

THE HIGH UNADVANCED VOWELS OF PROTO-TANO-CONGO

JOHN M. STEWART

Department of African Linguistics, University of Leiden

Capo (above) argues that there are no grounds for recognizing the [+High, -Advanced Tongue Root] vowels I , Q either in Hwe or in proto-Gbe, and suggests that this raises doubts about my hypothesis (Stewart 1971:203-4) that languages such as Akan inherited these vowels from the latest common ancestor of the Kwa languages. I show here that if we take the proto-language in question to be proto-Tano-Congo (Tano-Congo equals Benue-Congo plus Kwa minus Kru), then a regular I , $\text{Q} = \text{I}$, Q correspondence between Akan and proto-Bantu confirms my hypothesis; and that Capo's doubts are consequently unjustified.

Capo (*ci-dessus*) avance qu'il n'y a pas de place pour les voyelles [+Fermées, -ATR] I , Q ni en Hwe ni en proto-Gbe, et suggère que cela soulève des doutes à propos de mon hypothèse (Stewart 1971:203-4) que les langues telles que Akan auraient hérité ces voyelles de l'ancêtre commun le plus récent des langues Kwa. Je montre ici que si l'on accepte que la proto-langue en question est proto-Tano-Congo (Tano-Congo égale Benue-Congo plus Kwa moins Kru), alors une correspondance régulière I , $\text{Q} = \text{I}$, Q entre Akan et proto-Bantu confirme mon hypothèse; et que par conséquence les doutes de Capo ne sont pas justifiés.

0. INTRODUCTION

Capo, in his article in this issue, expresses reservations about my reconstruction of the vowels of the latest common ancestor of the Kwa languages. He fails, however, to take account of any publication more recent than Stewart (1971), the relevant section of which was first circulated in 1969 under the title "Cross-height vowel harmony in the Kwa languages". I shall begin, therefore, by summarizing the progress that has been made since then; I shall deal first with the implications of the Bennett and Sterk (hereafter (B & S) (1977) classification for the questions of what the latest common ancestor of the Kwa languages is and of how we should set about reconstructing it; second with my claim (Stewart 1970) that proto-Bantu, which shares that latest common ancestor, had the vowels I , Q and not e , o as Guthrie and Greenberg both supposed; third with Guthrie's reasons for positing e , o ;

fourth with Greenberg's; and fifth with the reconstruction of l, o back from Akan (Twi-Fante) and proto-Bantu to the target proto-language. I shall then proceed to consider what Capo has to say; I shall argue first that he is wrong to condemn Ford (1973) for analysing the Ewe vowel system in terms of the segmental feature category Advanced Tongue Root (= ATR = Advanced); second that he is wrong to follow Oyelaran (1973) in positing a proto-Yoruba devoid of cross-height vowel harmony (hereafter CHVH); third that he is right to insist that the evidence he cites provides no justification whatsoever for reconstructing l, o in proto-Gbe; and fourth that he is right to insist that the possibility of a Kwa Language acquiring CHVH should not be excluded.

This article incorporates the conclusions I reach in Stewart 1982, an unpublished paper in which I consider the implications of De Blois's (1981) demonstration that proto-Bantu lacked CHVH and that Nen (Bantu A44) acquired it, and his suggestion that the seven-vowel system of proto-Bantu resulted from a pre-Bantu merger of e, o with l, o. This falsified Stewart and Van Leynseele's (1979) hypothesis that Nen inherited CHVH through proto-Bantu from an earlier proto-language, and that the seven-vowel systems found in many present-day Bantu languages resulted from a post-Bantu merger of e, o with ɛ, ɔ. A revised derivation of the Nen vowel system from that of proto-Bantu is included below in the section on the acquisition of CHVH. Also from Stewart 1982 is the discussion of the postulation by both Guthrie and Greenberg of the vowel sounds e, o in proto-Bantu.

1. THE LATEST COMMON ANCESTOR OF THE KWA LANGUAGES

Although Capo refers to the latest common ancestor of the Kwa languages as 'proto-Kwa', it is now widely accepted that on the one hand Kwa does not constitute a genetic unit, and that on the other Volta-Congo (B & S's Central Niger-Congo; see Stewart and Van Leynseele 1979:31-2) and Tano-Congo (B & S's South Central Niger-Congo) probably do constitute such units; the Volta-Congo group has the combined membership of Greenberg's (1963a) Kwa, Benue-Congo, Gur, and Adamawa-Eastern groups, and the Tano-Congo group the combined membership of the Kwa and Benue-Congo groups minus Kru, which Greenberg treats as a subgroup of Kwa.

As two of B & S's three genetic subdivisions of Tano-Congo, namely Western and Ijo, are entirely Kwa and the third, namely Benin-Congo (B & S's Eastern), partly Kwa, the latest common ancestor of the Kwa languages is, by the B & S classification, proto-Volta-Congo or proto-Tano-Congo according to whether or not the Kwa languages are considered to include the Kru languages. As Capo makes no reference to the Kru languages we can take proto-Tano-Congo as the latest common ancestor of the languages under discussion.

In reconstructing proto-Tano-Congo I naturally aim to take full advantage of existing reconstructions of proto-Bantu, which is by far the most important and best known of the descendant proto-languages.

