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VOWEL ROUNDNESS IN GBE: A PANDIALECTAL APPROACH

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A rounded vowel may derive its roundness from either (i) its inherent feature-specification, or (ii) a co-occurrence restriction in the lexicon, or (iii) the application of a phonological rule. All Gbe dialects have rounded vowels to be characterised as in (i). In addition, in specific lects and contexts, rounded vowels may be equally characterised as in (ii) or (iii). This paper argues that the characterisation in (iii) is more illuminating in a pandialectal approach. The aim of this approach is to present a synchronic analysis sensitive to (but not necessarily based on) history, i.e. a purely internal description of one lect, using only occasionally information from another lect to prefer one solution over the other. Thus the paper supports the claim that within the linear generative model, not all co-occurrence restrictions should be stated as Morpheme Structure Conditions (in the lexicon); rather some of them result from the application of phonological rules.

Une voyelle arrondie peut provenir de trois sources; (i) ou bien l'arrondissement fait partie de ses traits inhérents; (ii) ou bien il résulte d'une restriction phonotactique au niveau lexical; (iii) ou encore il est acquis par le truchement d'une règle phonologique. Tous les dialectes Gbe ont des voyelles arrondies de la première source. Mais en plus et dans des parlers specifiques, des cas existent ou l'arrondissement peut tout aussi bien provenir de la seconde source que de la troisième. On essaie de montrer dans cet article que la dernière interprétation est la plus éclairante dans une approche pandialectale, dont le but est de présenter une analyse synchronique sensible à (mais pas nécessairement basée sur) l'histoire ou la dialectologie. De fait on confirme que certaines restrictions phonotactiques ne sont pas nécessairement des contraintes de structure de morphèmes, mais résultent plutôt de l'application de règles phonologiques.

1. INTRODUCTION

1.1 SOME DEFINTIONS

At the phonetic level a rounded vowel is a vowel during the articulation of which the lips are protruded, i.e. the general configuration of the lips in a front view resembles an orifice: thus cardinal vowels 5 to 8 are back and rounded. At the phonological level, a rounded vowel may derive its roundness from either (i) its inherent feature-specification, or (ii) a co-occurrence restriction in the lexicon, or (iii) the application of

a phonological rule. We talk of roundness here because we capitalize on the existence of the phonetic characteristic of lip rounding with a view to discussing its phonological interpretation; in this respect rounding refers here to a process by which roundness is acquired.

Following the distinction between synchrony and diachrony articulated by F. de Saussure (1916) a phonological process is synchronic when it is (still) productive at the time of description; it is diachronic when it is (already) part of the "history" of that language, i.e. the effects of the process can be noticed, but the process itself is no longer productive because there has been restructuring in the language. But the synchronic vs. diachronic dichotomy applies also to descriptions. A description is said to be synchronic if it deals with a specific lect (speech form/system) at a point in time and in a specific locality, i.e. if it deals exclusively with a state of a language. It is said to be diachronic if it deals with the development/ evolution of a language through time. Saussure himself has warned against confusing or mixing the two approaches (synchronic and diachronic), but has indicated that synchronic descriptions at different times are a prerequisite to a good diachronic description.

Having in mind a panchronic approach, I do not intend to mix the two perspectives, and indeed I keep them quite separate. I wish, however, to suggest that perhaps we are faced with basically the same processes, whether they have only a synchronic or diachronic dimension or both. In fact, I am talking of a pandialectal approach because my investigation has been carried out on the present-day dialects of a given language, Gbe[2]: thus the pandialectal approach would mean proposing for specific processes synchronic accounts that are likely to apply to all dialects (even when they fail to apply or are obscured by other factors) so that the dialectal differences may be put in a more illuminating perspective. However one may use the terms "pandialectal" and "panchronic" interchangeably because it is now largely agreed upon that "dialect differences often reflect some of the changes that have taken place in the language over a period of time. In other words, dialect differences often provide us with the most direct evidence of the history of a language" (Dolphyne 1976:15)

1.2 GBE VOWELS

Since our discussion centers around vowel roundness, it is only appropriate to have an overview of Gbe vowels. Taken together the present-day Gbe dialects exhibit sixteen vowels, eight "oral" and eight "nasalised". Their distinctive feature matrices (Capo 1985a) are presented in (1); all these vowels are, of course, [+syl, -cons, +voiced, +son].

(1) Feature matrices of Gbe vowels (overall view)

	i	e	ə	ɛ	a	ɔ	o	u	ĩ	ẽ	ə̃	ɛ̃	ã	ɔ̃	õ	ũ
high	+	–	–	–	–	–	–	+	+	–	–	–	–	–	–	+
low	–	–	–	+	+	+	–	–	–	–	–	+	+	+	–	–
front	+	+	–	+	–	–	–	–	+	+	–	+	–	–	–	–
round	–	–	–	–	–	+	+	+	–	–	–	–	–	+	+	+
nasal	–	–	–	–	–	–	–	–	+	+	+	+	+	+	+	+

The feature [back] is not entered because we have the redundancy [∝round] <-->[∝back]. Note also that all [-round] vowels are [+front] except a ã ə ə̃: these four vowels are central; in any case all front vowels are redundantly unrounded. These morpheme structure conditions are formally stated in (2) as If-then conditions.

(2) a. [∝round] --> [∝back]
b. [+front] --> [-round]
c. [+round] --> [-front]

Considering the "oral" vowels only for the moment (but the same applies also to the "nasalised" ones), no Gbe dialect has contrast between the eight vowels, but between six or seven. All the known dialects have the following underlying five vowels in common:

(3) i a ɔ o u.

Those dialects with six contrasting vowels have in addition either e (Gen d., Ajá d. and Kpándo), or ə (Awlan, Tɔwun, Wací), or ɛ (Pecí), whereas those with seven contrasting vowels (Fon and Phla-Pherá dialects) have, in addition to the five common vowels e and ɛ. Thus seven contrasting vowels are reconstructed for proto-Gbe as in (4) (Capo forth.):

(4) i a ɔ o u e ɛ.

The cross-dialectal correspondences supporting the reconstruction of these vowels (and their nasalised counterparts) are illustrated in (5).

