

## VOWEL FEATURES IN GBE

Houkpati B.C. Capo  
University of Ilorin

No known Gbe dialect possesses the classic cross-height vowel harmony. However, on the basis of certain assimilations, one could divide Gbe oral vowels into three sets: set 1 includes [i, u], set 2 [e, o, (ə)], and set 3 [ɛ, a, ɔ]. All authors agree that set 1 is opposed to sets 2 and 3 on the basis of the feature category [high]. As for the difference between sets 2 and 3, some people argue for the use of [ATR] whereas others argue for [low]. The present paper tries to bring the two camps to an agreement that set 1 is [+high, -low, +ATR], set 2 [-high, -low, +ATR], and set 3 [-high, +low, -ATR]. But it appears that [ATR] and [low] are redundant or mutually exclusive, that is, we need, distinctively, only one of them. What are the arguments to prefer one over the other? A tentative answer is proposed in this study.

C'est un fait bien connu qu'aucun dialecte Gbe ne possède le type classique d'harmonie vocalique. Cependant, au regard de certaines assimilations, on peut diviser les voyelles (orales) du Gbe en trois sous-ensembles. Le sous-ensemble 1 comporte [i u], le sous-ensemble 2 [e o (ə)] et le sous-ensemble 3 [ɛ, a, ɔ]. Tous les chercheurs s'accordent à reconnaître que le sous-ensemble 1, par opposition aux sous-ensembles 2 et 3, est [+fermé]. Quant à la différence entre les sous-ensembles 2 et 3, les uns ont recours à [avancé] alors que les autres ont recours à [ouvert]. On essaie dans cet article de réconcilier les deux camps en montrant que le sous-ensemble 1 est [+fermé, -ouvert, +avancé], le sous-ensemble 2 [-fermé, -ouvert, +avancé] et le sous-ensemble 3 [-fermé, +ouvert, -avancé]. Mais il apparaît clairement que [avancé] et [ouvert] sont mutuellement exclusifs. On essaie d'examiner ici quels sont les arguments pour préférer l'un à l'autre.

## 0. INTRODUCTION

Gbe<sup>1</sup> is the name given to a cluster of dialects spoken in the south of the Volta Region in Ghana, the south of the Republics of Togo and Bénin, and also parts of the Ogun and Lagos States in Nigeria. It is most known in the linguistic literature as "Ewe," although "Ewenists" usually content themselves with describing only one section of the cluster, or some elements of that section, the one I call Vhe. In fact, the Gbe cluster can be divided into five sections, namely: Vhe dialects, Gen dialects, Ajá dialects, Fon dialects, and Phla-Pherá dialects (for details see Capo 1980). Gbe dialects have common as well as specific characteristics. For instance, vocalic alternations are reasonably consistent from

dialect to dialect, but different dialects may place slightly different conditions on the application of the rules they share (see Clements 1974). Moreover, present-day Gbe dialects differ in that they make a somewhat different selection from a sixteen-vowel system comprising /i, e, ə, ɛ, a, ɔ, o, u, ɨ̃, ẽ̃, ǣ̃, ǿ̃, ǻ̃, ɔ̃, ɔ̃̃/². Note, however, that this sixteen-vowel system is not an underlying system in any Gbe dialect (see section 2 below).

On several occasions (for example in Capo 1981a), I have specified the Gbe vowels as shown in Table 1, that is, using the features [high, low, nasal, front] and [back] or [rounded].

Table 1: Overall view of Gbe-dialect vowels.

	i	e	ə	ɛ	a	ɔ	o	u	ũ	õ	ɔ̃	ǻ̃	ǿ̃	ẽ̃	ĩ̃
high	+	-	-	-	-	-	-	+	+	-	-	-	-	-	+
low	-	-	-	+	+	+	-	-	-	-	+	+	+	-	-
front	+	+	-	+	-	-	-	-	-	-	-	-	-	+	+
back	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-
(round	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-
nasal	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+

(Note that [rounded] and [back] are redundant in this specification.)

This system is at variance with the systems used by Smith (1968), Stahlke (1971), Ford (1973) and Clements (1974); it also implies that the feature [ATR] is not essential in Gbe. Given, however, the otherwise widespread use of [ATR] in the vowel system of other Tano-Congo languages, Stewart (1983:30) argues that "Ford's 1973 analysis [using ATR] remains the most satisfactory." I propose therefore to review all feature systems of Gbe vowels used by different authors and to show that the category [ATR] is still not necessary if it must play a unique role.