2. THE HIGH UNADVANCED VOWELS OF PROTO-BANTU

Guthrie (1967-71) represents the vowels of his Common Bantu as *i, *i, *e, *a, *o, *u, *y, and notes that *i, *u are realized as e, o in some present-day Bantu languages and as l, o in others. He suggests (vol.1:61) that proto-Bantu had e, o; he notes firstly that e, o are more widespread than l, o "and in consequence ... likely to be closer to the original", and secondly that l, o can be seen as the intermediate stage in a development e, o > l, o > i, u which would account for the merger of *i, *u with *i, *y in the present-day five-vowel Bantu languages. Greenberg before him (1951:813; 1963b:36) had made no mention of the possibility that the proto-Bantu vowels might have been l, o and had taken it for granted that they were e, o, and had claimed that they were paired with ɛ, ɔ in a proto-Bantu vowel harmony system based on the feature category that has since been identified as Advanced Tongue Root; he writes as follows (1963b:36-7):

"In proto-Bantu, within the morpheme, e and o reciprocally exclude ɛ and ɔ. Further there are verbal derivatives in which alternatives o ~ ɔ and e ~ ɛ occur. Since the remaining vowels a, i and u occur with both sets, we have a system of two principal grades with three neutral members in each:

1. a, e, i, o, u
2. a, ɛ, i, ɔ, u

"Here again the phonologically significant feature is relative height, e and o versus ɛ and ɔ. I have examined in detail nearly all African vowel harmony systems for which sufficient data are available. With the possible exception of Tiv, where the principle seems to be back versus front or perhaps more accurately rounded versus unrounded, all African systems seem to involve relative height as the basic principle."

I first rejected e, o in favour of l, o in Stewart 1970. I shall now restate my reasons.

I show in Stewart 1971 (200-1), the article from which Capo is at pains to distance himself, that there are compelling reasons for reconstructing proto-Volta-Comoe (Volta-Comoe = VCm = Greenberg's Akan) as having l, o and for positing the replace-

ment of these by e, o in Betibe (Western VCM) and Awutu (Eastern VCM) and by i, u in Baule (Central VCM); proto-Volta-Comoe l, o is thus manifested in the present-day languages by the correspondence in (1):

(1) Betibe, Awutu	Akan etc.	Baule		
(7 vowels)	(9 vowels)	(7 vowels)		
<u>e</u> , <u>o</u>	=	<u>l</u> , <u>o</u>	=	<u>i</u> , <u>u</u>

I show further that the sounds l, o are highly marked, and that consequently both of the sound changes posited, namely l, o > e, o and l, o > i, u, are highly plausible phonetically.

Now the three main present-day Bantu vowel systems are as in (2):

(2) Bobangi etc.	Sukuma etc.	Swahili etc.
(7 vowels)	(7 vowels)	(5 vowels)
<u>i</u> <u>u</u>	<u>i</u> <u>u</u>	<u>i</u> <u>u</u>
	<u>l</u> <u>o</u>	
<u>e</u> <u>o</u>	<u>e</u> <u>o</u>	<u>e</u> <u>o</u>
<u>ɛ</u> <u>ɔ</u>	<u>ɛ</u> <u>ɔ</u>	<u>ɛ</u> <u>ɔ</u>
<u>a</u>	<u>a</u>	<u>a</u>

The differences among these three systems are fully accounted for by the correspondence in (3):

(3) Bobangi etc.	Sukuma etc.	Swahili etc.
<u>e</u> , <u>o</u>	<u>l</u> , <u>o</u>	<u>i</u> , <u>u</u>

This, as I point out in Stewart 1970, is identical to the correspondence in (1), which is clearly derived from an original l, o. It follows that if we posit l, o for proto-Bantu, we provide a highly plausible explanation of the correspondence in (3). The question which then arises is this: do we provide an equally plausible explanation of the correspondence if we follow Guthrie in positing a Bobangi-type proto-Bantu and say that e, o was replaced by l, o in the course of the development of the present-day Sukuma-type and Swahili-type systems? I suggest that a sound change e, o > l, o which is not a merger (and in this case it

would not have been a merger) is highly implausible phonetically. In the first place the replacing sounds are more highly marked than the replaced sounds, and in the second place I know of no case in which the change can be clearly shown to have occurred.

3. GUTHRIE'S CASE FOR A BOBANGI-TYPE PROTO-SYSTEM

Let us now look at some of the considerations which led Guthrie and Greenberg to posit a Bobangi-type proto-system.

As we have seen, Guthrie argues that the proto-system is more likely to have been of the Bobangi type because that type is the more widespread. There are two obvious objections to this. In the first place Guthrie himself derives the Swahili type of system from the Sukumatype by a merger l, o > i, u, so that before this merger took place the Sukuma type was presumably much more widespread than the Bobangi type; Guthrie himself (vol.1:66) shows the Swahili type covering a wider area than the Bobangi type and the Sukuma type between them. In the second place, wide geographical distribution is in any case a highly unreliable index of antiquity as the case of the Swahili type of system amply illustrates.