(5) Illustration of Gbe vowels

	Proto-Gbe	Awlan	Pecí	Kpándo	Gen d	Ajá d.	Fon d.	Phla-Phera d.	Glosses
1.	*ɖu	ɖu	ɖu	ɖu	ɖu	ɖu	ɖu	ɖu	'to eat'
2.	*ɖi	ɖi	ɖi	ɖi	ɖi	ɖi	ɖi	ɖi	'to bury'
3.	*ɖe	ɖə	ɖɛ	ɖe	ɖe	ɖe	ɖe	ɖe	'to subtract,remove'
4.	*-ɖɛ́	aɖə́	aɖɛ́	aɖé	aɖé	aɖé	aɖɛ́	aɖɛ́	'tongue (organ)'
5.	*ɖó	ɖó	ɖó	ɖó	ɖó	ɖó	ɖó	ɖó	'to create'
6.	*-ɖɔ	ɖɔ	ɖɔ	ɖɔ	eɖɔ	eɖɔ	ɖɔ	-ɖɔ	'net'
7.	*ɖa	ɖa	ɖa	ɖa	ɖa	ɖa	ɖa	ɖa	'to cook'
8.	*dā́	dā́	dā́	dā́	dā́	dā́	dā́	dā́	'to wander about'
9.	*zɔ̄	zɔ̄	zɔ̄	zɔ̄	zɔ̄	zɔ̄	zɔ̄	zɔ̄	'to walk'
10.	*sū́	sū́	sū́	sū́	sū́	sū́, ʃū́	sū́	sū́	'to tear out'
11.	*zǐ́	ʒǐ́	zǐ́	zǐ́	zǐ́	ʒǐ́	zǐ́	zǐ́	'to push'
12.	*-dě	ədə	dɛ	de	dɛ́	edɛ́	de	dɛ́	'customs place'
13.	*-dɛ̄	də	dɛ	de	dɛ̄	dɛ̄	dɛ	dɛ	'to be resistent'
14.	*Rɔ̄	Ro	Ro	Ro	Rɔ̄	Ro	Rɔ̄	Ro	'to uproot'

Note that all (known) Gbe dialects have three inherently rounded vowels since their roundness cannot be otherwise derived. They are:

(6) ɔ o u .

1.3 THEORETICAL FRAMEWORK

Given this background information, the object of this paper is to describe some cases in which the interpretation of the "roundness" is not obvious. The description cum analysis is carried out in the framework of Standard Generative Phonology, i.e. the Sound Pattern of English model, referred to today as the linear type[3]. In this framework two approaches are explored. In the first approach (section 3) I shall hold to the view that "the only time a phonological rule is strongly motivated is when it captures regular morphological alternation" (Kiparsky 1968) and I propose accordingly a predominantly morpheme structure condition (MSC) based account. In the second approach (section 4) I shall start from the non-demonstrated premises that information from one dialect may be relevant to the underlying representation of forms in another dialect, and I propose accordingly a phonological (P) rule based account; the rules proposed will be claimed to be synchronic rules, and so section 5 will try to substantiate such a stand.

2. RELEVANT DATA

2.1 ALTERNATION BETWEEN ROUNDED VOWELS AND NONROUNDED VOWELS

In Gbe there are some items in which there are cross-dialectal matchings or surface correspondences between rounded and unrounded vowels after the same consonants, as illustrated in (7).

(7) Roundness alternation in vowels

	Pecí	Awlan	Wací	kpándo	Gen d.	Kpasɛ	Agbóme	Phla	Ajá d	Gloss
1.	abɔ́	abɔ́	abɔ́	abɔ́	abɔ́	abɔ́	abá	abɔ́	abá	'arm (upper)'
2.	ɛkpɔ́	kpɔ́	ɛkpá	ekpá	ekpá	ekpá	kpá	ɔkpá	ekpâ	'fence'
3.	byá	byá	byɔ́	byá	byɔ́	byɔ́	byɔ́	byɔ́	byɔ́	'ask'
4.	mỹã	mỹã	mỹɔ̃	mỹɔ̃	mỹɔ̃	mỹɔ̃	amỹɔ̃	ɔmỹɔ̃	emỹɔ̃	'left (hand)'
5.	kplɔ	kplɔ	kplɔ	kplɔ	kplɔ	kplã	kplã	--	--	'accompany'
6.	fyɛ	fye	fyɔ	fye	fyɔ	fyɛ	fyɛ	fyɛ	fyɔ	'boil'
7.	vɬ	vɬ	vɬ	vɬ	vɬ	vɬ	vɭ́	vɬ	vɬ	'small'
8.	ɲã	ɲã	ɲã	ɲã	ɲã	ɲɔ̃	ɲɔ̃	ɲɔ̃	ɲɔ̃	'know'
9.	ɲã	ɲã	ɲã	ɲã	eɲã	--	--	--	eɲɔ̃	'word'
10.	ayi	ayi	ayi	ayi	ayi	ayi	ayi	ayi	ayu	'beans'

The characteristics can be highlighted as in (8).

(8) i. The consonants do not alternate.
ii. The alternating vowels have practically the same height, i.e. - i : u [±high]
- ɔ : a [±low, -front]
- ɔ : ɛ : e : ə [-high][4].
iii. The alternating vowels occur mainly (but not exclusively) after syllable initial "labial" consonants.
iv. There seems to be no directionality: the same dialect exhibits the rounded vowel in one item and the unrounded vowel in another item.

The data presented here pose no problem if each dialect is considered per se. But put in historical perspective, one would be curious about the sources of the alternating vowels in comparison with the non-alternating ones. Consider (9) for example.

(9) a. abá : abɔ́ 'arm'
abɔbɔ (across dialects) 'boiled beans'
babá (across dialects) 'mud'

b. -kpɬ́ : -kpɔ́ 'fence'
kpɔ̃ : kpɔ́ 'see' difference in nasality, not roundness
kpã : kpa 'carry on the back'

Given the contrasts in (9), three hypotheses are logically possible, concerning the source of the alternating vowels, as sketched in (10).

(10) i. Postulating back unrounded vowels which evolved to (back) rounded vowels in some cases and to nonback (unrounded) vowels in other cases.
ii. Postulating nonback rounded vowels which evolved to (nonback) unrounded vowels in some cases and to back (rounded) vowels in other cases.
iii. Postulating free variants (i.e. two forms differing only in the roundness of the vowel) in proto-Gbe out of which only one form is retained by each particular dialect.

2.2 ROUNDNESS ALTERNATION IN SEQUENCES

In another set of examples Gbe items show cross-dialectal alternation between rounded and unrounded vowels coupled with alternation between the "non labialised" velar approximant and its "labialised" counterpart and/or the "labialised" voiced uvular fricative, as illustrated in (11).