### 1. TYPICAL VOWEL SYSTEMS OF GBE DIALECTS

As said above, Gbe dialects differ in that they make a somewhat different selection from a sixteen-vowel system. This statement has to be properly understood. It does not claim that the most conservative or the most innovative dialect has an underlying sixteen-vowel system. To my knowledge, no Gbe dialect has such an underlying system.<sup>3</sup> The dialect with the richest underlying inventory is proto-Gbe (see Capo 1981b), with its fourteen-vowel system comprising \*/i, e, ɛ, a, ɔ, o, u, ɨ̃, ẽ̃, ǣ̃, ǻ̃, ɔ̃, ɔ̃̃, ɔ̃̃̃/. No rule has the effect of creating, at the level of phonetic representation, additional vowels. On the contrary, there was a rule realizing \*/ẽ̃/ as \*[ǿ̃], and \*/o/ as \*[ɔ̃] so that, if not for few exceptions, [ǿ̃] and [ɔ̃] would not exist at the level of phonetic representation in proto-Gbe.

Closest to the proto-Gbe system is the one of Fon and Phla-Pherá dialects presented as comprising twelve vowels, namely, /i, e,  $\varepsilon$ , a,  $\text{ɔ}$ , o, u,  $\tilde{i}$ ,  $\tilde{\varepsilon}$ ,  $\tilde{a}$ ,  $\tilde{\text{ɔ}}$ ,  $\tilde{u}$ /. I have argued elsewhere (Capo 1983a) that these dialects also have / $\tilde{\varepsilon}$ / and / $\tilde{\text{ɔ}}$ /, but that these are always realized as [ $\tilde{\varepsilon}$ ] and [ $\tilde{\text{ɔ}}$ ], so that at the level of phonetic representation we have twelve vowels against fourteen at the level of underlying representation.

Another typical vowel system is the one exhibited by Gen and Ajá dialects, and also by Kpándo (a Vhe dialect). It is usually presented, underlyingly, as /i, e, ( $\varepsilon$ ), a,  $\text{ɔ}$ , o, u,  $\tilde{i}$ ,  $\tilde{\varepsilon}$ ,  $\tilde{a}$ ,  $\tilde{\text{ɔ}}$ ,  $\tilde{u}$ /. The brackets around indicate that this phoneme is being acquired from Fon and Phla-Pherá dialects by Gen and Ajá dialects, and that it is often in free variation with e in stems. I am of the view that underlyingly we have a twelve-vowel system /i, e, a,  $\text{ɔ}$ , o, u,  $\tilde{i}$ ,  $\tilde{\varepsilon}$ ,  $\tilde{a}$ ,  $\tilde{\text{ɔ}}$ ,  $\tilde{o}$ ,  $\tilde{u}$ /, and that / $\tilde{\varepsilon}$ / and / $\tilde{\text{ɔ}}$ / are always realized as [ $\tilde{\varepsilon}$ ] and [ $\tilde{\text{ɔ}}$ ] respectively. This system differs from the proto-Gbe one in that it does not have / $\varepsilon$ / nor / $\tilde{\varepsilon}$ /. This is accounted for by a rule merging \*/e/ and \*/ $\varepsilon$ / into /e/, and \*/ $\tilde{\varepsilon}$ / and \*/ $\tilde{\varepsilon}$ / into / $\tilde{\varepsilon}$ /. At the level of phonetic representation, [ $\varepsilon$ ] is synchronically derived from /a/ followed by /i/ or from /i/ preceded by /a/. Similarly, apart from being the realization of / $\tilde{\varepsilon}$ /, [ $\tilde{\varepsilon}$ ] is also synchronically derived from / $\tilde{a}$ / followed by /i/, or from /i/ preceded by / $\tilde{a}$ /, except in Ajá dialects.

Another system is exhibited characteristically by Pecí (a Vhe dialect). This dialect has an underlying vowel system of the twelve phonemes /i,  $\varepsilon$ , a,  $\text{ɔ}$ , o, u,  $\tilde{i}$ ,  $\tilde{\varepsilon}$ ,  $\tilde{a}$ ,  $\tilde{\text{ɔ}}$ ,  $\tilde{o}$ ,  $\tilde{u}$ /. Although / $\tilde{o}$ / is always realized as [ $\tilde{\text{ɔ}}$ ]. This system can be derived from proto-Gbe by a rule merging \*/e/ and \*/ $\varepsilon$ / into / $\varepsilon$ /, and \*/ $\tilde{\varepsilon}$ / and \*/ $\tilde{\varepsilon}$ / into / $\tilde{\varepsilon}$ /. At the level of phonetic representation, a further vowel, [e] is derived synchronically from /i/ preceded by /o/ or / $\varepsilon$ /, or from / $\varepsilon$ / followed by /i/. Although / $\varepsilon$ / and / $\tilde{\varepsilon}$ / exist as underlying segments, they are also synchronically created from /a/ and / $\tilde{a}$ / followed by /i/, or from /i/ preceded by / $\tilde{a}$ / or / $\tilde{\text{ɔ}}$ /.