4. GREENBERG'S ASSUMPTION OF A BOBANGI-TYPE PROTO-SYSTEM

Greenberg's vowel harmony claim cannot be dismissed quite so easily: the Bobangi-type languages frequently display single-height advancing harmony, and this clearly suggests a tentative hypothesis that the harmony goes back to proto-Bantu and is ultimately derived from an earlier cross-height advancing harmony. It is not, however, implausible to posit the loss of advancing harmony in proto-Bantu and its subsequent resurrection in the present-day Bobangi-type languages, as I shall now show.

I reconstruct the proto-Tano-Congo vowel system as in (4). Non-low vowels in affixes display advancing harmony with the nearest vowel of the root, so that we have the alternations l ~ i, o ~ u, e ~ e, ɔ ~ o. I derive the (Sukuma-type) proto-Bantu seven-vowel system from the proto-Tano-Congo system by a pre-Bantu neutralization of the oral/nasal distinction and a pre-Bantu merger of e, o with l, o; this latter merger has the immediate effect of replacing the +Advanced alternations e ~ e, ɔ ~ o by the +High alternations e ~ l, ɔ ~ o, with the alternants distributed as in (5).

See figures (4) and (5) overleaf.

(4) The Proto-Tano-Congo Vowel System

		-Nasal		+Nasal	
		-Round	+Round	-Round	+Round
+High -Low	+Advanced	i	u	ĩ	ũ
	-Advanced	l	ø	ĩ	õ
-High -Low	+Advanced	e	o		
	-Advanced	ɛ	ɔ		
-High +Low	-Advanced	a		ã	

(5) Before or after i, u: l, ø" l, ø from i, u: ɛ, ɔ" l, ø from e, o: l, ø" ɛ, ɔ: ɛ, ɔ" a: ɛ, ɔ

This is then simplified as in (6) as l, ø come to be used to the exclusion of ɛ, ɔ before or after i, u and as the affix vowel thus comes simply to copy the +High specification of the nearest root vowel.

(6) Where root vowel high (i.e., i, u, l, ø): l, øWhere root vowel nonhigh (i.e., ɛ, ɔ, a) ɛ, ɔ

Because of the way the situation later developed, I assume that at this stage the forms with l, ø are taken to be the base forms and that the forms with ɛ, ɔ are derived as in (7):

(7) l, ø > ɛ, ɔ where root vowel nonhigh (i.e., ɛ, ɔ, a)

This rule is then eroded as in (8) as the base form takes over from the derived form where the root vowel is low (i.e., a).

- (8) l, o > e, o where root vowel mid (i.e., e, o)

This rule is then further eroded as in (9) as base forms with o take over from derived forms with ɔ where the root vowel is e (though not where it is ɔ). This brings us to

- (9) a. l > e where root vowel mid (i.e., e, o)
 b. o > ɔ where root vowel ɔ

the situation in proto-Bantu verbal extensions as it is reconstructed by Meeussen (1967:84). In certain areas the post-Bantu sound change l, o > e, o then converts the Sukuma-type proto-Bantu vowel system into systems of the Bobangi type, with the result that the alternations l ~ e, o ~ ɔ revert to the e ~ e, o ~ ɔ of proto-Tano-Congo and the advancing harmony noted by Greenberg is restored.

It should be noted that although there is an element of speculation in the above account of the fall and rise of advancing harmony, neither of the two sound changes posited is at all *ad hoc*: the pre-Bantu merger of e, o with l, o is required in any case to account for the reduction of the proto-Tano-Congo nine-vowel system to a seven-vowel system, and the post-Bantu replacement of l, o by e, o is required in any case to account for the difference between the Sukuma-type system and the Bobangi-type system.

5. THE VOWELS OF PROTO-TANO-CONGO

In Stewart (1976 p.9) I report that "lists of [paired] items which are cognate in Akan and proto-Bantu and which display what are presumed to be identical vowel sounds can be quoted for each of the seven [proto-Bantu vowels]". In the paired items in (10) the first vowel in the Akan item, where it is not identical in quality to the first vowel in the reconstructed proto-Bantu item, differs from it only in that it is nasalized. In the outer columns the items are cited exactly as they are published in Christaller's dictionary (1933) in the case of Akan, and in Guthrie's *Comparative Bantu* (1967-71) in the case of Common Bantu; in the inner columns they are stripped of any affixes or presumed affixes as well as of their tones, and are presented in a uniform transcription. The centre column gives reconstructed proto-forms; since, by the B & S classification, Akan and proto-Bantu fall within different primary branches of Tano-Congo (B & S's SCNC), the proto-language is proto-Tano-Congo (pTCg): Akan (Ak) is in the Western branch, while proto-Bantu (pB) is in the Benin-Congo branch (B & S's Eastern).