(11) Roundness alternation in sequences

	Awlan	Kpándo	Wací	Ajá d.	Gen d.	Fon d.	Phla-Pherá d.	Gloss
1.	əɣə	ewo	əwo	ewe	ewe	we	-we	dance
2.	ɣá	ɣé	ɣá	ɣé	ɣé	wé	wé	be white
3.	ɣa	wo	wo	ewe	ewe	R^{W}e	R^{W}e	sun
4.	ɣlá	wlɔ́	wlá	wlá	wlá	R^{W}lá	R^{W}lá	hide
5.	ɣá	wó	wó	wé	wé	R^{W}é	R^{W}é	borrow
6.	ɣá	--	wó	--	ewó	R^{W}é	--	white clay

compare with:

7.	awu	awu	awu	awu	awu	awu	awu	shirt
8.	əwó	ewó	əwó	ewó	ewó	wó	-wó	ten
9.	wu	wu	wu	wu	wu,Ru	Ru	Ru	kill
10.	wú	wú	wú	wú	wú,Rú	Rú	Rú	surpass

Paying special attention to Awlan and Kpándo, we notice that both dialects have w and ɣ in complementary distribution, w before rounded vowels and ɣ before unrounded vowels, but not in the same lexical items. Thus, at the same time, we have three surface correspondences involving the two dialects and the two sounds as in (12).

(12) i. w : w (before the same rounded vowels);
ii. ɣ : ɣ (before the same unrounded vowels[5]);
iii. ɣ : w (coupled with unrounded vs. rounded vowel cross-dialectal alternation).

Given the correspondences in (12), whether we consider both w and ɣ as two underlying phonemes in each of the dialects or not, we still have to account for their restricted distributions. Moreover, in a comparative study, the (Awlan)ɣ:(Kpándo)w alternation must be accounted for, and thus can be done by postulating one process or the other, as in (13).

(13) i. Either in the latest common ancestor of Kpándo and Awlan, we had *w followed by an unrounded vowel: in that case Awlan would have retained the vowel but changed *w to ɣ through a de-rounding process, whereas Kpándo would have retained w, but changed the vowels to rounded ones through a rounding process.

ii. Or the latest common ancestor of Kpándo and Awlan had *ɣ followed by a rounded vowel; in that case Awlan would have retained ɣ but changed the vowels to unrounded ones through a de-rounding process, whereas Kpándo would have retained the rounded vowels and changed *ɣ to w through a rounding process.

iii. Or the latest common ancestor of Kpándo and Awlan had a consonant different from *w and *ɣ and/or vowels different from the back rounded ones and the nonback unrounded ones. In that case both dialects would have innovated various changes.

iv. Or the items in Awlan and Kpándo do not come from the same sources, but this seems unlikely on the basis of the regularities observed.

Note that some of the items exhibit w in Fon and Phla-Pherá dialects whereas others exhibit R^W or R in the same dialects. They have been traced back to *w and *Hw respectively in Capo (forth.), but this should not influence our treatment here, based, as it were, on the discrepancies between Awlan and Kpándo.

2.3 VOWEL ASSIMILATION?

In Gbe, there is a determiner, usually suffixed to the noun stem, and presumed to be an article. This article, depending on the dialects, has the following segmental realisations (if we disregard nasality, as it is automatic): lɔ, la, ɔ, a, ɛ as illustrated in (14).

(14) Different realisations of the 'article'

	Fon and Ajá d.		Pecí	Tɔwun	Gen d.	Gloss
1.	-taɔ́	-talɔ́	taa	taa	taa	the head
2.	-teɔ́	-telɔ́	tɛɛ	taa	tea	the yam
3.	-dɛ́ɔ́,	-dɛ́lɔ́	adɛ́ɛ́	adáá	adéá	the tongue
4.	-vi̱ɔ́,	-vi̱lɔ́	-vi̱ɛ́	vi̱á	-vi̱á	the child
5.	-nũɔ̃́,	-nũlɔ́	-nũɔ̃́	ŋũã	enũã	the thing
6.	-kúɔ́	-kúlɔ́	-kúɔ́	-kúɔ́	ekúá	the death
7.	-fɔɔ́,	-fɔlɔ́	afɔɔ	afɔɔ	afɔa	the foot
8.	-tɔ́ɔ́,	-tɔ́lɔ́	-tɔ́ɔ́	tɔ́ɔ́	etɔ́á	the ear

We shall be concerned with Pecí and Tɔwun forms.

In Pecí, the "article" in question is rendered by the three low vowels of the system (again disregarding nasality) as in (15).

(15) i. We have a after the low central vowel a .
ii. We have ɛ after the front vowels i and ɛ .
iii. We have ɔ after the rounded vowels ɔ o u .

In Tɔwun the same "article" is rendered by the two low non-front vowels of the system (again disregarding nasality) as in (16).

(16) i. We have a after all unrounded vowels, here a and i (in fact the third unrounded vowel is assimilated to a in items 3 and 4).
ii. We have ɔ after all rounded vowels, viz. ɔ o u .

In Fon and Ajá dialects we have only ɔ (disregarding nasality and here the lateral initial) whereas in Gen dialects we have only a throughout.

2.4 VOWEL HARMONY?

Under the heading of "vowel harmony" we shall examine an aspect of reduplication and an aspect of foreign word integration (loanword phonology). Concerning reduplication in Gbe, one should note that although we have the complete and the partial types, the reduplicative is always prefixed to the stem (Capo forth.). On loanword phonology, we must mention that in the native lexicon of Gbe there is no closed syllable, nor consonant cluster in which the second consonant is not a sonorant. So, when such situations obtain in a "foreign word" being integrated into Gbe, the consonants concerned are usually syllabified with an epenthetic close vowel.

2.4.1 In reduplicated forms

Examples of what could be termed "roundness harmony" in the vowels of reduplicated forms are presented in (17) where the column headed "stem" should read Proto-Gbe stem.