Another system, paralleling the last two, characterizes Wací, Awlan, and Adángbe (three Vhe dialects). Consisting of twelve vowels also, this system can be presented as made up of /i,  $\text{ə}$ , a,  $\text{ɔ}$ , o, u,  $\tilde{i}$ ,  $\tilde{\text{ə}}$ ,  $\tilde{a}$ ,  $\tilde{\text{ɔ}}$ ,  $\tilde{o}$ ,  $\tilde{u}$ /. This system can be derived from the proto-Gbe one by a rule merging \*/e/ and \*/ $\varepsilon$ / into / $\text{ə}$ /, and \*/ $\tilde{\varepsilon}$ / and \*/ $\tilde{\varepsilon}$ / into / $\tilde{\text{ə}}$ /. At the level of phonetic representation, / $\tilde{o}$ / is always realized as [ $\tilde{\text{ɔ}}$ ] in Wací and Adángbe; in Awlan, it is realized as [ $\tilde{\text{ɔ}}$ ] after consonants realized as oral, and remains [ $\tilde{o}$ ] after consonants realized as nasals. Moreover, both Wací and Adángbe create three additional vowels, namely [e,  $\varepsilon$ ,  $\tilde{\varepsilon}$ ] whereas Awlan creates only the first one, [e]. In all three dialects, / $\text{ə}$ / is synchronically realized as [e] after /i, u, y, w/ and also /R/ in Adángbe. Also in Adángbe /i/ is realized as [e] after / $\text{ə}$ , o/ whereas in Awlan the same /i/ is realized as [e] after / $\text{ɔ}$ , a/ (themselves realized as [o, e]). In both Awlan and Wací, / $\text{ə}$ / is synchronically realized as [i] after /i/. In Adángbe and Wací, [ $\varepsilon$ ,  $\tilde{\varepsilon}$ ] are synchronically derived from /i/ after / $\text{ɔ}$ , a,  $\tilde{\text{ɔ}}$ ,  $\tilde{a}$ /. and from /a,  $\tilde{a}$ / before /i/. Thus in both Adángbe and Wací, [e,  $\text{ə}$ ,  $\varepsilon$ ] are attested at the level of phonetic representation, but [e] and

[ɛ] do not occur, generally, in stems. In Adángbe however, [e] and [ɛ] occur as pseudo-stem vowels (see Capo 1983b), especially in nouns, as the result of vowel assimilation and vowel deletion rules (see Capo 1981b); for example [tɔ́gbé] <- /tɔ́gbóí/ 'grandfather', [ádádè] <- /ádádèí/ 'cat', and [àlògè] <- /àlògàí/ 'ring'. This derivation has been overlooked by Clements (1974:290) when he states that "all eight underlying (oral) vowels occur in noun stems" in Adángbe and Adángbe alone. At most, both /ə/ and /ɛ/ could be recognized because of a word like [àvɛ]⁴ 'weaver bird', but there is no argument, whatsoever, for recognizing /e/ as distinct from /ə/ in a word like [əye] <- /əyə/ 'spider', etc.

In the light of the observations made here, it becomes very difficult to agree with Stewart's (1983:28) assessment that Ford (1973) has succeeded in showing that "although no described Ewe (i.e., Gbe) dialect has been shown to possess...cross-height vowel harmony...three dialects possess vowel systems and particular phonological alternations which point to the loss of an earlier system in which the root advanced/unadvanced distinction played a more important role." For instance the vowel alternations presented are accounted for -- and more naturally as mainly assimilatory -- in my feature system (as we shall see below).

## 2. A REVIEW OF PREVIOUS FEATURE SPECIFICATIONS OF GBE VOWELS

"Ewenist" linguists who have described the Gbe vowels in terms of feature specifications have invariably limited themselves to the oral vowels (maybe with the understanding that nasal vowels differ only in the value of [nasal]).

### 2.1 SMITH'S (1968) SPECIFICATION

Smith (1968) uses the features [high, low, back, rounded], and ends up with the specification reproduced in Table 2 (see Smith 1973:351).