(10)

Akan (Dictionary)	Akan	Proto-Tano-Congo	Proto-Bantu	Common Bantu (Guthrie)	Gloss
a. e-bíŋ	bÍŋ	*'bid̩	*bid	*-b̩dò	'dirt'
síw	siw	*dibi	*dib	*-d̩ib-	'stop up'
sí	si	*diti	*dit	*-d̩it-	'tie a knot'
kyì(rí)	círi	*gidi	*gid	*-g̩id-	'abstain'
híni	hÍn̩	*k̩ig̩t̩	*ig	*-y̩lgad-	'shut'
nt̩íŋ	tÍŋ	*'tinã	*tina	*-t̩inà	'root'
b. t̩u	tu	*dutu	*dut	*-d̩yt-	'pull'
wù	wu	*ku	*ku	*-kú-	'die'
àhúru	huru	*pudu	*pud	*-pýdò	'foam'
húru	huru	*pudu	*pud	*-pýd-	'froth over'
o-fú	fu	*'pu	*pu	*-p̩y	'stomach'
fún̩u	fún̩u	*'p̩uk̩u	*puk	*-p̩yk-	'dig up'
c. b̩eŋ	b̩eŋ	*'b̩ed̩	*b̩d	*-b̩fd-	'b. cooked'
ase	se	*cl̩	*cl̩	*-cl̩	'underneath'
kyé	cl̩	*'k̩l̩	*kl̩	*-kí-	'dawn' (v)
me	m̩l̩	*ml̩	*ml̩	*-mí	'me'
hyé	sl̩	*pl̩	*pl̩	*-p̩f̩-	'burn'
ε-hé	h̩l̩	*pl̩	*pl̩	*-p̩f̩	'where'
d. b̩oro	b̩oro	*'baðo	*bað	*-b̩ud-	'hit'
ɔ-b̩ó	b̩o	*'bað	*bað	*-b̩uè	'stone'
ɔ-sórd̩	soro	*jado	*jodo	*-jùdú	'top; sky'
wo	wo	*ko	*ko	*-kú	'you (s)'
mo	m̩o	*m̩ðə	*m̩oð	*-múé	'you (pl)'
ɛ-wó	wó	*wɔkl̩	*ɔkl̩	*-yúk̩i	'honey'
e. s̩eŋ	s̩eŋ	*d̩ed̩	*d̩d	*-d̩éd-	'b. suspended'
ɛnné	de	*'d̩eɛd̩	*d̩eɛd	*-d̩eɛd̩o	'today'
ɛ-hyéŋ	ɛn̩eŋ	*ped̩	*edi	*-yéðl̩	'moon'
-hyéŋ	ɛn̩eŋ	*ped̩	*ɛd̩	*-yéðu	'white'
f. f̩ow	f̩ow	*b̩ob̩ð	*b̩omb	*-b̩omb-	'b. wet'
t̩ò	t̩o	*d̩oko	*d̩ok	*-d̩ók-	'rain (v)'
ɛ-k̩ɔŋ	k̩ɔŋ	*'k̩ɔt̩i	*k̩oti	*-k̩ɔt̩i	'neck'
p̩òw	p̩ow	*'k̩wɔb̩ð	*k̩omb	*-k̩omb-	'scrape'
ρ̩ó	p̩oŋ	*'k̩wɔɔn̩ð	*k̩ɔɔn̩	*-k̩óónud-	'break off'
ɔ-w̩ɔ	w̩o	*wɔka	*ɔka	*-yók̩à	'snake'
g. nt̩ám	tam	*dap̩i	*dap	*-d̩apò	'oath'
da	da	*'daad̩	*daad	*-d̩áád-	'lie down'
ɔ-sá	sa	*ta	*ta	*-t̩á	'war'
sàw	saw	*tap̩i	*tap	*-t̩áp-	'draw (water)'
ɛ-sã	sã	*t̩äto	*tato	*-t̩átu	'three'
ɛ-tá	ta	*'ta	*ta	*-t̩á	'bow'

PTCg 'p, 'b etc. are lenis p, b etc; the case for their reconstruction is presented in Stewart 1973. The fact that no account is taken of the tones means not that they are considered unimportant, but rather that the Akan data do not provide an adequate basis for their reconstruction: in the dialect described by Christaller most lexical tonal distinctions have been lost.

Since all nine oral vowels of proto-Tano-Congo are presumed to have survived in Akan, the presumed pre-Bantu merger of e, o with ɛ, ɔ referred to in preceding sections would lead us to expect the correspondences (Ak) e, o = (pB) ɛ, ɔ in addition to the seven correspondences illustrated in (10) above. Unfortunately, Akan does not have many roots with e or o as the only vowel, and it is consequently not possible to establish proto-Bantu correspondents for these two vowels with anything as like as much confidence as for the remaining seven; the tentatively paired items in (11), however, offer limited support for the correspondence (Ak) e = (pB) ɛ.

(11)	fè	fe	*'pe	*pl	*-pi-	'(Ak) b. fine, tender, soft smooth by grinding, pounding, [in preparation for consumption] (pB)b. cooked'
	sè	se	*te	*tl	*-ti	'saying, say'
	sèŋ	sen	*ten̩	*t̩n	*-t̩n-	'(Ak) carve, cut, chip, make by cutting or carving (PB) cut'

The most interesting of the vowel correspondences for the present purpose, of course, are (Ak) ɛ, ɔ = (pB) ɛ, ɔ, as these point to the reconstruction of ɛ, ɔ right back to Proto-Tano-Congo.

