VOWEL AND CONSONANT HARMONY IN YORUBA*

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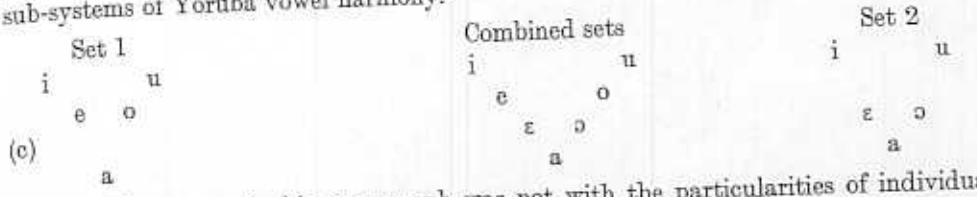
1.0. Abraham noted in his dictionary of the Yoruba language that the language exhibits vowel harmony, but in his discussion and exemplification of the phenomenon[1] he failed to give us anything approaching a clear picture of how it operates. This task was left for Ladefoged, who in discussing the systems of vowel harmony commonly found among the West African languages,[2] gave the following diagram of the two mutually exclusive sub-systems of Yoruba vowel harmony:



Ladefoged's concern in his monograph was not with the particularities of individual languages, but rather with the presentation of an overall picture of the languages studied. Hence this diagram was accompanied by little discussion, a circumstance which has the rather unfortunate result of leaving us with a diagram which is not only somewhat misleading but also incomplete,—misleading, because it gives the impression that the members of each sub-system co-occur freely, contrary to our findings; and incomplete, because it says nothing about the nasal vowels and also because there is yet another system of vowel harmony in the language, which we fail to detect in the diagram.

2.1. One of the two systems of vowel harmony in Yoruba, which we shall label word-initial, operates in vowel-initial nouns in such a way that we have the following pattern of vowel co-occurrence:

In the first syllable	Followed in the second syllable by
e	*o, e, u, i, ũ, ĩ*
o	*o, e, u, i, ũ, ĩ*
ɛ	*a, ɔ, ɛ, u, i, ɔ̃, ũ, ĩ*
ɔ	*a, ɔ, ɛ, *u,*[3] *i, ɔ̃, ũ, ĩ*

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* I am grateful to Professor Greenberg for making helpful comments on an earlier draft of this paper

[1] R. C. Abraham, *A Dictionary of Modern Yoruba*, London, 1958, p. xxvi.

For the genetic classification of Yoruba, see, e.g., J. H. Greenberg, *The Languages of Africa*, Part II, *IJAL* 29.i (1963), p. 8.

The phonemes of the language are:

p	t	–	k	kp
b	d	j	g	gb
f	s	š	h	–
m	l	y	–	w
	r			

Tones: high (´), mid (unmarked), low (`)

Evidence for establishing these phonemes and the rationale of their arrangement in this chart are presented in A. Oladele Awobuluyi, *The Phonology and Morphophonemics of Yoruba*, unpublished Master's Essay, Columbia University, 1964.

[2] Peter Ladefoged, *A Phonetic Study of West African Languages*, *West African Language Monographs* I, Cambridge, 1964, pp. 37–38.

[3] There are no instances of *ɔCu* in the language, where *C* is any consonant. Since the rule of vowel harmony being illustrated here leads us to expect them, their failure to occur would seem to be accidental rather than structural.

Both *a* and *i* can occur with any vowel (*u* and the nasal vowels do not occur word-initially).

No exceptions to the pattern of vowel co-occurrence shown in this chart were found among the monomorphemic vowel-initial nouns listed in Abraham's dictionary (op. cit.). Some examples are given below.

i: *ìgò* ' bottle ', *igbe* ' exclamation ', *igi* ' tree ', *ìka* ' finger ', *iyé* ' feather ', *itɔ́* ' saliva ', *irú* ' type, kind ', *ìyẽ* ' that ', *iyɔ̃* ' argument ', *iyû* a type of beads, *ihî/iyî* ' report '.

a: *àte* ' wares ', *aṣɔ* ' cloth ', *àwo* ' dishes ', *àmì* ' sign ', *àgbá* ' drum (container) ', *ate* ' hat ', *àgbɔ̃* ' coco-nut ', *àrû* ' sickness ', *agírá* ' snuff ', *àdúrà* ' prayer '.

ɛ: *ɛsɛ̂* ' foot ', *ɛ̌ja* ' fish ', *ɛ̀wù* ' garment ', *ɛ̀bi* ' blame ', *ɛkú* ' tears ', *ɛ̀šî* ' horse ', *ɛ̀fɔ̃* ' mosquito ', *ɛ̂kɔ* a type of food.

ɔ: *ɔ̌jɔ́* ' day ', *ɔsɛ̂* ' week ', *ɔ̀jà* ' market ', *ɔrũ* ' heaven ', *ɔtí* ' wine ', *ɔ̀kɔ̃* ' one ', *ɔkî* a kind of bird.

o: *òwe* ' proverb ', *owó* ' money ', *òwú* ' cotton ', *orí* ' head ', *òkũ* ' sea, ocean ', *òfĩ* ' law '.

e: *ebi* ' hunger ', *ekpo* ' oil ', *èté* ' lips ', *eku* ' mouse ', *erĩ* ' elephant ', *egũgũ* ' bone '.

2.2. Among the bi- and polymorphemic vowel-initial nouns, where this system of vowel harmony operates, again without any known exceptions, it provides a simple explanation for several otherwise mysterious morphological phenomena in the language.

2.2.1. For instance, there is an agentival construction which has the meaning ' someone who *x*-es something ' and involves a collocation of the derivational morpheme {o}, for the agent, the verb morpheme {lí} ' to own, possess ', and any noun morpheme, in this order. Thus {o-lí-išu}[1] lit. ' agent owns/possesses yam/yams ' yields by phonological rules [onîšu] ' owner/seller of yam/yams '. But, by contrast, {o-lí-ašɔ} lit. ' agent owns/possesses cloth/clothes ' gives [alášɔ] ' owner/seller of cloth/clothes ', where the morpheme {o} is now realised as [a].

The explanations offered for the differing manifestations of the agent morpheme {o} by earlier writers are rather unsatisfactory. Thus, Ward says: " A large number of nouns are constructed by some form of the word *oni* ' owner ' (from *ni* ' to have '). We have seen that the word *ni* has an alternative form *li*,[2] and that the vowel frequently is elided. In the compounds under consideration the vowel prefix preceding *ni* (or *li*) may undergo change under the influence of the vowel of the noun from which the compound is made: thus the ' owner ' (*oni*) ' of cloth ' (*ašɔ*) is *alašɔ*."[3] Ward does not tell us what exactly " the influence of the vowel of the noun " is, however. Another writer, Bamgbose, says only that, " the nominalising prefix is *oní* ' one who has '. When the final vowel of this prefix is elided, *n* → *l* before all vowels, except *i*. The initial vowel of the prefix is also replaced by that of the following item. "[4]

[1] Here and elsewhere in this paper, hyphens indicate the boundaries of morphemes of immediate interest.

[2] What Ward is describing here is the fact that [n] and [l] are allophones, with the former occurring before nasal vowels and the latter elsewhere.

[3] Ida C. Ward, *An Introduction to the Yoruba Language*, Cambridge, 1952, §412.

[4] Ayo Bamgbose, *A Study of Structures and Classes in the Grammar of Modern Yoruba*, Doctoral Dissertation, Edinburgh University, 1963 (microfilmed), p. 160.