Table 2. Smith' (1968) specification of "Ewe" oral vowels.

	i	e	ɛ	a	ɔ	o	u
high	+	-	-	-	-	-	+
low	-	-	+	+	+	-	-
back	-	-	-	+	+	+	+
round	-	-	-	-	+	+	+

This table shows that for Smith, [back] and [rounded] are not, contrary to my system, redundant. Smith also specifies [a] as [+back], but this does not take care of the phonological behavior of this vowel. In fact, phonetically, [a] is central (see Berry 1951:2, Ansre 1961:6 and even Clements's 1974:284 diagram, for instance), and in a feature system that does not allow such a category, one should determine the category according to phonological behavior. If this were so, [a] would be specified as [-back]. However, if [a] were specified as [-back] in Smith's

system, there would not be any difference at all between [a] and [ɛ]. Another point to be noticed is that Smith (1968) was not aware of the existence of [ə] in some "Ewe" dialects, and I cannot see how he would have specified it, distinctively, in his framework, without an additional feature.

## 2.2 STAHLKE'S (1971) SPECIFICATION

Stahlke (1971), working primarily on Kpándo, uses the features [high, low, back, rounded, covered], and ends up with the following specifications of "Ewe" (our Gbe) vowels, as reproduced in Table 3 (see Stahlke 1971:76).

Table 3. Stahlke's (1971) specification of "Ewe" vowels.

	i	e	ɛ	a	ɔ	o	u
high	+	-	-	-	-	-	+
low	-	-	-	+	-	-	-
back	-	-	-	-	+	+	+
round	-	-	-	-	+	+	+
cover	-	-	+	+	+	-	-

For Stahlke, the set feature that groups together [ɛ, a, ɔ] is [+covered], since in his framework, only [a] is [+low]. It is true that phonetically, [a] is lower than [ɛ, ɔ], but [ɛ, ɔ] are lower than [ə] which is lower than [e, o] which are lower than [i, u] (see for instance the diagram in Clements 1974:284 reproduced in footnote 2), so that, relatively, [ɛ, a, ɔ] could be referred to as low vowels vis-à-vis the other ones. One may also wonder which instrumental evidence Stahlke (1971) has to claim that [ɛ, a, ɔ] are produced "with a pharynx in which the walls are narrowed and tensed and the larynx raised". (Chomsky and Halle 1968:315). Stahlke is certainly right in making [back] and [rounded] redundant, and in specifying [a] as [-back]. Like Smith (1968), Stahlke (1971 and even 1979) does not mention [ə].

## 2.3 FORD'S (1973) SPECIFICATION

Although Ford (1973) does not present a table of Gbe vowels nor their feature specifications, from the rules he writes as well as from the prose of his presentation, one can safely say that he uses the features [high, low, advanced, back], and that he would adopt my arrangement of the vowel specifications presented in Table 4.

Table 4. Ford's (1973) specification of Gbe vowels.

	i	e	ə	ɛ	a	ɔ	o	u	I	U
high	+	-	-	-	-	-	-	+	+	+
low	-	-	+	-	+	-	-	-	-	-
back	-	-	-	-	-	+	+	+	-	+
adv.	+	+	+	-	-	-	+	+	-	-

Note, however, that Ford (1973) does not state explicitly the existence of [I] and [U] in any present-day Gbe dialect (hence my question marks in the table). Even in proto-Gbe, one is not sure, since in his own table on page 65, the only place where [I] and [U] are mentioned is under "?Proto." In fact, from this curious notation and the whole article, one does not know whether the question mark refers to the identity of the proto language (i.e. whether what is presented is proto-Gbe or a pre-Gbe stage, possibly in proto-Volta-Congo), or whether it refers to the validity of postulating [I] and [U], or even to both situations. The interpretation given by Stewart (1983:28) is that Ford's (1973) "?Proto" is not to be identified as proto-Gbe, but presumably as proto-Volta-Congo. What is disturbing here is that along with his "?Proto," Ford presents only some present-day Gbe dialects, (namely Peki, Kpándo, Adángbe, and Anlo; my Pecí, Kpándo, Adángbe, and Awlan), and one is naturally led to ask what the situation in the latest common ancestor of these three dialects was. It is in that light that I thought (in Capo 1983b) and still believe that for Ford, "?Proto" refers to proto-Gbe and the question mark to the lack of clear evidence in support of the reconstruction of \*I and \*U in proto-Gbe.<sup>6</sup> I will therefore assume that /I/ and /U/ do not occur in the underlying representation of any present-day Gbe dialect, nor of proto-Gbe.<sup>7</sup>

Regarding Table 4, I would say first that, by having a single feature [back] for the axis of "place of articulation," Ford (1973) assumes that all [-back] vowels are automatically [+front] in my system. This is evident on page 66 where he states that "the two forms of the noun prefix are [ə] and [a], both low front vowels." The major problem with Ford's (1973) specification is his treating [ə] as [+low], and at the same time [ɛ] as [-high, -low], whereas in actual fact, [ə] is higher than [ɛ]. I believe, contrary to Stewart (1983:29), that one should make a consistent - though relative - use of the features [high] and [low] for all vowels in a given language, and I think it untenable to specify a vowel higher than a nonlow vowel as [+low], or a vowel lower than a mid (nonhigh) vowel as [+high].<sup>8</sup> In this regard, [i, e, ə, o, u] are

[-low] as opposed to [ɛ, a, ɔ] which are [+low]. (This makes the feature category [ATR] or [advanced] redundant.) Unfortunately, if [ə] were specified as [-high, -low] as it ought to be, then it cannot be distinguished from [e] in Ford's (1973) system.