6. FORD'S ANALYSIS OF THE GBE VOWEL SYSTEM

I pass now from the reconstructed proto-Tano-Congo vowel system itself to its implications for descendant proto-languages such as proto-Gbe and proto-Yoruba which, for a variety of reasons, have contributed less significantly to proto-Tano-Congo reconstruction than have proto-Bantu and proto-Volta-Comoe (Volta-Comoe = Greenberg's Akan). In this connection Capo writes as follows in his concluding paragraph: "Il conviendrait ... de considérer avec réserve l'hypothèse de Stewart (1971) et de ne pas partir d'elle pour mouler toutes les proto-langues membres du groupe Kwa. C'est de cela qu'a été victime Ford (1973)."

What in fact Ford said was 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 rôle" (p.62). He did not claim, as Capo seems to suggest he did, that the earlier system survived intact as far as proto-Gbe; and moreover, the point he did make marked an important step forward in our understanding of African vowel systems, as we shall see.

It is profitable to compare Ford's (1973) analysis of the eight Gbe oral vowel sounds in (12a) with the analysis by Clements (1974: 286) in (12b). To facilitate the comparison I have replaced Ford's α Back by α Round; I have also replaced Ford's symbol 'a' and Clements's '3' by Capo's (1981) 'e'.

(12)a. Ford's Analysis of the Gbe Vowel Sounds

		-Round	+Round
+High -Low	+Advanced	i	u
-High -Low	+Advanced	e	o
	-Advanced	ɛ	ɔ
-High +Low	+Advanced	ə	
	-Advanced	a	

b. Clements's (Capo's) Analysis of the Gbe Vowel Sounds

		-Back -Round (+Front) (-Back)	+Back -Round (-Front) (-Back)	+Back +Round (-Front) (+Back)
+High	+Advanced (-Low)	i		u
-High	+Advanced (-Low)	e	ə	o
	-Advanced (+Low)	ɛ	a	ɔ

Ford's analysis of the oral vowel sounds of Gbe is in line with my analysis of the oral vowels of proto-Tano-Congo in (4) above; the only differences are that in my proto-Tano-Congo (i) (i) the [+High, +Advanced] vowels i, u have the [+High, -Advanced] counterparts ɛ, ɔ, and (ii) the [+Low, -Advanced vowel] a has no [+Low, +Advanced] counterpart ə.

Clements' analysis differs from Ford's in that it eliminates the category Low at the cost of bringing in the category Back. In an apparent reference to Ford's [+Low, +Advanced] vowel ə he writes that "one would not expect to find languages in which pairs of vowels marked [+Constricted Pharynx] [i.e., [+Low]; J.M.S.] are minimally distinguished at the phonetic level by the feature category [Advanced]" (p.283).

Certainly it seems on the face of it odd to classify ə as +Low and ɛ, ɔ as -Low if, as I presume to be the case, ɛ, ɔ are in fact lower than ə. We should however think in terms not of a single vowel triangle but of separate -Advanced and +Advanced vowel triangles; as Stewart and Van Leynseele point out (1979:33), "the high point on the high/mid/low scale for -Advanced vowels is not necessarily higher than, or even as high as, the mid point on the high/mid/low scale for +Advanced vowels, and similarly the low point on the scale for +Advanced vowels is not necessarily lower than, or even as low as, the mid point on the scale for -Advanced vowels; that is, ɛ, ɔ are not necessarily as high as e, o, and ə is not necessarily as low as ɛ, ɔ". Painter (1973) in fact provides instrumental evidence that in Akan e, o are higher than ɛ, ɔ.

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; *if-then* sequence structure conditions capturing the two situations are formulated in (13).

(13)a. Classic Cross-height Advancing Harmony

V		C_O	V
-Low			-Low
> Advanced			α Advanced

b. Classic Single-height Advancing Harmony

V		C_O	V
-High			-High
-Low			-Low
> Advanced			α Advanced

The first condition says that two successive nonlow vowels, whether or not they are separated by one or more consonants, have the same specification for the category Advanced; and the second says the same of two successive mid vowels. Obviously, the category Low is essential for the specification both of the neutral class of nonlow vowels in the case of the first condition and of the natural class of mid vowels in the case of the second condition.

It would seem to follow that Clements, if he wished to sustain his analysis, would have to provide a historical explanation of the implied Gbe restructuring of the proto-Tano-Congo vowel system.

Capo's (1981:8) classification of the vowel sounds in question is exactly the same as Clements's, although this is not immediately obvious because he uses different features to label his categories; the feature correspondences are as in (14). Capo's labels are added in parentheses in the table showing Clements's analysis ((12b) above).

(14)	Clements	Capo
α Round	=	α Back
α Back	=	-α Front
α High	=	α High
α Advanced	=	-α Low

It follows, of course, that Capo's analysis is open to the same objection as Clements's. 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 l, ø which occur, presumably as a result of recent historical change, in some Gbe languages/dialects (section 3.1.); the alternative would be to treat them as [+High, +Low]!