Actually, part of the explanation for the differing shapes of the agent morpheme {o} is to be found in vowel harmony of the type illustrated above. To begin with, a phonological (morphophonemic) rule of vowel elision, which has only a few exceptions, calls for the dropping of the *i* of verbs and prepositions before the initial vowels of their objects. Thus, {rí-ajá} ' see/saw dog/dogs ' and {sí-ajá} ' to dog/dogs ' become [rájá], and [sájá], respectively, and with the same meanings; similarly, {jí-ɛja} ' steal/stole fish ' and {ti-ɔja} ' from market ' yield, respectively, [jɛ́ja] and [tɔja], with no difference in meaning. This same rule turns {o-lí-ašɔ} lit. ' agent owns/possesses cloth/clothes ' into *[o-lášɔ], a form which does not exist, because, as can clearly be seen in the chart given above (§2.1), *o* does not occur initially when the vowel in the next syllable is of a lower tongue height. Hence, if the [a] in the second syllable of this example is to remain, as indeed it must (because otherwise the resultant form would either have a totally different meaning or be unattested), then the initial [o] must be replaced by a non-higher-mid vowel, i.e., any vowel other than *o* and *e*. In this particular example the non-higher-mid vowel is [a]; so that the attested form of the construction is [alášɔ] ' owner/seller of cloth/clothes '.

We have no explanation for why the non-higher-mid vowel selected in this case should have been [a] rather than [ɛ] or [ɔ]. Our guess would be that the selection probably rests on considerations of economy of effort.

Some further examples of the agentival construction are provided below:

[ɛ-lɛ́ja] ' owner/seller of fish ', cf. {ɛja} ' fish '
[ɔ-lɔ́kɔ̀] 'owner/seller of lorries ', cf. {ɔkɔ̀} ' lorry '
[e-léwé] ' owner/seller of leaves ', cf {ewé} ' leaf '
[o-lówó] ' owner of money ', cf. {owó} ' money '

The initial vowel of each of these forms is a phonologically conditioned allomorph of the agent morpheme {o}.

2.2.2. There are many other forms besides these in which what would otherwise be considered the morphologically conditioned allomorphs of some derivational morphemes can now be seen to be conditioned at least in part by vowel harmony. Thus, the same agent morpheme {o} that was discussed in the preceding sub-section occurs also in these words (to mention only a few examples):

a-dájɔ́ lit. ' agent who settles cases ', i.e., ' a judge ' (cf. *dá* ' to give an opinion ', *ɛjɔ́* ' quarrel, court case '); *ɔ-bɛ* lit. ' agent that peels ', i.e., ' knife ' (cf. *bɛ* ' to peel '); *ɔ-bí* lit. ' agent that gave birth to ', i.e., ' parent ' (cf. *bí* ' to give birth to '); *ɛ-kpa* lit. ' agent that deadens/kills ', i.e., ' antidote ' (cf. *kpa* ' to kill/deaden ').

A second morpheme {ì}[1] with the meaning ' that which is used for *x* ' occurs with the allomorphs *ì-*, *à-*, *ò-*, *è-*; as in:

ì-bɔ̀sɛ̄ lit. ' that which is used for putting the feet into ', i.e., ' socks ' (cf. *bɔ̀* ' to put into ', *ɛsɛ̄* ' foot '); *à-áké* (< **à-kíké*[2]) lit. ' that which is used for cutting ', i.e., ' axe ' (cf. *ké/gé* ' to cut '); *è-rɔ* lit. ' that which is used for fabricating ', i.e., ' machine ' (cf. *rɔ* ' to fabricate '); *ò-ọ̀fà* (< **ò-fífà*) lit. ' that which is used for pulling ', i.e., ' magnet ' (cf. *fà* ' to pull ').

[1] This symbol stands for the whole class as well as for the allomorph with the widest distribution.
[2] The form *àkíké* occurs in some dialects in Ekiti Division.

A third morpheme {è}[1] with something like the past participial meaning ' that which was *x*-ed ' has the allomorphs *è-*, *ẹ́-*, and *ì-*; as in:

è-rò lit. ' that which was thought ', i.e., ' thought ' (cf. *rò* ' to think '); *ẹ́-rí* lit. ' that which was seen ', i.e., ' evidence ' (cf. *rí* ' to see '); *ì-là* lit. ' that which was split ', i.e., ' line ' (cf. *là* ' to split ').

As can be observed from these examples, the allomorphs of these morphemes occur with the vowels of the verb stem according to the pattern of vowel co-occurrence given in the chart in §2.1. To this extent at least, they seem to be phonologically conditioned. The only alternative to the partial explanation offered here is, as suggested above, to regard these allomorphs as the morphologically conditioned variants of their respective morphemes—an analysis which we find rather unsatisfying.

The fourth and last construction in which vowel harmony of the type exemplified above appears to play a rôle is illustrated by the following numerals:

ogó-òj̀ì ' forty ' (< {ogú} {èj̀ì} lit. ' twenty, two ')
ogó-òǰe ' a hundred and forty ' (< {ogú} {èǰe} lit. ' twenty, seven ')
ɔgɔ́-ɔ̀fà ' a hundred and twenty ' (< {ogú} {èfà} lit. ' twenty, six ')
ɔgɔ́-ɔ̀rī ' eighty ' (< {ogú} {èrī} lit. ' twenty, four ')

While it remains somewhat unclear how and why the sequence *ú-è* becomes *ó-ò* and *ú-ẹ́* becomes *ɔ́-ɔ̀* in these numerals,[2] a partial explanation seems available for at least the allomorph *ɔgɔ́* of the morpheme {ogú} ' twenty ' (*ogó* another allomorph of the same morpheme also occurs in these examples). As can be seen in the chart given in §2.1, *o* is never followed in the second syllable by *ɔ*. This seems to explain why we have the allomorph *ɔgɔ́* rather than **ogɔ́*, which we would have expected if vowels could co-occur freely.

3.1. The other system of vowel harmony in Yoruba, which we shall label as word-final, has to our knowledge never been noted by earlier writers. It operates in the last two syllables of monomorphemic non-onomatopoeic polysyllabic nouns. Some examples are provided below.

ìrókò a kind of tree
àbúrò ' younger sibling '
eruku ' dust '
àkùrò a type of farmland
òwúrɔ̀ ' morning '
egũgũ ' bone '
kpátákò ' hoof '
èlùbó a type of food
ìràwɔ̀ ' star '
òkùrɔ́ ' palm kernel '
àgùtɔ̀ ' sheep '
àkóòkò ' time, season '
orúkɔ ' name '
àgùfɔ̀ a kind of bird
àdúgbò ' neighbourhood '
òkìkí ' fame '
àkpɛrɛ ' example '
agbede ' mid-way, mid-air '
ògiri ' wall '
agídí ' stubbornness '
àtàgé ' mud platform '
ìkèlè ' morsel '
ìrégbè ' trifles '
elẹ́ẹ̀dẹ̀ ' pig '
àyĩrĩ ' blue '
àtíkè ' make-up powder '
àjèj̀ì ' stranger, alien '
ahéré ' hut '
abéré ' needle '
àgbẹ̀de ' blacksmith '

[1] See footnote 1, page 3.
[2] Coalescence was suggested as a possible explanation for these developments in Awobuluyi (op. cit.).

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péẹ̀lì ' pen '
eéjíbíìtì ' Eg
gẹ́lẹ́síìsì ' Ge
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It will easily be noticed that the vowels in the last two syllables of these words agree with respect to frontness (nonlabiality) or backness (labiality), the low central vowel *a* being neutral—in the sense that it occurs with both front and back vowels. An actual count[1] shows that approximately 84 per cent of the monomorphemic polysyllabic noun entries in Abraham's dictionary (op. cit.) exhibit this pattern of vowel co-occurrence. A conformity score of this magnitude, in our opinion, definitely rules out chance as an explanation for the pattern.