#### 2.4 CLEMENTS'S (1974) SPECIFICATION

Unlike Smith (1968) and Stahlke (1971) who base themselves on one particular Gbe dialect (Vhe), Clements (1974), like Ford (1973), compares data from the Gbe dialects known to him (these turn out to be Vhe and Gen dialects only); he has therefore a fairly complete picture of the vowel system (overall view) of "Ewe" (my Gbe). Thus he recognizes [ə] (which he transcribes as 3), and he uses the features [high, back, rounded, ATR]. He ends up with the specification presented in Table 5 which represents my rearrangement.

Table 5. Clements's (1974) specification of "Ewe" vowels.

	i	e	ə	ɛ	a	ɔ	o	u
high	+	-	-	-	-	-	-	+
ATR	+	+	+	-	-	-	+	+
back	-	-	+	-	+	+	+	+
round	-	-	-	-	-	+	+	+

For Clements (1974), [back] and [rounded] are not redundant in Gbe. Thus he specifies [a] as [+back, -rounded]; and not only [a], but also [ə] is specified as [+back], which is not correct, phonetically or phonologically speaking. He uses the feature [ATR] as a set feature to group together [i, e, ə, o, u] on the one hand, and [ɛ, a, ɔ] on the other, because he maintains that in Gbe the vowels [ɛ, a, ɔ] (with their nasal counterparts) "are not of similar tongue height" (Clements 1974:283). It should now be mentioned, to the credit of Clements's (1974) specification that it can nicely account for the vowel alternations in Gbe (see Capo forthcoming, and also some comments below, in section 3).

#### 2.5 COMPARISON

Comparing all the vowel specifications so far presented, one notices that only the feature [high] has been used by all to specify the same vowels, namely [i, u]. The feature [back] has been used by all, but not all specify the same vowels in the same manner; for instance, [ɔ, o, u] are [+back] for all of them; but in addition, [a] is also [+back] according to Smith (1968) and Clements (1974), and so also is [ə] according to Clements (1974) (note that Smith has no [ə] in his inventory). The feature [rounded] has been used by all except Ford and maybe Capo (1981a), and for all of them, only [u, o, ɔ] are [+rounded]. Four authors (Capo, Smith, Stahlke and Ford) use the feature [low], but their

specifications are different; for all four, [a] is certainly [+low], but [ɛ, ɔ] are [-low] according to Stahlke and Ford whereas they are [+low] according to Capo and Smith; moreover, [ə] is specified as [+low] by Ford, but as [-low] by Capo (note that Smith and Stahlke have no [ə] in their inventory).

One terminological difference between the authors is the necessity or otherwise of the feature [ATR] or [advanced] or [covered] (note that [covered] and [ATR] or [advanced] have opposite values). This feature has been used by Stahlke, Ford, and Clements,<sup>9</sup> but it was missing in Capo and in Smith; the first three authors agree on the specifications, that is, [ɛ, a, ɔ] are [-ATR] or [-advanced], or [+covered], whereas all the other oral vowels are [+ATR] or [+advanced] or [-covered]. I certainly agree with this specification, but I do not see how the use of [ATR] or its equivalents better handles some of the vocalic phenomena in Gbe. The feature [front] has been used by myself alone, specifying [i, e, ɛ] as [+front] and all others as [-front]. If this feature were used by the other authors, they would all certainly specify [i, e, ɛ] as [+front], although they may treat differently [ə, a]. I will now proceed to justify my feature specification.

### 3. JUSTIFYING MY FEATURE SPECIFICATION

Given the comments made in section 2, one may wonder why should I not adopt Clements's features. In fact Stewart (1983:30) has even claimed that "Capo's (1981a:8) classification...is exactly the same as Clements, although this is not immediately obvious because he uses different features to label his categories." Certainly, the correspondence established between my features and Clements's by Stewart (1983:30) is accurate, but I did not simply take Clements's specification and change the labels of some of the features. My main reasons -- then and now -- for departing from Clements's specification are rather practical ones: First, I have not experienced the Tongue-Root Advancing in any Gbe dialect; and second, I have experimental evidence showing that [a] and [ə] are central, that is, neither front nor back.

