-tɛ̀ɾɛ̀	'vulture'
ʊù	-bùn	'goats'	ʊù	-gɔ̀b	'fear'
ù	-jɛ̀b	'thief'	ù	-kɔ̀m	'plantain'
tù	-ŋ̀kpò	'water pot'	ù	-gà	'doctor'
rù	-grə́	'money'		[also *ù-*]	

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'	→	[tìbìɣəm]	'my shoes'
rə̀	-kùg	'navels'	→	[rəkù:ɣəm]	'my navels'

b. /i/[2] or /u/[2] in stems

rú	-ɟíd	'food'	→	[rúdʒì:ɣàm]	'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	→	[ɾùjùk]	or	[ɾújúk]	'horn'
gì-ɾə̀	→	[gìɾə̀]	or	[gɪɾə̀]	'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	-ŋáɪ	'nail'	→	[tíŋáɾɣàm]	'my nail'
tɛ̀	-kpàɪ	'skin'	→	[tɛ̀kpàɾɣàm]	'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 ongoing 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

[Received February 2000; accepted June 1, 2003]