3.2. Additional proof of the reality (in the sense of existing in its own right and not made up for descriptive convenience) of this second system of vowel harmony is supplied by assimilated loanwords that ended in consonants before they entered the language. Yoruba being an open-syllable type of language, loanwords entering it are assimilated by having their consonant clusters, if any, resolved with either *i* or *u*, and by having one or the other of these same vowels appended to them if they ended in consonants.[2] For convenience, we shall discuss consonant-final loanwords first.

Which of the two epenthetic vowels *i* and *u* a particular consonant-final loanword receives depends, with a few apparent exceptions (discussed below in §3.4), on the quality of the vowel[3] in the penultimate syllable of such a loanword after it has been rendered according to the other Yoruba "substitution rules".[4] If the vowel in this syllable is back (labial), the loanword receives *u*; otherwise, it receives *i*. Some examples (and a few apparent exceptions) are given below.

1. Final Syllables in *i*

kátólîkì 'Catholic'	*búrédì* 'bread'
gébúréèlì 'Gabriel'	*fɔ́ɔ̀kì* 'fork'
péèlì 'pen'	*bíbéèlì* 'Bible'
eéjíbîtì 'Egypt'	*fílípì* 'Phillip'
gélésîsì 'Genesis'	*ṣéètì* 'shirt'
léètì 'late'	*aḿgéèlì* 'angel'
elísábéètì 'Elizabeth'	*ìlèétírîkì* 'electric'

[1] The details of this count are as follows:

	Conformities	Non-conformities
Vowel-initial morphemes/words:	543	119
Consonant-initial morphemes/words:	282	38
Total:	825	157

[2] Rowlands pointed out that consonant clusters are sometimes reduced rather than merely resolved, as in *títì* 'motor road' (derived from *street*), and final consonants are dropped, as in *ṣílè* 'shilling'; see E. C. Rowlands, 'Yoruba and English: A Problem of Coexistence', *African Language Studies* 4, 208–214 (1963). This appears not to be a common process, however, as evidenced by the paucity of examples. We shall ignore it for the purposes of the present paper.

[3] We are unable to determine whether Rowlands had the same explanation in mind when he said (ibid. p. 209), "a final consonant is either dropped . . . or a vowel—*i* or *u* according to the timbre of the preceding sounds—is added to it . . ."

[4] The term "substitution rules" is borrowed from Wick R. Miller, 'Spanish Loanwords in Acoma: I', *IJAL* 25, 147–153 (1959). The following substitution equations may or may not be useful for predicting the shapes of new loanwords, but they seem to describe most of the loanwords that are now in the language: $p = p, b, kp, f$; $v = f, b$; $č = s, š$; $\theta = t$; $ð = d$; $ɪ = e, i$; $ʊ = u$; $ɔ = a, ɔ, u$. Foreign sounds which have counterparts in Yoruba are reproduced more or less faithfully.

sìléètì ' slate '
tábìlì ' table '
kpáàdì ' Padre '
yáàdì ' yard, compound '
aáyɛ̀lí ' iron '
fáàlì ' to fine '
tɔ́ɔ̀šì ' flashlight '

šéèlì ' chain '
fádìlí ' farthing '
àléfì ' a leave (of absence) '
gáréèǰì ' garage '
gáàdì ' guard '
šɔ́ɔ̀šì ' church '
ǰɔ́ɔ̀ǰì ' George '

2. Final Syllables in *u*

aámɔ̃́ɔ̀kù ' hammock '
kɔ́ɔ̀tù ' court '
búùtù ' boot '
bíšɔ́ɔ̀bù ' bishop '
ambílóòkù ' envelope '
rékɔ́ɔ̀dù ' record '
aáhábù ' Ahab '
wɔ́ɔ̀dù ' ward '
lúùkù ' Luke '
sɔ́ɔ̀lù ' Saul '
kpáàlù ' pan '
mã́àpù ' map '

kɔ́bùrù ' corporal '
kóòtù ' coat '
búùkù ' to book '
góòlù ' gold, goal '
síkáòtù ' scout '
sípóòkù ' spoke '
kúùkù/kúkù ' a cook '
ǰóòbù ' Job '
bɔ́ɔ̀lù ' ball '
ǰíìpù ' jeep '
síkáàfù ' scarf '
fáàbù ' valve '

The similarity between the pattern of vowel co-occurrence exemplified in §3.1 and the one illustrated here is immediately apparent. There, as here, front (nonlabial) vowels occur with front vowels and back (labial) with back, while the low central vowel *a* occurs with both classes of vowels. Needless to say, (since, as is the widely held belief, barring certain socio-cultural and psychological variables,[1] loanwords are pronounced in a manner which is predetermined by the structure of the borrowing language), these assimilated loanwords obviously end in the way they do only because the pattern illustrated in §3.1 is already present in the Yoruba language.

3.3. As for the loanwords with consonant clusters, there are two possibilities of which one does not appear to be of great interest for our present purposes: if the first member of a two-term cluster is nasal, this consonant becomes syllabic and thus obviates the necessity for a cluster-breaking vowel. Some examples are:

bɔ́m̀bù ' bomb '
kã́ḿsùrù ' to cancel '

aḿbílóòkù ' envelope '
pɛ́ḿsùrù ' pencil '

The other more interesting possibility is that clusters in which the first member is oral are resolved with either *i* or *u*.[2] Some examples are given below.

dírɛ́bà ' driver '
šùkúrù ' school '
búlɔ́ɔ̀kù ' block '

sílípáàsì ' slippers '
búrɛ́dì ' bread '
bíríkì ' brick '

[1] See A. Richard Diebold Jr., ' A Laboratory for Language Contact ', *Anthropological Linguistics* 4.i. 41–50 (1962).

[2] We found only two exceptions to this: *férémù* ' (window) frame ' and *kérésimesi* ' Christmas '.

fúrû ' a slope, free '	*bélîtì* ' belt '
tábìlì ' table '	*sílêètì* ' slate '
giramōfóò ' gramophone '	*bílêèdì* ' blade '
kíláàsì ' class '	*gíláàsì* ' glass '

It will be observed from these words that, with a few exceptions (discussed below in §3.4), the incidence of these two cluster-breaking vowels is determined by the feature of the first member of the cluster: if the first member is labial, *u* occurs; otherwise, *i*. It thus seems that we have on our hands a case of consonant harmony,[1] in which the feature of the consonant determines that of the vowel, such that the resulting CV sequence exhibits agreement with respect to a particular feature—in the present case, the feature of labiality.[2] But the system of vowel harmony exemplified by the native words listed in §3.1 and by the loanwords given in §3.2, in which front (nonlabial) vowels occur with front vowels and back (labial) vowels with back vowels, is also one of labiality. We can thus see that the system of consonant harmony illustrated here and the system of vowel harmony discussed in the preceding two subsections are in reality manifestations of the same phenomenon.

3.4. Apparent exceptions, some of which can be seen among both the cluster-exhibiting and the consonant-final loanwords given above, seem to be deviant only because some of them—cluster-exhibiting loanwords—display vowel harmony when we would have expected them to exhibit consonant harmony, and others, vice versa. This seems to us to be the best explanation for the fact that one can only say:

bílêèdì and not **búlêèdì* ' blade '
bíríkì and not **búríkì* ' brick '
fúrû and not **fúúrû* ' a slope, free '
šùkúrù and not **šìkúrù* ' school '

In these cases vowel harmony of the variety exemplified in §3.1 appears to have been extended beyond its normal range (the last two syllables).