The theoretical objection against my feature specification is the validity of positing two different features [front] and [back] for the same axis of "place of articulation," and two different features [high] and [low] for another same axis of "tongue height" or stricture. Some people think indeed that [high] and [low] should be considered as two opposite values of the same feature (Clements 1974 adopts such a stand), and that [front] and [back] should also be considered as two opposite values of the same feature (Ford 1973 certainly assumes such a stand) on the ground that no segment can be specified as [+high, +low], nor [+front, +back]. I have shown elsewhere (Capo 1981b and 1982) that this constraint of "impossible feature combinations" is a fallacy, and that they are allowed in complex sounds such as diphthongs and affricates when one brings in the length dimension, ignored by the simultaneity constraint. In any case, when three tongue heights are found, some of the vowels must be specified as [-high, -low]: This is the case with at least [e, o] in Gbe. For me then, there is no serious objection against using both [front] and [back], nor [high] and [low]. In fact, the



criticism is alleviated if one uses [constricted pharynx] for [low] together with [high], and [rounded] for [back] together with [front], by a simple play on words. Actually, from a practical point of view, the diagramming used by Clements himself (p. #286, and more importantly his vowel chart reproduced in footnote 2) supports my feature specification: On the vertical axis (tongue height dimension), and on the horizontal one (place of articulation dimension), we have a three-step scale. Replacing then Clements's features by my own, and using his arrangement, we obtain the specification reproduced in Table 7.

Table 7. My specification of Gbe vowels (Clements's 1974's arrangement).

	-front		
	+front	-back	+back
+high	i		u
-high -low	e	ə	o
+low	ɛ	a	ɔ

From a native speaker's point of view, I am convinced that both [front] and [back] on the same axis, and [high] and [low] on another single axis are necessary, unless one uses a multivalued feature for each axis. From a phonological point of view, I pretend that [ɛ, a, ɔ] constitute a set by being [+low], [e, ə, o] by being [-low, -high], and [i, u] by being [+high]; naturally one can also consider [i, u, e, ə, o] to constitute a set specified as [-low]. The question then is what else will the feature [ATR] do! Moreover, the fact that /a/ becomes synchronically [ɛ] in all Gbe dialects (except Awlan where it becomes [e]), and the fact that /ə/ becomes [e] in those dialects that have it, both changes occurring in the environment of a following /i/, is a further indication that phonologically, [a] and [ɛ] have the same tongue height, as do [ə] and [e], and that the only change in both cases is from central to front, a clear case of front assimilation triggered by the front vowel /i/. Note that in Clements's system, the change from /a/ to [ɛ] not only involves fronting, but also tongue height. Moreover, the typical extent of the stem-vowel raising rule in Awlan, where /a/ and /ɔ/ become synchronically [e] and [o], and /ə/ and /o/ become [i] and [u], is better explained in my system as "closing to the immediate tongue height" than in Clements's system where change of tongue root advancing is involved in the first case, and change of tongue height in the second case, that is, two different processes are involved in Clements's system while only one is involved in mine. Besides, the rule deriving the [ɪ-ə-ɛ] forms of the 3rd person singular object pronoun, or the [i-é-é] forms of a nominal derivative identified as /i/ in Capo (1983b) is expressed

solely in terms of tongue-height assimilation in my system, whereas in Clements's system, both tongue-height and tongue-root advancing assimilations are involved.

Another objection to my specification, raised by Stewart (1983), is simply nonexistent. By saying that "Capo's analysis is open to the same objection as Clements's" (p.#30), Stewart is not consistent with himself. What he says about Clements is that "his analysis differs from Ford's in that it eliminates the category Low at the cost of bringing in the category Back...It should in any case be emphasized that the category Low is essential, not only for the many nine-vowel Tano-Congo Languages in which the mid and high vowels display classic cross-height advancing harmony but also for the many seven-vowel Tano-Congo Languages in which the mid vowels display classic single-height advancing harmony" (Stewart 1983:29). Contrary to Clements, I use explicitly the category Low.

Finally, Stewart (1983:30) mentions that "Capo lays himself open to an additional objection by his labelling: He is forced to introduce a fifth category Advanced in order to handle the [+High, -Advanced] sounds [I, U] which occur, presumably as a result of recent historical changes, in some Gbe languages/dialects; the alternative would be to treat them as [+High, +Low]!" This point has been referred to in footnote 7. My position is that if the segments concerned really exist, then one should properly see them as innovations, and not as continuations of the proto-Volta-Congo \*/I/ and \*/U/ reconstructed by Stewart (1983). Naturally, I agree that [i, e, ə, o, u] are certainly [+ATR], but I am saying that they are also [-low], and that since the Low category exists anyway, there is no need to add [ATR] without strong motivation.