(17) Instances of C(1)V reduplication in Gbe dialects

	Stem	Ajá d.	Gen d.	Phla-Awlan	Pherá d.	Gun	Agbóme	Maxí	Gloss
1.	*se	sese	sese	səsə	sise	sise	sise	sise	'hear'
2.	*ɗa	ɗaɗa	ɗaɗa	ɗaɗa	ɗiɗa	ɗiɗa	ɗiɗa	ɗiɗa	'cook'
3.	*sɛ̃,	sɛ̃sɛ̃,	sɛ̃sɛ̃,	səsɛ̃,	sɪsɛ̃,	sɪsɛ̃,	sɪsɛ̃,	sɪsɛ̃,	'worship'
4.	*klã	klãklã	kãklã	kaklã	kɪklã	kɪklã	klãklã	kɪklã	'separate'
5.	*ɗi	ɗiɗi	ɗiɗi	ɗiɗi	ɗiɗi	ɗiɗi	ɗiɗi	ɗiɗi	'bury'
6.	*zɔ̃	zɔ̃zɔ̃	zɔ̃ɔ̃	zɔzɔ̃	zɪzɔ̃	zɪzɔ̃	zʊ̃zɔ̃	zʊ̃zɔ̃	'walk'
7.	*ko	koko	koko	koko	kiko	kiko	kuko	kuko	'laugh'
8.	*ɗu	ɗuɗu	ɗuɗu	ɗuɗu	ɗuɗu	ɗuɗu	ɗuɗu	ɗuɗu	'eat'
9.	*klɔ́	klɔklɔ́	kɔklɔ́	kɔklɔ́	kiklɔ́	kiklɔ́	kʊklɔ́,	kuklɔ́	'wash'
10.	*glɔ̃	glɔ̃glɔ̃	gɔ̃glɔ̃	gɔ̃glɔ̃	gɪglɔ̃	gɪglɔ̃	glɔ̃glɔ̃	gʊ̃glɔ̃ɔ	'bend'
11.	*bɛ	bebe	bebe	bəbə	bibɛ	bibɛ	bibɛ	bubɛ	'hide'
12.	*vɛ́	vevé	vevé	vəvə	vivɛ́	vivɛ́	vivɛ́	vuvɛ́	'be dear, bitter'
13.	*kpɛ̃	kpekpe	kpɛ̃kpɛ̃	kpəkpə	kpɪkpɛ̃	kpɪkpɛ̃	kpɪkpɛ̃	kpʊ̃kpɛ̃	'be heavy'
14.	*blá	blablá	bablá	bablá	biblá	biblá	blablá	bublá	'tie'
15.	?*bló	--	--	--	--	bibló	blobló	bubló	'do'

We shall be concerned here with the Agbóme and Maxí forms. In Agbóme, we notice that:

(18) i. The vowel of the reduplicative is i if the stem vowel is an unrounded vowel.
ii. It is u when the stem vowel is a rounded one.

Turning to Maxí, we notice that if the stem initial consonant is not a labial nor a palatal, we have the same situation as in (18), i.e. the choice of i or u depends on the roundness of the stem vowel. Note that Phla-Pherá dialects and Gun consistently have i whereas the other dialects (e.g. Ajá and Gen dialects and Awlan) use the exact copy of the stem vowel. In these statements we disregard the nasality of the vowels.

2.4.2 In loanword phonology

Examples of "roundness harmony" involving indigenization of foreign terms are presented in (19).

(19) Roundness harmony in loanwords

A.	Source		Gbe d.	Gloss	B.	Source		Gbe d.	Gloss
1.	ˈfɔ^{R}s	(F)	fɔ́su	force, v.	6.	ˈbœg	(E)	bági	bag
2.	ˈbɔl	(E)	bɔ́lu	ball	7.	ˈjə:k	(E)	jɛ́ki,d^{z}ɛ́ki	jerk
3.	ˈkUk	(E)	kúku	cook, n.	8.	ˈmaʃin	(F)	mãcínĩ	machine
4.	ˈkɔst	(E)	kɔ́su	costly	9.	ˈbed	(E)	bɛdi	bed
5	ˈskul	(E)	{sukúu / sukúlu	school	10.	ˈbred	(E)	blɛ́di	bread

(E and F refer to English and French respectively.)

Our observations are that:

(20) The consonants to be syllabified take:
i. i if the preceding vowel is unrounded;
ii. u if the preceding vowel is rounded.

Note, however, that none of the consonants involved is either a palatal or a labial.

2.5 CONSONANT AND VOWEL HARMONY?

We shall be concerned, here too, with reduplication and loanword phonology, but from a different angle.

2.5.1 In reduplication

Looking again at the illustrations in (17) and paying special attention to Maxí, we notice that, apart from the observations in 2.4.1, we must add the following statement (21):

(21) When the stem initial consonant is a labial, the vowel of the reduplicative is u irrespective of the stem vowel.

We do not have such a situation in any other dialect investigated so far, not even in Agbóme.

2.5.2 In loanword phonology

The aspect of loanword phonology examined here (consonant and vowel harmony) is based on the examples in (22).

(22) Consonant and vowel harmony (?) in loanwords

A.	Source		Gbe d.	Gloss	B.	Source		Gbe d.	Gloss
1.	ˈlɛ̃b	(F)	lɛ̃bu	limbo	4.	ˈʒɔ^{R}ʒ	(F)	joɔ́ji	George
2.	ˈʒozɛf	(F)	jozɛfu	Joseph	5.	ˈtɔ^{R}ʃ	(F)	{dzoɔ́ji / tɔ́ci	torch
3.	ˈgrɛv	(F)	{dzozɛ̃fu / gɛ̃vu	strike	6.	ˈcʌc	(E)	cɔ́ci	church
					7.	ˈce'nj	(E)	céji	change

(F and E stand for French and English respectively.)

In all these examples the consonants to be syllabified are either labials or palatals (including prepalatals). We observe that:

(23) i. All labial consonants are syllabified with an epenthetic u irrespective of the roundness of the preceding vowels.
ii. All palatal consonants are syllabified with i irrespective of the roundness of the preceding vowel.

3. A MSC BASED ACCOUNT

3.1 JUSTIFICATION

Because, very often, there are no phonological alternations (in one dialect considered per se) to motivate phonological rules in respect of the phenomena considered here, I will propose some morpheme structure conditions (MSCs) and set up some "archisegments" to account for the relevant data presented in section 2. Note that these statements obtain in the lexicon and may not be phonological rules (but morphological if they are rules at all).

3.2 ON ROUNDNESS ALTERNATION ACROSS DIALECTS

With regard to the data in 2.1, there is nothing to account for, except in the diachrony. Even then, I opt for hypothesis (10iii), claiming that in proto-Gbe we had free variation between forms exhibiting the rounded vowels and those exhibiting the unrounded vowels. Thus it is a matter of random choice in present-day dialects, a situation that has led to the asystematicity observed.

3.3 ON VELAR APPROXIMANTS AND ROUNDNESS OF VOWELS

With regard to the data presented in 2.2, I will assume here that both Awlan and Kpándo have /w/ and /ɣ/ at the level of systematic phonemic representation. The fact that /w/ is always followed by a rounded vowel, and that /ɣ/ is always followed by an unrounded vowel will be captured by (24).