Similarly, among the consonant-final loanwords, one can only say:

fɔ́ɔ́kì and not **fɔ́ɔ́kù* ' fork '
šɔ́ɔ́šì and not **šɔ́ɔ́šù* ' church '
ʃéêmû and not **ʃéêmî* ' gem '
ʃíìpù and not **ʃíìpì* ' jeep '

Of course, tradition may have played a part in determining the shapes of these words, but this, in our opinion, would be a rather difficult point to prove.

4. Since some of the other languages in the same subfamily as Yoruba also display vowel harmony, a brief comparison between the Yoruba pattern of vowel harmony and the patterns reported for two of these other languages, Twi and Igbo, would seem to

[1] Cf. Theodore M. Lightner, ' On the Description of Vowel and Consonant Harmony ', *Word* 21, 244–250 (1965).

[2] The term *gravity* is probably less cumbersome than *labiality*, but we prefer the latter because it refers to labial consonants only, while the former refers to labial as well as velar consonants. On this, see Roman Jakobson, C. Gunnar M. Fant and Morris Halle, *Preliminaries to Speech Analysis*, Cambridge, Mass., 1963, p. 30.

be in order. The chief principle of vowel harmony in Twi and Igbo is said[1] to operate on relative tongue height and the subordinate principle on frontness (nonlabiality) and backness (labiality), this distinction being based on the fact the first occurs in the stems and the other in the affixes. In Yoruba, however, the most natural distinction seems to be between the pattern (word-final) which obtains in the latter half of words or morphemes and the one (word-initial) which occurs in the first half, whether such words have affixes or not. If this dichotomy is correct, then it is impossible to rank the two patterns. This lack of a clear-cut hierarchy constitutes one major difference between the patterns of vowel harmony in Yoruba and those in Twi and Igbo. Another difference consists in the fact that, although one of the two patterns in Yoruba operates on labiality, like the subordinate pattern in Twi and Igbo, the other pattern does not show any definite arrangement according to tongue height. Thus, the higher-mid vowels, *o* and *e*, occur with themselves and with vowels of the same or higher tongue position, whereas the lower-mid vowels, *ɛ* and *ɔ*, occur with themselves, with vowels of the same or lower tongue height, and with vowels of the highest tongue position.[2] In the Twi and Igbo main principle, however, which operates on relative tongue height, tense and lax vowels are typically kept unmixed. Finally, Yoruba *i* and *a* are neutral in the sense that they can occur with any vowel. The vowel *a* behaves like this in Twi but not in Igbo.

5. To conclude this brief discussion, it should be noted that while the findings reported here are largely of theoretical interest they may also be of practical value since they contain implicit suggestions for the transliteration of loanwords in Yoruba, thereby contributing to the removal of perennial orthographic inconsistencies.

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[1] See J. H. Greenberg, ' Vowel Harmony in African Languages ', *Actes du Second Colloque International de Linguistique Négro-Africaine*, Dakar, 1963, pp. 33–38.

[2] Perhaps Yoruba once had a nine-vowel system

i u
ɪ ʊ
e o
ɛ ɔ
a

in which lax vowels occurred with lax vowels, tense with tense, and the low central vowel *a* with both groups. The reduction of such a system to a seven-vowel system (as in note 1), probably following the mergers of *ɪ* with *i* and of *ʊ* with *u*, would explain the somewhat irregular pattern of co-occurrence of some of the modern Yoruba vowels. We owe this suggestion to Dr. Kay Williamson, University of Ibadan.

VOWEL HARMONY IN YORUBA*

AYỌ BAMGBOṢE

LADEFOGED describes the pattern of vowel harmony in Yoruba as consisting of two sets of five vowels,[1] i.e.

Set 1		Set 2	
i	*u*	*i*	*u*
e	*o*	*ẹ*	*ọ*
a		*a*	

This pattern is restricted in two ways: Firstly, there is an overlap of three vowels in each set. Compared with the vowel harmony systems of languages such as Twi and Igbo where there is no overlap at all, or even Igbira where there is an overlap of only one vowel, the Yoruba system is an ' incomplete form of vowel harmony '.[2] Secondly, this restricted vowel harmony system applies only to nouns of the shapes VCV and CVCV,[3] and even the sets involve further restrictions in the actual occurrence of combinations of vowels. In nouns of V_1CV_2 shape, for instance, V_1 cannot be a nasalized vowel or *u*; and in addition to the restriction *e*, *o* exclude *ẹ*, *ọ* and vice-versa (which is already indicated in the sets), *e*, *o* as V_1 also exclude *a* and *ã* as V_2; and *ọ* as V_1 also excludes *u* as V_2. Only the vowels *i* and *a* as V_1 can be followed by any vowel.[4]

The above statement of vowel harmony is based on an observation of the vowel system of Standard Yoruba. Evidence from some dialects of Yoruba shows that vowel harmony is not as restricted as the data from Standard Yoruba tend to suggest. A typical feature in languages having a vowel harmony system is the alternation between the pronominal subject forms in harmony with the vowel of the verb. Thus in Igbo, there is an alternation between *o* and *ọ* as in *ó zòrò* ' he hid ' and *ọ́ zọ̀rọ̀* ' he lied '. This kind of vowel harmony is to be found in dialects of Yoruba such as Ọ̀yọ́ and Ẹ̀gbádò. In both dialects, the singular pronoun subject series have the vowel *ọ* before *ọ*, *ẹ*, *a*; and *o* before the other vowels. Hence,

* This article was first presented as a paper at the Seventh West African Languages Congress in Lagos, March–April, 1967.

[1] Peter Ladefoged: *A Phonetic Study of West African Languages* (West African Language Monographs 1), Cambridge University Press, 1964, p. 37.

[2] Ladefoged, ibid., pp. 37–38.

[3] The vowel harmony does not apply to nouns of more than two syllables which are generally formed by combining two or more words or morphemes, e.g. *òtítọ́*, *òdẹ̀ẹ́* ' truth ', *ìkọ́lé* ' building ', *òòdẹ̀* ' bat '. The CVCV nouns are native words such as *bàbá* ' father ', *fèrè* ' whistle ', *dòdò* ' fried plantain '. They exclude loan words, and nouns formed through compounding.

[4] Cf. Siertsema: ' Stress and Tone in Yoruba Word Composition ', *Lingua* 8, 1959, p. 386. The nasalized vowels *ĩ* and *ũ* may be V_2 following any V_1.

Phonologically, there are seven oral vowels represented as *i*, *e*, *ẹ*, *a*, *ọ*, *o*, *u*. Two of these vowels (*i* and *u*) have two allophones each. Hence they are represented phonetically by two different symbols as follows: *i* realized as [i] or [ɪ]; *u* realized as [u] or [ʊ]. The other five oral vowels are represented phonetically as follows: *e* [e], *ẹ* [ɛ], *a* [a], *o* [o], *ọ* [ɔ].

The nasalized vowels are different from the oral ones in the sense that whereas [i], [ɪ], and [u], [ʊ] are phonetic and are therefore represented by only two symbols (*i* and *u* respectively) in the phonological transcription, their nasalized counterparts are independent phonemes. Hence their phonological representation as *ĩ*, *ĩ*, *ũ*, *ũ* with the phonetic equivalents [ĩ, ɪ̃, ũ, ʊ̃] respectively. The only other nasalized vowel is *ɔ̃* [ɔ̃].