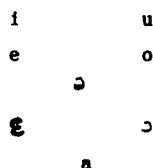
#### 4. CONCLUSION

An attempt has been made to evaluate the different feature specifications used for Gbe vowels. It has been argued that all the vowels could be properly specified in terms of stricture and place of articulation (and of course also nasality) and that there is no need to refer to the category [ATR] for specifying whichever "class" or accounting for any type of "harmony." The proposed system sets up, however, two different features for "stricture" ([high] and [low]), and two different features for "place" ([front] and [back]), because it is in the framework of binarism. One realizes that multivalued features (such as the system proposed by Williamson 1977) are more revealing: Here we will have three relative values for a single feature "stricture" and three relative values for a single feature "place." This use of multivalued features will definitely prevent classifying [ə] as [+low] when [ɛ] is [-low]. But it does raise an interesting question, that is, on which criteria (objective and nonrelative) do we classify vowels as close, mid, and open, or front, central and back! The need then arises to conduct a thorough instrumental analysis of all the Gbe vowels so that the phonetic identity of each one of them can be properly assessed; in particular the actual occurrence of /I/ and /U/ in some dialects should be properly checked. And unless these investigations have been properly undertaken, disagreements may still persist.

## NOTES

<sup>1</sup>I am grateful to John Bendor-Samuel for stimulating interaction between John Massie Stewart and myself. This paper arose as comments on Stewart's (1983) review of a previous paper of mine (Capo 1983b). I am glad to acknowledge my debt to Stewart, for without his criticisms I could not have deepened (as I hope I have done) the issue at stake.

<sup>2</sup>The oral vowels are thus presented by Clements (1974:284) along the lines of the traditional vowel diagram suggestive of relative stricture and place:



(I have retranscribed Clements' ɔ as ə.)

<sup>3</sup>Surely Clements (1974:290), interpreting the data contained in Sprigge (1967), claims that "all eight underlying (oral) vowels occur in noun stems" in Adángbe. This claim is negatively assessed towards the end of this section.

<sup>4</sup>Even if /ɛ/ is recognized in Adángbe, the comparative data at hand show that this /ɛ/ is not to be traced back to proto-Gbe \*/ɛ/. Thus, the only stem noticed so far, [ʒvɛ] 'weaver bird', does not develop from proto-Gbe \*/-R<sup>w</sup>ɛ/ but certainly had a nasal vowel, presumably \*/ɛ̃/. This /ɛ/ in Adángbe is not, however, a regular development of \*/ɛ̃/ either. Whereas /ɛ/ could derive from proto-Gbe \*/ɛ̃/ by a diachronic denasalization rule (perfectly justified in Adángbe, see Capo 1981b), in actual fact, as said above, \*/ɛ/ and \*/e/ merge to /ə/, and \*/ɛ̃/ and \*/ɛ̄/ to /ɔ̃/, certainly before the denasalization rule.

<sup>5</sup>Stewart (1983:28) states emphatically: "He [Ford 1973] did not claim, as Capo...seems to suggest he did, that the earlier system with I and U survived intact as far as proto-Gbe."

<sup>6</sup>After a thorough examination and comparison of the vowel systems in a number of Gbe dialects and the interdialectal vowel correspondence, I came to the conclusion (in Capo 1981b) that the only area where the reconstruction of \*/I/ and \*/U/ in proto-Gbe may be tempting is the correspondence (Gen, etc.) e, o = (Hwe, etc.) i, u. In this area, however, I have since (Capo 1983b) shown that a proper analysis of the evidence does not point to the existence of \*/I/ and \*/U/ in proto-Gbe. On this point, as I happily notice, Stewart (1983) is in complete agreement with me. He even adds: "In support of this conclusion, I would point out that the Gbe e, o = i, u correspondence does not stand comparison with the e, o = I, U = i, u correspondences which support the reconstruction of proto-Volta-Comoe /I, U/ and proto-Bantu /I, U/, with the ɛ̃, ɔ̃ = ǐ, ǔ = ǐ, ǔ correspondence which supports the reconstruction of proto-Yoruba /ǐ, ǔ/" (Stewart 1983:32).

(Note that, subject to more conclusive evidence as contained in Akinkugbe 1978, I would readily trace the Yoruba correspondence mentioned to \*/ɛ̃, \*ɔ̃/: see Capo 1983c.)

<sup>7</sup>Note that /I, U, ǐ, ǔ/ have been observed by some authors as occurring in some Gbe dialects as predictable variants of /i, u/ in "closed syllables" (see Capo 1983b). If indeed they are genuinely attested, they cannot be specified as other than [+high, -ATR]; but one could (in fact, should) invoke the innovation of the feature [ATR] from the neighboring languages with cross-height vowel harmony. It is only at this point that the feature [ATR] may be justified in Gbe.