(24) If $ [-syl ; +son ; _+back] (1) [+syl ; _-cons] $ (Awlan and Kpándo)

Then [α round] [α round]

*e.g. sequences /wo/, /wu/, /wɔ/ as well as /ɣə/, /ɣi/, /ɣa/ are allowed whereas */wi/, */ɣu/ are not. Fon and Phla-Perá dialects have only one velar approximant, namely /w/. Thus they have the MSC stated as (25).

(25) [-syl ; +son ; _+back] --> [+round] (Fon and Phla-Phera dialects)

e.g. we have /w/, but not /ɣ/ in these dialects.

3.4 ACCOUNTING FOR THE "ARTICLE"

In respect of the data presented in 2.3, I account for the Pecí situation by (26) and for the Tɔwun situation by (27), both of which postulate an "archisegment" or "underspecified segment" identified simply as a low vowel in (26) and a low non-front vowel in (27).

(26) $\begin{bmatrix} -syl \\ \div low \end{bmatrix} \rightarrow \begin{bmatrix} \propto round \\ \beta front \end{bmatrix} / \begin{bmatrix} \div syl \\ \propto round \\ \beta front \end{bmatrix}$ — (Pecí)

e.g. / te + A / -> [teɛ] 'the yam'
/ kú + A / -> [kúɔ́] 'the death'
/ ta + A / -> [taa] 'the head'

According to (26) the "unpronounceable" low vowel takes its values of frontness and roundness from those of the (last) stem vowel (remember that we do not take nasality into account). Note that although (26) can be expanded into four sub-rules, only three obtain since we had earlier stated that no Gbe vowel is [÷front, ÷round] : see section 1.2 (2).

(27) $\begin{bmatrix} \div syl \\ -front \\ \div low \end{bmatrix} \rightarrow [\propto round] / \begin{bmatrix} \div syl \\ \propto round \end{bmatrix}$ -- (Tɔwun)

e.g. / te + A / -> [tea] -> [taa] 'the yam'
/ kú + A / -> [kúɔ́] 'the death'
/ ta + A / -> [taa] 'the head'

According to (27) the "unpronounceable" low non-front vowel takes its value of roundness from the one of the preceding (stem) vowel.

It is pertinent to point out here that (26) and (27) are open to two interpretations. They may be considered as phonological rules or as morpheme structure conditions. (Proponents of Lexical Morphology/Phonology talk of "fill-in rules" the nature of which is "functionally analogous to the markedness principles of Chomsky and Halle (1968), but formally identical to ordinary phonological rules" (Kiparsky 1982:168).)

3.5 ON INSTANCES OF "ROUNDNESS HARMONY"

In respect of the data presented in 2.4, the following accounts are proposed here.

For Agbóme reduplicative I propose (28a) which is slightly modified as (28b) to take care of Maxí (at least partly), where F stands for all (other) relevant features.

(28a) RED -> $\begin{bmatrix} -syl \\ F \end{bmatrix} \begin{bmatrix} \div syl \\ \div high \\ round \end{bmatrix} / -- \begin{bmatrix} -syl \\ F \end{bmatrix} \begin{bmatrix} \div syl \\ round \end{bmatrix}$ (Agbóme)

e.g. se -> sise 'hear'
ko -> kuko 'laugh'

(28b) RED -> $\begin{bmatrix}-\text{syl}\\-\text{lab}\\ \underline{F}\end{bmatrix}\begin{bmatrix}\div\text{syl}\\ \div\text{high}\\ \alpha\underline{\text{round}}\end{bmatrix}$ / -- $\begin{bmatrix}-\text{syl}\\-\text{lab}\\ \underline{F}\end{bmatrix}$ (1) $\begin{bmatrix}\div\text{syl}\\ \alpha\underline{\text{round}}\end{bmatrix}$ (Maxí)

e.g. **klá̰ -> kĩklá̰** 'separate'
klɔ́ -> kuklɔ́ 'wash'

(where [lab] is used as a cover feature: see Halle and Clements 1983.)

Note that (28a) and (28b) are morphological rather than phonological rules. They claim that the reduplicative copies the stem initial consonant and introduces a close vowel which agrees in roundness with the stem vowel.

For the aspect of loanword phonology discussed in 2.4.2, I propose to account for it by (29).

(29) $\emptyset \rightarrow \begin{bmatrix}\div\text{syl}\\ \div\text{high}\\ \alpha\underline{\text{round}}\end{bmatrix} / \begin{bmatrix}\div\text{syl}\\ \alpha\underline{\text{round}}\end{bmatrix}$ [Loan] [-syl] -- $\begin{Bmatrix}\$\\ \begin{bmatrix}\div\text{syl}\\ \underline{-\text{son}}\end{bmatrix}\end{Bmatrix}$ [Loan]

e.g. **bol -> bɔ́lu** 'ball'
bed -> bɛ́ɖi 'bed'

This statement introduces a close vowel which agrees in roundness with the preceding vowel.

3.6 ON INSTANCES OF "CONSONANT AND VOWEL HARMONY"

To account for the aspect of Maxí reduplication presented in 2.5.1, I propose here (30).

(30) If $\begin{bmatrix}-\text{syl}\\ \div\text{lab}\\ \underline{F}\end{bmatrix}\begin{bmatrix}\div\text{syl}\\ \underline{\div\text{high}}\end{bmatrix}\begin{bmatrix}-\text{syl}\\ \div\text{lab}\\ \underline{F}\end{bmatrix}$ (1) [÷syl]

Then [÷round]

e.g. **vɛ́ -> vuvɛ́** (***vivɛ́** unacceptable) 'be dear'
or **vɪvɛ́ -> vúvɛ́** (***vivɛ́** unacceptable) 'be dear'

For the aspect of loanword phonology discussed in 2.5.2, I propose here (31).

(31) $\emptyset \rightarrow \begin{bmatrix}\div\text{syl}\\ \div\text{high}\\ \langle -\text{round}\rangle\ a\\ \underline{\leq \div\text{round}\rangle\ b}\end{bmatrix} / \begin{bmatrix}-\text{syl}\\ \langle \div\text{pal}\rangle\ a\\ \underline{\leq \div\text{lab}\rangle\ b}\\ \underline{\text{Loan}}\end{bmatrix}$ -- $\begin{Bmatrix}\underline{\$}\\ \begin{bmatrix}-\text{syl}\\ \underline{-\text{son}}\end{bmatrix}\\ \underline{\text{Loan}}\end{Bmatrix}$

e.g. **•lɛ́b -> lɛ́bu** (***lɛ́bi** unacceptable)
•cʌc -> cɔ́ci (***cɔ́cu** unacceptable)

By this statement, an "underspecified" close vowel is introduced, which is front (unrounded) if the preceding consonant is a palatal, and is rounded (back) if the preceding consonant is a labial.