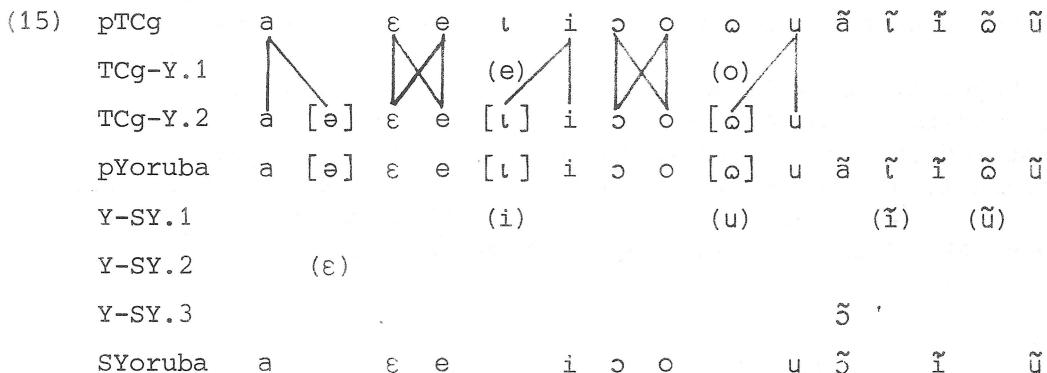
Ford's analysis thus remains the most satisfactory. But that is not all: Ford also deserves credit for being the first to recognize that a language without CHVH could still have Advanced as a segmental feature category; the present reconstruction of the proto-Bantu vowel system is one of the many monuments to his vision.

7. OYELARAN'S PROTO-YORUBA

And now on to Yoruba. As Capo points out, "Oyelaran (1973), confirmant les faits présentés par d'autres linguistes Yoruba... de l'existence de l et ø dans certains parlers Yoruba, avance, contrairement aux autres, que ces voyelles ont dû être innovées par ces parlers particuliers, i.e., que le Proto-Yoruba les ignorait."

There is, however, a serious objection to Oyelaran's reconstruction of ɛ, ɔ rather than ɪ, ʊ as the source of the correspondence ɛ, ɔ = ɪ, ʊ which he finds across the present-day Yoruba dialects. The most likely source of e, o = i, u is i, o, as I have argued above; and where [+High, -Advanced] vowels become -High they usually become +Advanced if they are oral but remain -Advanced if they are nasal, so that whereas i, o become e, o; ɪ, ʊ become ɛ, ɔ, and the nasal counterpart of e, o = i, o = i, u is thus ɛ, ɔ = ɪ, ʊ. The most likely source of ɛ, ɔ = ɪ, ʊ = i, u is therefore ɪ, ʊ.

In the light of this observation, and on the basis of the data in Bamgbosé (1967) and Oyelaran (1973), I would tentatively derive the ten vowels of Standard Yoruba (SY) as in (15).



TCg-Y.x: number x in the set of changes deriving proto-Yoruba from proto-Tano-Congo.

(e): e, which we have elsewhere already (i.e., the change is a merger as far as this particular output is concerned).

[ə]: subphonemic ə.

TCg-Y1: V TCg-Y.2: V /# ___ C V
+High
-Advanced
-Nasal > α Advanced

> -High
+Advanced

Y-SY.1: V Y-SY.2: V Y-SY.3: V
+High +Low +Low
 +Advanced +Nasal

> +Advanced

> -Low
-Advanced > -Low
 +Round

TCg-Y.1 is arbitrary; I have no evidence that pTCg l, o merge with e, o, and I could in fact have saved two feature specifications by merging them with i, u instead. TCg-Y.2 applies only to oral vowels, as nasal vowels do not occur in the context specified. The set of 15 vowel sounds posited in proto-Yoruba is identical to the set of 15 found in certain present-day Akan (Twi) dialects.

Y-SY.1 may be compared with Oyelaran's "nasal vowel raising" which changes ɛ, ɔ to ĩ, ũ, Y-SY.2 with his "a-fronting" which changes a to ɛ before a consonant followed by a high vowel, and Y-SY.3 with his (essentially identical) "ã-backing" which changes ã to ɔ̄. Note that while my first two changes have the combined effect of reducing a system of ten vowel qualities to a system of seven in the classical manner, neither of Oyelaran's first two changes is phonetically plausible.

Hopefully it will not be long before the derivation in (15) is confirmed, amended or falsified by the establishment of relevant regular sound correspondences between Yoruba and proto-Bantu. Yoruba is of course closer than Akan to proto-Bantu since, unlike Akan, it is a Benin-Congo (Eastern SCNC) language; and as we have seen, Akan-Bantu correspondences have been established already.

8. THE GBE CORRESPONDENCE e, o = i, u

Capo goes deeply into the question of whether he should reconstruct proto-Gbe l, o as the source of the present-day correspondence (Gen etc.) e, o = (Hwe) i, u, and happily decides that the evidence for proto-Gbe l, o is insufficient. In support of this conclusion I would point out that the e, o = i, u correspondence does not stand comparison with the e, o = l, o = i, u correspondences which support the reconstruction of proto-Volta-Comoe i, o and proto-Bantu l, o, or with the ɛ, ɔ = ĩ, õ = ĩ, ũ correspondence which supports the reconstruction of proto-Yoruba ĩ, õ.

Capo draws the moral that my 1971 hypothesis should not be used as a mould for all Kwa proto-languages. Now that is an admirable precept, and it is to be hoped that if there are any offenders among the readers of this journal they will take heed. I would, however, like to make one thing clear: my claim that those Kwa languages which lack l, o have lost them would not be invalidated by a demonstration that these two vowels were lacking in proto-Gbe. I have never excluded the possibility that they may already have been lost in some intermediate proto-languages.