<sup>8</sup>True enough, Stewart (1983:29) reports that "Painter (1973) in fact provides instrumental evidence that in Akan [e, o] are higher than [I, U]." Similarly Elugbe (1983:80) also reports that "Donwa (forthcoming) has done a spectrographic investigation of vowels in Isoko and discovered that [I] and [U] are in fact lower than [e] and [o]." Having no reason to doubt these reports and findings, I simply suggest that /I/ and /U/ should not be described as high or closed vowels when /e/ and /o/ are described as mid.

<sup>9</sup>If we agree on the fact that [covered] and [ATR] have the same theoretical importance, then Stewart's (1983:30) assertion that "Ford also deserves credit for being the first to recognize that a language without CHVH could still have Advanced as a segmental feature category" fails to take account that Stahlke (1971) is prior to Ford (1973).

## REFERENCES

- Akinkugbe, Femi O. 1978. A comparative phonology of Yoruba (dialects), Isekiri and Igala. Unpublished doctoral dissertation, University of Ibadan (2 vol.), Ibadan.
- Ansre, Gilbert. 1961. The tonal structure of Ewe. *Hardford Studies in Linguistics* No. 1. Hartford, CN: Hardford Seminary Foundation.
- Berry, Jack. 1951. *The pronunciation of Ewe*. Cambridge: Heffers.
- Capo, Hounkpati C. 1980. Un regroupement des parlers Gbe. *Africana Marburgensia* 13(1)3-24.
- \_\_\_\_\_. 1981a. Nasality in Gbe: A synchronic interpretation. *Studies in African Linguistics* 12(1)1-43.
- \_\_\_\_\_. 1981b. A diachronic phonology of the "Gbe" dialect cluster. Unpublished doctoral dissertation, University of Ghana, Legon.
- \_\_\_\_\_. 1982. A case for plosivates. Unpublished paper read at the 15th West African Languages Congress, University of Port Harcourt, Port Harcourt. Mimeo.
- \_\_\_\_\_. 1983a. Nasal vowels and nasalized consonants in Gbe. *Current Approaches to African Linguistics*, ed. by Ivan R. Dihoff. 1:127-43. Dordrecht:Foris Publications.
- \_\_\_\_\_. 1983b. I et U en Hwe et leur place dans la reconstruction du proto-Gbe. *Journal of West African Languages* 13(1)3-18.
- \_\_\_\_\_. 1983c. On the high unexpanded vowels in Yoruboid: Implications. Unpublished paper read at the 4th annual conference of the Linguistic Association of Nigeria, University of Benin, Benin City (July 20-23).
- \_\_\_\_\_. Forthcoming. Vowel harmony in Gbe.
- Chomsky, Noam and Morris Halle. 1968. *The sound pattern of English*. New York: Harper and Row.
- Clements, George N. 1974. Vowel harmony in Ewe. *Studies in African Linguistics* 5(3)281-301.
- Donwa, F.S. forthcoming. The sound system of Isoko. Ph.D. thesis, University of Ibadan.
- Elugbe, Ben Ohi. 1983. The vowels of proto-Edoid. *Journal of West African Languages* 13(1)79-89.
- Ford, K.C. 1973. On the loss of cross-height vowel harmony. *Research Review Supplement No. 4: Papers in Ghanaian Linguistics (Transactions of the Linguistic Circle of Accra)*, 50-81. Legon: Institute of African Studies, University of Ghana.
- Painter, C. 1973. Cineradiographic data on the feature 'covered' in Twi vowel harmony. *Phonetica* 28:97-120.
- Smith, N.V. 1968. Tone in Ewe. (MIT Quarterly Progress Report No. 97) Reproduced in *Phonology*, ed. by E. Fudge. Harmondsworth: Penguin, 1973, 354-69.
- Sprigge, R.G.S. 1967. Collected field reports on tone in the Adangbe dialect of Ewe. *Collected Language Notes* No. 8, Legon: Institute of African Studies, University of Ghana.
- Stahlke, Herbert. 1971. Topics in Ewe phonology. Unpublished doctoral dissertation, Los Angeles: UCLA.
- \_\_\_\_\_. 1979. Derivational conditions on morpheme structure in Ewe. Unpublished paper read at the 10th annual conference on African Linguistics, University of Illinois at Urbana-Champaign. Mimeo.
- Stewart, John M. 1983. The high unadvanced vowels of proto-Tano-Congo. *Journal of West African Languages* 13(1)19-36.
- Williamson, Kay. 1977. Multivalued features for consonants. *Language* 53(4)843-71.