4. A P-RULE BASED ACCOUNT

4.1 JUSTIFICATION

The statements presented in section 3 are certainly correct, but some of them may be treated as results of phonological rules, whether there is alternation or not. Here, we go beyond the raw data and use our inquisitive mind to look for what could bring about complementary distribution between phonetically similar sounds, some gaps in the combination of certain sounds, etc., and see whether they cannot be accounted for by postulating phonological rules, synchronic for that matter. This search is based on the assumption that certain gaps of sequences in the lexicon can be accounted for as the results of the applications of P-rules (see also Stahlke 1979). On the other hand, I believe that "unpronounceable" phonematic units, just like "abstract segments" and "archisegments" will be recognized in the lexicon only under very special circumstances, i.e. when no alternative can be found. A P-rule based account of the data presented in 2 is now offered.

4.2 ROUNDNESS ALTERNATION ACROSS DIALECTS REVISITED

As pointed out in 3.1 with respect to data presented in 2.1, no statement is required in any present-day dialect. However, since "free variants" are my preferred hypothesis for proto-Gbe, one could account for this situation by the optional application of synchronic vowel rounding rule in proto-Gbe. This rule was perhaps initially of the form of (32a), i.e. "labial attraction", and then later extended as (32b), but eventually got lost because of its consequences on vowel merger in the history of the language.[6]

(32a) $\begin{bmatrix} \pm syl \\ (-round) \end{bmatrix} \rightarrow [\pm round] / \begin{bmatrix} -syl \\ \pm lab \end{bmatrix} ([-syl])$ -- (Proto-Gbe: optional)

(32b) [±syl] -> [±round]/[-syl] ([-syl]) --

e.g. /abá/ -> [abɔ́] or [abá] 'arm'
/ayi/ -> [ayu] or [ayi] 'beans'

Note that the application of the (32b) variant should result in absolute neutralisation between rounded and unrounded vowels in favour of the rounded ones: it is this undesirable effect, I now speculate, that has precipitated the loss of the rule in the grammar.

4.3 VELAR APPROXIMANTS AND ROUNDNESS OF VOWELS REVISITED

Concerning the data of 2.2, I now tend to think that the complementary distribution between w and ɣ in both Kpándo and Awlan is not fortuitous, but rule-governed. Thus I propose (33) for Awlan and (34) for Kpándo.

(33a) $\begin{bmatrix} -syl \\ +son \\ +back \\ (+round) \end{bmatrix} \rightarrow [-round] / -- \begin{bmatrix} +syl \\ -round \end{bmatrix}$ (Awlan)

e.g. /wə/ -> [ɣə] 'sun'

OR

(33b) $\begin{bmatrix} -\text{syl} \\ +\text{son} \\ +\text{back} \\ (-\text{round}) \end{bmatrix}$ -> [+round] / -- (1) $\begin{bmatrix} +\text{syl} \\ +\text{round} \end{bmatrix}$ (Awlan)

e.g. /əɣó/ -> [əwó] 'ten'

(33a) posits /w/ as a systematic phoneme and derives [ɣ] before unrounded vowels, while (33b) posits /ɣ/ as underlying and derives [w] before rounded vowels. Although (33a) looks less natural than (33b), I shall argue for it as the best alternative below.

(34) $\begin{bmatrix} +\text{syl} \\ (-\text{round}) \end{bmatrix}$ -> [-round]/ $\begin{bmatrix} -\text{syl} \\ +\text{son} \\ +\text{back} \\ (+\text{round}) \end{bmatrix}$ (1) -- (Kpándo)

e.g. /we/ -> [wo] 'sun'

Note that (34) takes it for granted that Kpándo has only /w/ (and not /ɣ/), and that /w/ triggers the rounding of the following vowel; but since we have a form like [ɣé] 'be white', one would think that Kpándo also has (33a). It seems obvious, however, that the two rules contradict each other: they cannot apply at the same time; and if they are ordered, by the time (33a) applies, the structural index of (34) can no longer be met; alternatively, by the time (34) applies, the structural index of (33a) can no longer obtain: they are in absolute bleeding order (Kiparsky 1978). I take it that Kpándo has no (32a); thus [ɣé] 'be white' is aberrant in this dialect; and since it is the only sequence of [ɣ] followed by an unrounded vowel, and indeed the only occurrence of [ɣ], it can be assumed that the term is re-borrowed from Awlan.

Back to Awlan, I prefer (33a) to (33b) because, by claiming that Awlan has /ɣ/ (but not /w/, the assumption of 33b), we are also claiming that Fon dialects' /w/ may not be related to Awlan's /ɣ/. Whereas, by postulating (33a), the claim is that just like Fon dialects, Awlan and Kpándo have underlying /w/ as well as the segment structure condition stated in (25). In addition, we have a natural account of the (Awlan)ɣ: (Kpándo)w surface correspondence coupled with the unrounded vs. rounded alternation in the following vowels. Note that the case of Wací, Gen dialects and Ajá dialects should be dealt with within the wave theory model, i.e. the two rules innovated (one by Awlan, the other by Kpándo) intersect in those dialects, and eventually ɣ and w are being "phonemicised" in those dialects. The suggestion is that (33a) and (34) assume a diachronic dimension in the derivation of Wací and Gen forms, but (33a) is still a synchronic rule in Awlan while (34) is still a synchronic rule in Kpándo.

4.4 THE UNDERLYING FORM OF THE "ARTICLE" REVISITED

With respect to the "article" discussed in 2.3, perhaps the lexicon should contain one form whereas the others are derived. For Pecí, whereas any of the three low vowels could be chosen, considering the types of rules to be envisaged, /a/ seems the best candidate. With this choice, we would derive [ɛ] through (35a) and [ɔ] through (35b).

(35a) [+syl, +low, -round, (-front)] -> [+front] / -- [+syl, +front] -- (Pecí)

e.g. /te + a/ -> [teɛ] -> [tɛɛ] 'the yam'

(35b) [+syl, +low, (-round), -front] -> [+round] / -- [+syl, +round] -- (Pecí and Tɔwun)

e.g. /kú + a/ -> [kúɔ́] 'the death'

In the case of Tɔwun, any of the two non-front vowels can be chosen as the underlying representation of the "article" concerned. But again, considering the nature of the rule deriving the other form, our postulated underlying form is /a/, and [ɔ] is derived by the application of (35b) proposed for Pecí.