Ọyọ & Ẹgbɔ
mọ lọ
mo jó
ọ fẹ́
o dé
ọ́ wá
ó kú

Even in these dialec
the plural pronoun
person plural pronc
ẹ fẹ́ ' you want ', *ẹ*
In some other di
not only applies tc
extensive even to th
In Ijẹṣa and Eki
logically identical w
two allophones each

The conditioning
[i], [u] before
[ɪ], [ʊ] before
(After /a/, the ch

Examples

Ijẹṣa & Ekiti
igi [igi]
ulé [ule]
igò [igo]
ubi [ubi]
ùlù [ulu]
ugbó [ugbo]
erù [eru]
ebi [ebi]
ebĩ [ebi]

[5] My informant for Ijeṣ
Irọ̀-Ekiti.

[6] In SY, *i*, *u* are phonet

[7] In words of VCV shape
of more than two syllables,
ọ̀kúta ' stone ', *erùkpẹ̀* ' sand

[8] An example of such a c
respectively in *àfi owó* ' excep

[9] Unlike in SY, the vowe

Oyọ & Ẹgbado	*SY (i.e. Standard Yoruba)*
mọ lọ	*mo lọ* 'I went'
mo jó	*mo jó* 'I danced'
ọ fẹ́	*o fẹ́* 'you want'
o dé	*o dé* 'you arrived'
ọ́ wá	*ó wá* 'he came'
ó kú	*ó kú* 'he died'

Even in these dialects, this kind of vowel harmony is restricted. It does not extend to the plural pronoun subject where there is no alternation, for instance, in the second person plural pronoun which is *ẹ* in all cases, e.g. *ẹ lọ* 'you went', *ẹ jó* 'you danced', *ẹ fẹ́* 'you want', *ẹ dé* 'you arrived'.

In some other dialects of Yoruba such as Ìjèṣà, Èkìtì and Àkúré, the vowel harmony not only applies to the alternation of the second person plural pronoun, but it is extensive even to the point of a difference in vowel system between these dialects and SY.

In Ijeṣa and Ekiti,[5] there are two harmonizing sets of oral vowels which are phonologically identical with the two sets in SY. But unlike in SY, the vowels *i* and *u* have two allophones each:[6]

Set 1		Set 2	
i [i]	*u* [u]	*i* [ɪ]	*u* [ʊ]
e	*o*	*ẹ*	*ọ*
a		*a*	

The conditioning of these allophones as attested in nouns of VCV shape is as follows:

[i], [u] before and after /i, e, o, u/
[ɪ], [ʊ] before /ẹ, ọ, a/[7]

(After /a/, the choice of allophone depends on the vowel following /i/ or /u/.)[8]

Examples

Ijeṣa & Ekiti	*SY*
igi [igi]	*igi* 'tree'
ulé [ule]	*ilé* 'house'[9]
igò [igo]	*ìgò* 'bottle'
ubi [ubi]	*ìbí* 'evil'
ulù [ulu]	*ìlù* 'drum'
ugbó [ugbo]	*igbó* 'forest'
erù [eru]	*ẹrù* 'load'
ebi [ebi]	*ebi* 'hunger'
ebi [ebi]	*ẹbí* 'relations'

[5] My informant for Ijeṣa is Mr. Adelekun from Ilésà, and my informant for Ekiti is Mr. Ajimọkọ from Ìrẹ̀-Èkìtì.

[6] In SY, *i*, *u* are phonetically [i] and [u] respectively.

[7] In words of VCV shape, *i* and *u* cannot occur after *ẹ* and *ọ*. But where such a sequence occurs in words of more than two syllables, the quality of *i* or *u* is determined by the following vowel, e.g. *ẹ̀rìrà* 'ant', *ọ̀kúta* 'stone', *ẹ̀rùkpẹ́* 'sand'.

[8] An example of such a conditioning is to be found in the word *àjí* where *i* has the allophones [i] and [ɪ] respectively in *àjí owó* 'except money', *àjí ọmọ* 'except children'.

[9] Unlike in SY, the vowel *u* may be word-initial in Ijeṣa and Ekiti.

Ijeṣa & Ekiti	*SY*	
ọjú [oɲu]	*ọjú*	'eye'
obi̩ [obi]	*obi̩*	'kola nut'
iyọ̀ [ɪjɔ]	*iyọ̀*	'salt'
ukọ́ [ɔkɔ]	*ikọ́*	'cough'
uṣẹ́ [ɔsɛ]	*iṣẹ́*	'work'
i̩jẹ̀ [ɪɲɛ]	*ẹ̀jẹ̀*	'blood'
ilá [ɪla]	*ilá*	'okra'
ugbá [ɔgba]	*ọgbá*	'calabash'

Although the conditioning of the allophones of /u/ and /i/ as described above is restricted to intra-word vowel sequence, the same conditioning may extend to inter-word vowel sequence. This latter feature is true of a restricted group of items including a few nouns, some verbal items, and some particles. For example, the allophones of /i/ in the nouns *i̩gbi̩* 'time' and *ibi̩* 'place' are conditioned by the immediately following vowels. Hence we have:

i̩gbi̩ ooru	[igbi ooru]	'time of heat' = 'dry season'
i̩gbi̩ ọyẹ́	[ɪgbɪ ɔjɛ]	'time of harmattan'
ibi̩ eré	[ibi ere]	'place of play'
ibi̩ ìjà	[ɪbɪ ɔja]	'place of fight'[10]

In some verbal items, e.g. *ti* 'have', *fi* 'with', *di̩* 'become', *si̩* 'into', *tú* 'again', and a few other particles such as *ki̩*, *li̩*, *i̩*, *ii̩*, the allophone of the vowel is also conditioned by the immediately following vowel. When there are several vowels, the conditioning can only be regressively determined from the point at which the vowel harmony begins to operate. For example,

[i]	*i̩ ó ti dé*	'he said that he (someone else) had come'
[ɪ]	*i̩ ọ́ ti lọ*	'he said that he (someone else) had gone'
[i]	*ó di wèrè*	'he became a mad man'
[ɪ]	*ọ́ di bàbá*	'he became an old man'[11]
[u], [i]	*ó tú ti jó*	'it has got burnt again'
[ɔ], [ɪ]	*ọ́ tú ti bẹ́*	'it has burst again'
[i], [i], [ɪ]	*ki̩ i tèmi̩ ti jẹ́*	'what is my own business?'
[ɪ]	*ki̩ i tiẹ́ ti jẹ́*	'what is your own business?'

Operation of vowel harmony across word or morpheme boundaries is, in fact, very restricted. The typical situation in these dialects (and this is also true of SY) is that the vowel harmony of the nouns does not influence other words in larger constructions. For example, in verb-nominal collocations, the vowel of the verb is not influenced by the initial vowel of the noun. Thus, in *ó ri̩ ewé* 'he saw leaves' and *ó ri̩ ẹja* 'he saw fish', the vowel /i/ has the allophone [i]; and in *ó ru ewé* 'he carried leaves' and *ó ru ẹja* 'he carried fish' the vowel

not go beyond the no
nominal collocations wh

ó ro èfọ́ > *ó rọ̀fọ́*
ọ́ fọ́ ulé > *ọ́ fọ́lé*
ó gé i̩yẹ́ > *ó gé.y*

The contractions of
status of the allophone
identical noun is differ
other noun losing its ow
For example,

ra ugbá [ra ɔgba]
and *ru ugbá* [ru ɔgba]

In the contracted form
[i] and [ɪ] is the contra

ji̩ ilá [ji ɪla] 'st
jẹ ilá [jɛ ɪla] 'e

In a phonemic analysis
should now be four
Admittedly, the vowel
it seems a pity to disre
tractions, and that the
An analysis that can
need for the introduct
between words is oblig
phones of /u/ and /i/

ru 'gbá [rugba
r' ugbá [rɔgba
ji̩ 'lá [jila]
j' ilá [jɪla]

Compared with the
different picture. Whe
tively, [ĩ] contrasts wit
of verbs illustrate this

fũ 'be white'
fṹ 'be tight'

mũ 'be sharp'
mũ̀ 'drink'

[10] This feature is in fact restricted to very few nouns. Cf. *igi ewé* 'tree of leaves' and *igi ọgbá* 'tree in a fence' where /i/ in both cases is phonetically [i]; or *ùrù ológbò* 'a cat's tail', *ùrù ẹja* 'a fish tail' where /u/ is phonetically [u] in both cases.