9. THE ACQUISITION OF CROSS-HEIGHT VOWEL HARMONY

Capo concludes with an extract from an unpublished paper by Oyelaran (1977) which I have not seen: "The reconstruction of proto-languages for West African languages should admit of other views than the supposition that no Kwa language can be shown to have acquired vowel harmony of the cross-height type." My guess is that this refers to Stewart (1976), where I write as follows (p.8):

"It has been quite widely agreed that the latest common ancestor of the Kwa languages must have had CHVH (see, for instance Williamson 1973:130-1); languages with CHVH are found in several Kwa subgroups, and within many of these subgroups one finds pairs of closely related languages, and in one case even a pair of dialects, in which one member of the pair has CHVH and the other has not; it can never be shown that the member with the harmony acquired it, and it can nearly always be shown that the member without the harmony has lost it."

I would accept the correction of "it can never be shown" to "it cannot, in any of the cases of which I am aware, be shown"; it is certainly wrong to exclude the possibility that some Kwa language might some day be shown to have acquired CHVH, though I remain unaware of any actual Kwa case.

There is, however, at least one convincing Bantu case. As we have seen, in 1970, I reconstructed the proto-Bantu vowels as i, ɛ, a, ɔ, ø, u. De Blois (1981) has now shown that Nen (Bantu A.44) developed CHVH by replacing the five -Advanced vowels i, ɛ, a, ɔ, ø by their +Advanced counterparts i, e, e, o, u in words containing i, u. He has thereby falsified Stewart and Van Leynseele's (1979:51) Nen-inspired hypothesis "that proto-Bantu had a classic system of CHVH with nine (or possibly ten) vowels, and that it inherited this system largely unchanged from proto-Volta-Congo". I would now tentatively derive as in (16) the vowels which we find today in regular Nen roots.

Nen roots are normally either -Advanced or +Advanced throughout, except that ø occurs in roots that are otherwise -Advanced throughout. The vowels a, ɛ, ɔ, ø of a -Advanced root are replaced by the +Advanced vowels e, i, o, u respectively before a +Advanced suffix such as the causative suffix -i. It will be seen that changes B-N.3 and 4 are jointly responsible for the merging of the two alternations ɛ ~ e and ɔ ~ i into a single alternation e ~ i. After B-N.4, ɔ and ɔu are identical in the base forms of roots, and the roots with ɔu are distinguished only by a rule feature; some of these roots lose the rule feature before B-N.5 applies, with the result that, although they have ø in proto-Bantu, they have not ø but ɔ in Nen.

(16) pTCg	a	e	ɛ	i	ɔ	o	ø	u	ã	ĩ	ጀ	ጀ	ጀ
TCg-B.1			(ɛ)			(o)							
TCg-B.2									(a)	(i)	(i)	(o)	(u)
pBantu	a	e	ɛ	i	ɔ	o	ø	u					
B-N.1	a	[ə]	[e]	i	[ɔ]	[o]		u					
B-N.2			([ə])										
B-N.3			ɛ ¹										
B-N.4			(ɛ ¹)				u						
B-N.5						o							
B-N.6						o ^{2u}							
Nen	a	e	ɛ ¹	i	ɔ	o	o ^{2u}	u					

ɛ¹: e in alternation not with its normal +Advanced counterpart but with i.

o²: disharmonic o (i.e., o not requiring that other vowels in the word should also be +Advanced).

TCg-B.1:	v -High -Low +Advanced	TCg-B.2:	v > -Nasal
	> +High -Advanced		
B-N.1:	v %—X v +Advanced	%E:	in the environment E or its mirror image
	> +Advanced		
	Condition: X contains no word boundary.		
B-N.2:	e > ə	Condition: e is part of a morpheme lexically specified as +Advanced (and is thus not in alternation with ə).	
B-N.3:	ə > ጀ		
B-N.4:	v +High -Advanced -G	G:	Grammatical; a segment marked -G is part of a root morpheme.
	> +High		
B-N.5:	ɔ > ጀ	Condition: ɔ is in alternation with ጀ.	
B-N.6:	v %—C ₀ v +High -Advanced	α Advanced	
	-High %—C ₀ v +Advanced	α Advanced	

B-N.6 replaces l, o by e, o without disturbing the harmony displayed by the remainder of the word, thereby converting simple CHVH into what Stewart and Van Leynseele (1979), perhaps unfortunately, treat as 'underlying CHVH': they recognize underlying l, o and merge them with e, o by a synchronic counterpart of B-N.6.

In case the reader is puzzled by my referring here not only to disharmonic o but also to disharmonic e, I would remind him that the derivation in (16) is concerned only with the vowels of roots; both disharmonic vowels occur frequently in affixes.

It will be seen that the [+Advanced, -High] vowels are shown as being subphonemic in the output of B-N.1 but not in the final output, namely present-day Nen. The explanation is that in certain circumstances the conditioning [+ Advanced, +High] vowels have been lost, by changes not formulated here, and that the [+ Advanced, -High] vowels have thereby become phonemic.