Thus we see that Pecí and Tɔwun are closer in that both apply (35b); but they are different in that only Pecí applies (35a). Both of them are close to Gen dialects in that the "article" is underlyingly (and synchronically) /a/. Fon and Ajá dialects stand apart in that the underlying representation of the 'article" is /ɔ/ or /lɔ́/. We can now claim that Fon and Ajá dialects have innovated their /ɔ/ or /lɔ́/ from proto-Gbe */-a/ or */-lá/ by a diachronic rule of the form of (36) which is a generalization of (35b).

(36) [+syl, +low, (-round), -front] -> [+round] / (1) -- _Suf.

e.g. */telá/ -> [telɔ́] 'the yam'

Thus it can be argued that (35b) was introduced right at the proto-Gbe period, but was later lost in some Vhe dialects. In proto-Gbe, however, (35b) was rather like (35c).

(35c) [+syl, +low, (-round), -front] -> [+round] / -- [+syl, +round] +[-syl] -- _Suf.

e.g. /kúlá/ -> *[kúló] 'the death'

4.5 "ROUNDNESS HARMONY" REVISITED

In connection with instances of "vowel harmony" discussed in 3.4, we have the following alternatives. With specific reference to the Agbóme CV stem reduplication, I wish to propose that the morphological rule of reduplication introduces the close front vowel while copying the stem initial consonant. Thus (37a).

(37a) RED -> [-syl, F] [+syl, +high, ±front] / -- [-syl, F] [+syl] (Agbóme)

Maxí extends (37a) to its ClV stems as (37b).

(37b) RED -> [-syl, F] [+syl, +high, ±front] / -- [-syl, F] (1) [+syl] (Maxí)

Then we have a P-rule of vowel rounding that accounts for the "harmony"; thus (38).

(38) [+syl, +high, ±front] -> [+round, (-front)] / [-syl, F, Red] - [-syl, F] (1) [+syl, ±round, Red]

e.g. se -> sise (by 37a) 'hear'
ko -> kiko (by 37a) -> kuko (by 38) 'laugh'

The re-interpretation of (28) as the successive application of (37) and (38) has the advantage of showing that (37) is common to all Fon and Phla-Phera dialects, and that Agbóme and Maxí have innovated (or added) (38).

In the same way, for the indigenization process presented in 2.4.2, the alternative to (29) is to break it into two, viz. (39) and (40).

(39) Ø-> [+syl, +high, ±front] / [-syl] -- $ [-syl, -son]

(i.e. the close front vowel is used as an epenthetic vowel to syllabify syllable-final consonants and other first consonants of a non-initial cluster.)

(40) [+syl, +high, ±front] -> [+round, (-front)] / [+syl, ±round, Loan] [-syl] --

Note that (40) is a vowel rounding P-rule.

e.g. •bed -> bɛ́di (by 39) 'bed'
•bɔl -> bɔ́li (by 39) -> [bɔ́lu] (by 40) 'ball'

4.6 "CONSONANT AND VOWEL HARMONY" REVISITED

With reference to the Maxí peculiarities exposed in 2.5.1, the present alternative to (30) suggested in 3.5 is the successive application of (37b) above and (41).

(41) $\begin{bmatrix}\pm syl\\ \pm high\\ \pm front\end{bmatrix} \rightarrow \begin{bmatrix}\pm round\\ (-front)\end{bmatrix} / \begin{bmatrix}-syl\\ \pm lab\\ F\\ Red.\end{bmatrix} - \begin{bmatrix}-syl\\ \pm lab\\ F\end{bmatrix} (1) [\pm syl]$

e.g. vɛ́ -> vivɛ́ (by 37b) -> vuvɛ́ (by (41) 'be dear'

As for the indigenization process exposed in 2.5.2, the present alternative to (31) suggested in 3.5 is the successive application of (39) above and either (42) or (43).

(42) $\begin{bmatrix}\pm syl\\ \pm high\\ \pm front\end{bmatrix} \rightarrow \begin{bmatrix}\pm round\\ (-front)\end{bmatrix} / \begin{bmatrix}-syl\\ \pm lab\\ Loan\end{bmatrix} \_$

(43) Rule (40) does not apply if the syllabified consonant is a palatal.

Of course (43) should be directly incorporated in (40) to read (40bis) while (42) should be allowed to apply before (40) or (40bis).

(40bis) $\begin{bmatrix}\pm syl\\ \pm high\\ \pm front\end{bmatrix} \rightarrow \begin{bmatrix}\pm round\\ (-front)\end{bmatrix} / \begin{bmatrix}-syl\\ \pm round\\ Loan\end{bmatrix} \begin{bmatrix}-syl\\ -pal\end{bmatrix} \_\_$

e.g. •cʌc -> cɔ́ci (by 39) 'church'
•lɛ̃b -> lɛ̃bi (by 39) -> lɛ̃bu (by40 bis) 'limbo'

5. EVALUATION

5.1 MOTIVATION

Although the proposed two accounts seem descriptively adequate, I personally prefer the P-rule based account to the MSC-based account[7] for the simple reason that the latter is not sensitive to the history of the language whereas the former is. The fact is that, at any stage, any language has the marks of its history. More empirically, we discover that the co-occurrence restrictions do not arise <u>in vacuum</u> but are precisely, most of the time, results of phonological rules, either synchronic or diachronic. I hope one can understand better my pandialectal/panchronic approach as a way of postulating synchronic rules which ultimately have diachronic implications: this is therefore similar to, but not to

be confused with, the polylectal approach: for the latter see Obilade (1984), De Bose (1977); note that Schachter and Fromkin (1968) have used the pandialectal approach in their description of Akan; see also Hagège and Haudricourt 91978) for a slightly different view.

To bring the matter still more home, a critical comparison of the rules postulated in section 4 shows the emergence of certain general tendencies,e.g. labial attraction i.e. rounding of vowels in the vicinity of a labial consonant (see 34, 41, 42), and also roundness assimilation/harmony, i.e. rounding of vowels in the vicinity of inherently rounded vowels (see 35b, 38, 40bis).

5.2 ON THE ISSUE OF "PHYSCHOLOGICAL REALITY"

But many people would object to my P-rule based account. Their major contention is that the rules postulated cannot be said to be synchronic because they are not part of the internalised knowledge of the speakers of various dialects, i.e. they are not psychologically real. I comment on this with two illustrations.