[11] In the case of this pair, there is a possible contrast between *di̩* [di] or [dɪ] 'become' and *di̩* [di] 'tie'. Cf. *ó di wèrè* 'he tied the mad man', *ó di bàbá* 'he tied the old man', and *ó di wèrè* 'he became a mad man', *ọ́ di bàbá* 'he became an old man'.

[11] In verbs, /i/ and /u/
[13] The dot in this exam
see the author's article: 'T
[14] The juncture featur
been elided.

carried fish ' the vowel /u/ has the allophone [u].[12] The fact that vowel harmony does not go beyond the noun is shown more clearly when there is a contraction of verb-nominal collocations where vowels from the two sets shown above co-occur freely, e.g.

ó ro ẹ̀fọ́ > *ó ròfọ́* ' he cooked vegetables '
ọ́ fọ́ ulé > *ọ́ fọ́lé* ' he broke (into) the house '
ó gé ìyẹ́ > *ó gé.yẹ́* ' he cut feathers '[13]

The contractions of verb-nominal collocations raise a problem about the phonological status of the allophones of /i/ and /u/. In a pair of verb-nominal collocations where an identical noun is differently contracted (one noun retaining its initial vowel and the other noun losing its own), the two allophones of /u/ or /i/ may contrast with each other. For example,

ra ugbá [ra ɷgba] ' buy calabash ' is contracted *rugbá* [rɷgba]
and *ru ugbá* [ru ɷgba] ' carry calabash ' is contracted *rugbá* [rʉgba].

In the contracted forms [u] and [ɷ] contrast in a minimal pair. A similar example for [i] and [ɪ] is the contraction:

jí ilá [ji ɪla] ' steal okra ' > *jílá* [jila]
je ilá [jɛ ɪla] ' eat okra ' > *jilá* [jɪla]

In a phonemic analysis, the logical implication of these contrasts is that [u], [ɷ], [i], [ɪ] should now be four separate phonemes instead of allophones of two phonemes. Admittedly, the vowel contrasts must be accounted for in a phonological analysis; but it seems a pity to disregard the fact that the contrasts are restricted only to these contractions, and that they arise solely on account of the blurring of the word boundary. An analysis that can preserve this boundary should solve the problem, and avoid the need for the introduction of two new phonemes. If, for instance, a juncture feature between words is obligatorily inserted in the contractions, the conditioning of the allophones of /u/ and /i/ will remain unchanged. For example,

ru 'gbá [rʉgba] ' carry calabash '
r' ugbá [rɷgba] ' buy calabash '
jí 'lá [jila] ' steal okra '
j' ilá [jɪla] ' eat okra '[14]

Compared with the oral vowels, the nasalized vowels in Ijẹṣa and Ekiti present a different picture. Whereas [ĩ], [ɪ̃] and [ũ], [ɔ̃] are allophones of two phonemes respectively, [ĩ] contrasts with [ɪ̃], and [ũ] contrasts with [ɔ̃]. For instance, the following pairs of verbs illustrate this contrast:

fṹ	' be white '	*rĩ́*	' laugh '
fũ̀	' be tight '	*rĩ̀*	' walk '
mṹ	' be sharp '	*kpĩ*	' end ' (Ijẹṣa only)
mũ̀	' drink '	*kpĩ̀*	' divide '

[12] In verbs, /i/ and /u/ have only the allophones [i] and [u] respectively.

[13] The dot in this example represents the assimilated low tone. For a detailed discussion of this feature, see the author's article: ' The Assimilated Low Tone in Yoruba ', *Lingua*, Vol. 16, no. 1, 1966.

[14] The juncture feature is represented by an apostrophe inserted at the point where a vowel has been elided.

sṳ̀	'sleep'	*sī*	'bury'
sṳ́	'move away'	*sḭ̄*	'serve'
yṳ̀	'go'	*yī*	'harvest'
yṳ̄	'be stunted'	*yḭ́*	'praise'

An additional indication of the contrast between these verbs is to be found in the alternation of the vowels of the pronoun subject and in the reduplicated noun formation. For example,

fū:	*ó fū*	'it is white',	*fífū*	[fifū]	'being white'
fṳ́:	*ọ́ fṳ́*	'it is tight',	*fífṳ́*	[fɪfʊ̃]	'being tight'
kpī:	*ó kpī*	'it ends',	*kpíkpī*	[kpikpī]	'ending'
kpḭ́:	*ọ́ kpḭ́*	'it divides',	*kpíkpḭ́*	[kpɪkpī]	'dividing'

The following nouns also illustrate the contrast between the vowels:

ugū	[ugū]	'vulture'	*iyḭ́*	[iɲī]	'excreta'
ugṳ̄	[ʊgɔ̃]	'edge' (Ijẹ̀ṣa only)	*inḭ́*	[ɪnī]	'one'

The sets of nasalized vowels grouped according to their potentiality of occurrence in the same word are, therefore:

Set 1	Set 2
ī *ū*	*ṳ̄*
	ọ̄

The combined oral and nasalized sets are:

Set 1		Set 2	
i [i]	*u* [u]	*i* [ɪ]	*u* [ʊ]
e	*o*	*ẹ*	*ọ*
a		*a*	
ī	*ū*	*ɪ̄*	*ṳ̄*
			ọ̄

The following are examples of words showing vowel harmony involving oral and nasalized vowels:

Ijẹ̀ṣa & Ekiti		*SY*	
ìdū	[ɪdʊ̃]	*ìdū*	'bedbug'
ọrṳ̂	[ɔr̃ʊ̃]	*ọrṳ̂*	'neck'
ùsṳ̄	[ʊsʊ̃]	*ọ̀kẹ́rẹ́*	'squirrel'
ọtḭ́	[ɔtī]	*ọtḭ́*	'wine'
ìdḭ̄	[ɪdī]	*ìdī*	'maggot'
ūrī	[ʊ̃r̃ī] (Ijẹ̀ṣa)	*ìrī*	'iron'[15]
urī	[ʊr̃ī] (Ekiti)		
ẹdū	[ɛdʊ̃]	*ẹdū*	'baboon'
ìbō	[ɪbɔ̃]	*ìbō*	'gun'

[15] Unlike in SY where nasalized vowels cannot be word-initial, the nasalized vowels *ū* and *ī* do occur in this position in Ijẹ̀ṣa. Cf. this example, and also *īyṳ̂* 'pounded yam', *ūyṳ̂* 'famine'.