We now have good reason, then, to suppose that proto-Bantu lacked advancing harmony in any form, but that it retained advancing as a segmental feature category and that some descendant languages developed advancing harmony in one or the other of two ways: either by reversing the pre-Bantu e, o > l, o shift, thereby introducing single-height harmony as in the case of the Bobangi-type languages, or by assimilating all the -Advanced vowels to any +Advanced vowel in the word, thereby introducing cross-height harmony as in the case of Nen.

10. CONCLUSION

In Stewart (1976), I made the following observation on the significance of my hypothesis for historical reconstruction (p.9):

"If proto-Volta-Congo did in fact have a ten-vowel system with cross-height harmony, and if the many present-day languages which have ten- or nine-vowel systems with cross-height harmony have in fact inherited these systems virtually unchanged from proto-Volta-Congo, then we have a highly unusual situation which should be an immense advantage in the reconstruction of the proto-language; there is surely no case anywhere else in the world where the vowel system of a proto-language of such antiquity has been so well preserved in so many daughter languages."

Clearly, I must now admit that some present-day languages with CHVH have not inherited it from proto-Tano-Congo (nor, by implication, from proto-Volta-Congo; it should be noted that I had not recognized proto-Tano-Congo before the publication of the B & S classification in 1977) but have acquired it. This, however, calls

for nothing more than a refinement of the hypothesis, and in no way affects its significance for the reconstruction of proto-Tano-Congo; all the cases of acquisition known to me can be plausibly explained within its framework.

It is not customary for a critic to write at greater length than the author he is criticizing, but I have made an exception in this case because of the significance of the issue and the consequent desirability of securing a consensus if at all possible.

REFERENCES

- Bamgbose, A. 1967. 'Vowel harmony in Yoruba' in *Journal of African Languages* 6: 268-73.
- Bennett, P.R. and J.P. Sterk. 1977. 'South Central Niger-Congo: a reclassification' in *Studies in African Linguistics* 8: 241-73.
- Capo, H.C. 1981. 'Nasality in Gbe: a synchronic interpretation' in *Studies in African Linguistics* 12: 1-43.
- Christaller, J.G. 1933. 'Dictionary of the Asante and Fante language called Tshi (Twi). Basel: Basel Evangelical Missionary Society.
- Clements, G.N. 1974. 'Vowel harmony in Ewe' in *Studies in African Linguistics* 5: 281-301.
- De Blois, R. 1981. 'On the origin of underlying cross-height vowel harmony in Nen.' Paper presented to the Department of African Linguistics of the University of Leiden on 8 December.
- Ford, K.C. 1973. 'On the loss of cross-height vowel harmony' in *Papers in Ghanaian Linguistics*, ed. M.E. Kropp Dakubu, pp. 50-80. University of Ghana Institute of African Studies Research Review, suppl. 4.
- Greenberg, J.H. 1951. 'Vowel and nasal harmony in Bantu languages' in *Zaire* 5:812-20.
- Greenberg, J.H. 1963a. 'The languages of Africa.' Publications of the Research Center in Anthropology, Folklore, and Linguistics, 25. Bloomington: Indiana University.
- Greenberg, J.H. 1963b. 'Vowel harmony in African languages' in *Actes du second colloque international des langues negro-africaines*, pp. 33-7. Université de Dakar.
- Guthrie, M. 1967-71. 'Comparative Bantu', 4 vols. Farnborough: Gregg.
- Meeussen, A.E. 1967. 'Bantu grammatical reconstructions' in *Africana Linguistica* 3: 79-121.
- Oyelaran, O.O. 1973. 'Yoruba vowel co-occurrence restrictions' in *Studies in African Linguistics* 4: 155-82.
- Painter, C. 1973. 'Cineradiographic data on the feature "covered" in Twi vowel harmony' in *Phonetica* 28:97-120.
- Stewart, J.M. 1970. 'Tongue root position in the Volta-Comoe Languages and its significance for the reconstruction of the original Bantu vowel sounds' in *African Language Studies* 11: 340-50.
- Stewart, J.M. 1971. 'Niger-Congo, Kwa' in *Current Trends in Linguistics* 7: *Linguistics in Sub-Saharan Africa*, ed. T. Sebeok et al., pp. 179-212. The Hague: Mouton.
- Stewart, J.M. 1973. 'The lenis stops of the Potou Lagoon languages and their significance for pre-Bantu reconstruction' in *Papers in Ghanaian Linguistics*, ed. M.E. Kropp Dakubu, pp. 1-49. University of Ghana Institute of African Studies Research Review, suppl. 4.
- Stewart, J.M. 1976. 'Towards Volta-Congo Reconstruction.' Leiden: Universitaire Pers.
- Stewart, J.M. 1982. 'The vowels of proto-Kwa-Congo.' Paper presented to the Department of African Linguistics of the University of Leiden on 9th February.
- Stewart, J.M. and H. van Leynseele. 1979. 'Underlying cross-height vowel harmony in Nen' (Bantu A.44) in *Journal of African Languages and Linguistics* 1: 31-54.
- Williamson, K. 1973. 'More on nasals and nasalization in Kwa' in *Studies in African Linguistics* 4: 115-38.