5.2.1 A review of velar approximant(s) and vowel roundness

Given the discussion on Awlan (3.2 and 4.2), in the MSC based account, we simply state that a sequence like /ɣo/ is impossible as well as a sequence like /wə/ although the lect has /w ɣ ə o/ etc.; no explanation whatsoever is offered for this situation. In the P-rule based account, we claim that the lect may have underlying /wə/, but that it is realized as [ɣə]; it may also have /wo/ realized as [wo]: in that case Awlan has underlying /w ə o/, but not /ɣ/. Alternatively it may have a sequence /ɣə/ realized as [ɣə] and a sequence /ɣo/ realized as [wo], i.e. it has /ɣ ə o/ underlyingly, but not /w/. The question now is: between the MSC and the P-rule, which one is more psychologically real? I am not sure there is at present any conclusive test leading to a definite answer. But the major difference between a MSC and a P-rule is that the former is a statement of a constraint occurring at the level of underlying representation, and as such it does not tolerate exceptions, whereas a P-rule may maintain various relationships with other rules, and as a consequence may allow exeptions[8]: e.g. in Awlan /wóieve/ is realized as [wíive] via wúíive, thus allowing a sequence [wi] not permitted by the MSC. In the P-rule based account, the sequence [wi] is allowed if the de-rounding of /w/ is ordered before the deletion of u/o. Secondly there is no specific claim that all P-rules should create alternations (Hyman 1975). Thirdly the test of loanwords (Hyman 1970) shows that sometimes it is not enough to state that a particular sequence is forbidden. We should also find out how the language deals with such a sequence when it manages to arise (from various sources): in such a case, we are forced to postulate a P-rule. Stahlke (1979) has argued that if in a particular domain, a constraint can be accounted for by either a MSC or a P-rule, and in another case it can only be accounted for by a P-rule, we should prefer the P-rule account in both domains so that the MSC be disposed of. The recourse to information from another dialect comes in as a support for one of the dialect internally motivated hypotheses, and not as the prime motivation.

5.2.2 A review of the "article"

Let us take a second illustration. In our discussion of the "article" in Pecí (3.3 and 4.3), the MSC based account postulates an "archisegment" or to use a more current term, a segment underspecified for [round] and [front]. Statement (26) accordingly filled in these features and their values in agreement with their vowel environment: it is only after (26) that the "article" is "pronounceable" in Pecí. In the P-rule based account, a definite segment /a/ is proposed as the underlying representation, and the other forms [ɔ] and [ɛ] derived by rules. In this case, the use of P-rule is justified since there are alternations. What one may question is the choice of /a/ instead of others, and that was where we had recourse to simplicity and naturalness. Now, coming back to the issue of psychological reality, it seems likely that in the case we are dealing with, the segment /a/ has more pyschological reality than the "unpronounceable archisegment". Moreover, statement (26) in the MSC model acts simultaneously on two features, [round] and [front], whereas statement (35) in the P rule model acts on one feature at a time, [round] and [front]. Here again, the recourse to information from another dialect comes in only to re-enforce an interpretation which was intrinsically desirable, and thus gives an edge to a P-rule based analysis over alternative analyses.

6. CONCLUSION

This paper has considered the issue of vowel roundness in Gbe. Having acknowledged that there are inherently rounded vowels in the language, arguments were presented to show that in many cases roundness is also acquired as the result of P-rules in specific dialects. These rules, claimed to by synchronic, have raised the question of their psychological realities in the dialects concerned; this has led us to elaborate on the pandialectal approach to descriptive linguistics. It appears that the aim of this approach is not to describe one lect in terms of another, nor to introduce a diachronic interpretation of the facts. It simply suggests that where there is a tie between two plausible solutions in a lect, the solution which also applies (to the exclusion of the other) to other lects (of the same language) must be preferred. As a consequence (and this is only a consequence) dialect differences are put in a more illuminating perspective. We are also suggesting that the use of cross-dialectal information is legitimate because, after all, the language homogeneity assumption is only a methodological one and has not been substantiated.

NOTES

[1]This article was presented at the 17th Congress W.A.L.S.at Ibadan, March 1986. It is an extensively revised version of the first two parts of "Vowel rounding in Gbe: a panchronic approach" originally read at the University of Ilorin. Bringing together some data presented in Capo (forth.), it has benefited from critical comments by Beban S. Chumbow, Yiwola Awoyale, Peter Ihionu, Yetunde Laniran and Nick Clements. Some of the conventions used here included prefixed asterix for proto-forms and unattested forms and prefixed dot for foreign words e.g. *kú and •cʌc respectively.

[2]Gbe is a dialect cluster or language classified as (western) Kwa by Greenberg (1963) and as (New) Kwa U21 by Stewart (forth.): it is spoken under different dialectal names in Ghana (Volta Region), Togo, Bénin and Nigeria (Ogun and Lagos States). Its numerous dialects are grouped into five sections, largely on the basis of phonological innovations:

(i) Vhe dialects: these include Awlan, Wací, Pecí, Tɔwun, Kpándo, etc.
(ii) Gen dialects: these include Glijí, Anéxo and Agɔ̀i.
(iii) Ajá dialects: these include Dogbó, Stádó, Hwe, Sikpí.
(iv) Fon dialects: these include Gun, Kpasɛ, Agbóme, Maxí, etc.
(v) Phla-Pherá dialects: these include Tɔli, Alada, Tɔfin, etc.

[3]The third part of the original paper attempted an autosegmental analysis. An expanded version of this is under preparation as "Vowel (and consonant) harmony in Gbe? two autosegmental approaches".

[4]In the cross-dialectal ɔ:ɛ:e:ə alternation, e and ə occur in dialects not having ɛ, having merged it with e or ə respectively. Thus this set could actually be referred to as [±low] in proto-Gbe.

[5]Take note of the regular (Awlan) ə : (Kpándo) e vowel correspondence. These two vowels are considered, for practical reasons, as the same here, being [-back, -high, -low].

[6]The alternative of postulating a vowel de-rounding rule is counter-intuitive because the "free variation" postulated occurred mostly after "labial" consonants.

[7]this position holds for the situation at hand and should not necessarily be extended to the Stewart-Clements controversy on "Vowel harmony in Akan": see in particular Stewart (1967 and 1983) and Clements (1981 and 1984).

[8]This view is different from the assumption of lexical phonology in which lexical rules many have lexical exceptions whereas postlexical rules cannot. We are not insinuating, however, that lexical rules and postlexical rules of lexical phonology/ morphology correspond to morpheme structure conditions and phonological rules of standard generative phonology respectively.

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