Ijẹ̀ṣa &

ùgbḭ̄	[ʊ
ọ̀nọ̄	[ɔ
àgbṳ̄	[a
àrṳ́	[a
efū	[ɛ
òfī	[ɔ
erī	[ɛ
ogū	[o
ugū	[u
ifū	[ɪf

The vowel ha
not necessarily a
borrowed into Y
harmony rules, e
which have vowe
of CVC shape wh
final V is an encl
to some extent,
vowels. The vow
vowel, e.g. *gẹ̀ẹ̀tḭ́*
form of vowel har
in Yoruba where
obḭ́ 'kola nuts', *i*
as shown in the
back, but, in so f
and low.[18]

The foregoing
involving an incr
patterns of Ijẹ̀ṣa a
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substantial overla
that the more con
form of the vowel
of which the vowe

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Nigeria.

[16] For example, lab
ṣọ́ọ̀sḭ́ 'church'.

[17] Cf. Studies of En
and Vowel Harmony i
for the Diploma in En

[18] Note however St
opposition between 'a
Position in Akan Vowe
(body of tongue not re

Ijeṣa & Ekiti		*SY*	
ùgbī̩	[ɔgbī]	*ọ̀gbī̩*	'plant'
ọ̀nō̩	[ɔnɔ̄]	*ọ̀nō̩*	'path'
àgbō̩	[agbɔ̄]	*àgbō̩*	'chin'
àrū̩	[aɾ̄ū]	*àrū̩*	'five'
efū	[efū]	*ẹfū*	'chalk'
òfī	[ofī]	*òfī*	'law'
erī	[eɾ̄ī]	*erī*	'elephant'
ogū	[ogū]	*ogū*	'twenty'
ugū	[ugū]	*ìgū*	'vulture'
ifū	[ifū]	*ifū*	'intestines'

The vowel harmony pattern in SY as well as in the other dialects of Yoruba does not necessarily apply to loan words. For example, English nouns of CVCV shape when borrowed into Yoruba may have a sequence of vowels which contravenes the vowel harmony rules, e.g. *fọ́tò* 'photo', *télọ̀* 'tailor', *bébà* 'paper', *mọ́tò* 'motor-car' (all of which have vowel sequences which are not permissible in native words). English nouns of CVC shape when borrowed into Yoruba usually have the shape CV́V̀CV̀ where the final V is an enclitic *-i* or *-u*. The choice of one or the other of the two vowels depends, to some extent, on the immediately preceding consonant,[16] and also on the preceding vowels. The vowel *-i* is added to a preceding front vowel and *-u* to a preceding back vowel, e.g. *géètì* 'gate', *béèlì* 'bail', *kọ́ọ̀tù* 'court', *bọ́ọ̀lù* 'ball'.[17] Although this is a form of vowel harmony, it is, in fact, not typical of the regular pattern of vowel harmony in Yoruba where front vowels combine freely with back vowels, e.g. SY *ewu* 'danger', *obì* 'kola nuts', *ikú* 'death', *ọtí* 'wine'. The typical vowel harmony pattern in Yoruba, as shown in the harmonizing sets of vowels, is not an opposition between front and back, but, in so far as one set of vowels excludes another, an opposition between high and low.[18]

The foregoing study of the vowel harmony patterns of Yoruba shows a development involving an increasing restriction on the operation of vowel harmony, i.e. from the patterns of Ijeṣa and Ekiti where vowel harmony is very extensive and involves sets of harmonizing vowel qualities with little overlap, to Standard Yoruba where there is a substantial overlap of harmonizing vowel qualities. If the assumption can be made that the more complex pattern represents the older form of the language, the proto-form of the vowel system in Yoruba is probably a nine-vowel system (like that of Igbira) of which the vowel system of present-day Standard Yoruba is only a reduced form.

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[16] For example, labial consonants usually have *-u* added to them, and palatal ones *-i*. E.g. *ṣọ́ọ̀bù* 'shop', *ṣọ́ọ̀ṣì* 'church'.

[17] Cf. Studies of English loan words in Yoruba in two unpublished papers: O. Awobuluyi: 'Loan Words and Vowel Harmony in Yoruba'; L. A. Banjo: 'A Study of English Loan Words in Yoruba' (Dissertation for the Diploma in English Studies, University of Leeds, 1965).

[18] Note however Stewart's suggestion that the so-called high/low opposition is probably in fact an opposition between 'advanced/unadvanced tongue root position'. See J. M. Stewart, 'Tongue Root Position in Akan Vowel Harmony', *Phonetica*, Vol. 16, no 4, 1967, pp. 185–204. Cf. a similar explanation (body of tongue not retracted/body of tongue retracted) in Ladefoged, ibid., pp. 39–40.

TWO VIEWS OF VOWEL HARMONY IN YORUBA[1]

A. OLADELE AWOBULUYI and AYỌ BAMGBOṢE

I

BAMGBOṢE I

PERHAPS I should begin by restating my aim in the article concerned. Briefly, it is to show, in two dialects of Yoruba, the very interesting system of vowel harmony which involves nine harmonizing vowel qualities, and to suggest that the apparently irregular high/low vowel harmony system of present-day standard Yoruba cannot be fully understood unless it is seen as a survival of a fuller system which continues to be represented in some dialects of Yoruba.

In making the statement that the front/back pattern of vowel harmony is ' not typical ' I based my conclusion on the fact that in native Yoruba words of VCV shape, front vowels combine freely with back vowels. I did overlook, however, the fact that in addition to its operation in loan words, the front/back pattern is also found in native words of CVCV shape .

Awobuluyi says (3.1) that the front/back pattern of vowel harmony operates in ' the last two syllables of monomorphemic non-onomatopoeic polysyllabic nouns ' and he cites words almost all of V-CVCV shape to prove this contention. If Awobuluyi had looked at words of CVCV shape, he would have discovered that what is true of the last two syllables of his polysyllabic nouns is also true of disyllabic nouns of CVCV shape, i.e. they exhibit both the high/low and the front/back patterns of vowel harmony. The true picture seems to be that the front/back pattern is a feature of any CVCV shape, whether in disyllabic words or in a combination involving more than two syllables, i.e. CVCV(CV), V-CVCV(CV) etc. Even in the English loan words cited by Awobuluyi in 3.2, it is significant that the last two syllables (where the front/back pattern is said to operate) are always of the shape CVCV or CVVCV (the latter shape being derived, of course, from English CVC). In contrast to the above pattern, one finds that the high/low vowel harmony pattern is not a feature of VCV shapes. This is borne out by the examples given in my article and by the initial VCV shape of the polysyllabic words cited by Awobuluyi in Section 3.1 of his article. One may say, therefore, that there are two patterns of vowel harmony: a high/low one which operates in words of VCV and CVCV shapes and a front/back one which operates only in words of CVCV shape. This is the situation both in standard Yoruba and in the two dialects described in my article.

In Section 4 of his article, Awobuluyi claims that the vowel harmony system of

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[1] *Note from the Editor*

The preceding article deals with a similar topic to that treated by Dr. A. Oladele Awobuluyi in Volume VI, Part 1. As the respective authors have expressed views which differ considerably we have taken the somewhat unusual step of soliciting their reactions to each other's statements. An edited version of their comments follows. It falls into two unequal parts and is centered on two main areas of discussion.

1. How many patterns of vowel harmony occur in Yoruba ? What is the locus of each pattern ? Is any one predominant or most typical ?

2. How does vowel harmony operate in loan words ?

Readers who may wish to take up various points arising from this presentation are requested to contact the authors (*not* the Editor) at the following address : *Department of Linguistics and Nigerian Languages, University of Ibadan, Ibadan, Nigeria.*

Yoruba is typologically different from those of Twi and Igbo because (*a*) in Yoruba ' the most natural distinction seems to be between the pattern (word-final) which obtains in the latter half of words or morphemes and the one (word-initial) which occurs in the first half ', and (*b*) the high/low pattern ' does not show any definite arrangement according to tongue height '. As far as the first point is concerned, I hope I have succeeded in showing that this dichotomy is inaccurate. As for the second point, it seems to me that the crucial test of the high/low vowel harmony pattern in Yoruba is the exclusion of the close set by the open set of vowels. And the only complete set of close and open are *e*, *o* and *ẹ*, *ọ*. These sets completely exclude each other just as similar close and open sets do in other languages or even in the dialects of Yoruba described in my paper. In any V-CVCV pattern, if one takes the first two syllables (V-CV) or the last two (CVCV) as single units, there is not a single exception to the high/low harmony. On the other hand, as may be shown in the following examples as well as the figures for exceptions recorded in note 11, the front/back pattern has numerous exceptions (*èkúté* ' mouse ', *àdîrò* ' hearth '; *àkpôtî* ' box ', *ewúrẹ́* ' goat ', *iyọ̄rî* ' sand '). The high/low pattern operates without exception in nouns of V-CV shape, and there is no front/back restriction. (See words like *ewu* ' danger ', *ikú* ' death ', *ọtí* ' wine ' which contravene the front/back pattern.) One may now ask the question: which is the typical pattern? The one that operates without any exception, or the one that has numerous exceptions? My own feeling is that the obligatory pattern should be considered as the typical one; and this feeling is reinforced by the vowel harmony pattern of dialects of Yoruba which have not only the *e*, *o*/*ẹ*, *ọ* restriction but also *i*, *u*/*ị*, *ụ*. In summary, my arguments for saying that the high/low pattern is predominant are (*a*) that this pattern is found in words of both VCV and CVCV whereas the front/back pattern is found only in words of CVCV, and (*b*) that within the limits of the operation of the two patterns, the high/low pattern admits of no exception, whereas the front/back pattern does. My conclusion, therefore, is that there is no justification for considering Yoruba typologically different from the other languages which exhibit the high/low as the principal pattern, and the front/back as a subsidiary pattern.

AWOBULUYI I

Bamgboṣe's article represents an important contribution to our knowledge and understanding both of standard Yoruba and of some of its dialects. It is very much to be hoped that it will inspire similar studies of the remaining dialects of the language.

I agree that disyllabic words of the shape CVCV display the front/back vowel harmony; a statement to this effect was inadvertently omitted from my paper. Note, however, that extending the front/back harmony to CVCV words is only a matter of detail. My paper does not purport to be (and in fact need not be) exhaustive on this point. The omission does not affect the validity of my statement. One might assume from Bamgboṣe's comments that he considers the front/back harmony a feature which is exclusively found in CVCV words. If so, this is strange. How would he then explain the co-occurrence of vowels in longer words?

Our exchange of correspondence reveals that Bamgboṣe appears to believe (erroneously, as will be seen in Section 4 of my paper), that my aim is to show that of the two principles of vowel harmony in Yoruba, the front/back is primary, and the high/low

secondary. In order to disprove this putative claim, he attempts to show that high/low is ' more typical '. Unsurprisingly, this attempt is unsuccessful—for what does it mean to say that the high/low is ' more typical '? (For a critique of Bamgbose's similar use of the term ' important ' elsewhere, see my *Studies in the Syntax of the Standard Yoruba Verb*, p. 7.)[2] He employs a new criterion involving whether a principle has exceptions or not. I find this criterion somewhat irrelevant to the case in point. The questions one should really be asking about these two principles of vowel harmony are not whether or not they have exceptions but: (1) what purpose does each of these principles serve? (2) is one of them obligatory while the other is optional? (3) is one of them more productive than the other? etc.

The answer to the first question is very simple: the two principles of vowel harmony ensure euphony in Yoruba. In other words, the two principles of vowel harmony have the same function. This being the case, one obviously cannot rank them on the basis of function.

The answer to the second question is *no*: they are both obligatory in the sense that no deviation from them is permitted—where they operate. Again the attempt to rank these two principles in a meaningful manner is frustrated.

I cannot give a categorical answer to the third question. The high/low principle is productive in one construction only, namely, the agentival construction discussed in my 2.2.1. The front/back principle, on the other hand, is fully productive in that, all things being equal, a loan word of the type examined in my paper will always be pronounced as there indicated. Thus, on the simple question of productivity alone, there is reason to favour the front/back over the high/low. A sceptical observer, however, might wish to go beyond the simple question of productivity and consider also the number of items produced. If he did this, he would probably be led to favour the high/low over the front/back. Thus we see again that the issue as to which of these two principles is primary cannot be clearly resolved. It is precisely considerations such as these that led me to conclude in my paper (§4) that ' it is impossible to rank the two patterns '.

Bamgbose is mistaken in thinking that I see the dominant pattern of vowel harmony as based on a front/back opposition. Such an attitude on my part could not be reconciled with the statement quoted at the end of the preceding paragraph. Certain misapprehensions, together with differences of emphasis and approach may give the impression that our papers disagree. In fact, however, far from contradicting each other, they are to a large extent complementary: mine describes Yoruba vowel harmony as it *is* and Bamgbose's as it *was*. When the distinction is fully appreciated between the synchronic approach of my paper and diachronic approach of his (at least in so far as his discussion of Standard Yoruba vowel harmony is concerned), many apparent contradictions are resolved into complementary documentation of the same phenomena.

II

AWOBULUYI II

When Bamgbose illustrates the front/back pattern of vowel harmony in standard Yoruba by citing only loan words but later says that this pattern of vowel harmony is

[2] Ph.D. Dissertation, Columbia University, 1967.

' not typical of the regular pattern of vowel harmony in Yoruba ', one is reminded of the tendency on the part of some linguists to exclude loan words from treatment in their analyses of some languages. (Bamgbọse himself did not not consider loan words in his *Yoruba Orthography*, in spite of Professor Siertsema's earlier plea to the contrary in her review of Abraham's *Dictionary of Modern Yoruba*.) Does Bamgbọse feel that the front/back pattern of vowel harmony is to all intents and purposes not part of Yoruba? If such is the case, how can such a view be reconciled with my own finding—namely, that this pattern of vowel harmony is native to standard Yoruba and is neither more nor less ' important ' than the high/low pattern?

BAMGBỌSE II

I do not believe (as Awobuluyi apparently thinks I do) that loan words should be excluded from the study of a language. However, I do want to make a distinction between loan words which have been completely integrated into the phonological system of the language and those which have not. Many linguists often find it more useful to make separate statements for these two kinds of loan words. In my article, my contention is that the high/low vowel harmony which is typical of native CVCV words is not typical of loan words of the same shape. I see that Awobuluyi in his own article has concentrated on ' loan words that ended in consonants before they entered the language ', but in view of examples such as ' driver ' and ' free ' (given by him in Section 3.3) which end in vowels, I think it is not unfair to cite vowel-final loan words derived from English words such as ' photo ', ' tailor ', ' motor ' which definitely contravene the high/low vowel harmony rules of native CVCV words. This situation is not peculiar to Yoruba. In Green and Igwe: *A Descriptive Grammar of Igbo*, for instance, it is reported that ' borrowed words ' in Igbo do not conform to the high/low pattern of vowel harmony typical of native words in that language. In short, I wish to reiterate my contention (as stated in my article) that ' English words of CVCV shape when borrowed into Yoruba may have a sequence of vowels which contravenes the vowel harmony rules.'

Although I have commented mainly on points of disagreement with Dr. Awobuluyi, this should not be taken as a reflection on the article as a whole, which I consider a fine piece of work, and on which I congratulate the author.