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OKPẸ AND UVWIẸ: A CASE OF VOWEL HARMONY GALORE

Augusta Phil.Omamor
University of Ibadan, Nigeria

This study is in two parts. The first part presents evidence from which Hoffman (1973) and Omamor (1973) concluded that although the speech of some speakers of Okpẹ and Uvwiẹ indicates only seven vowels phonetically, both languages actually operate a system of nine phonemic vowels. The second part shows that the behaviour of the unadvanced high vowels /ɪ/ and /ʊ/ in Okpẹ and Uvwiẹ points to an interesting inter- play beween phonology and grammar which results in grammatical markers sometimes having four or more distinct phonetic shapes.

Cette étude comprend deux parties. La première présente l'évidence à partir de laquelle Hoffman (1973) et Omamor (1973) ont conclu, bien que le parler de quelques inter- locuteurs de Okpẹ et Uvwiẹ ne révèle phonétiquement que sept voyelles, que les deux langues ont en réalité un système de neuf voyelles phonèmiques. La deuxième partie montre que les voyelles hautes et non avancées /ɪ/ et /ʊ/ indiquent un jeu intéressant entre la phonologie et la grammaire et par conséquent que les indicatifs de grammaire ont quelquefois quatre ou plus réalisations phonétiques différentes.

0. INTRODUCTION

Okpẹ and Uvwiẹ belong to the Kwa group within the Niger-Congo family of languages (Greenberg, 1963). They are each spoken by a group of the same name. Both are Ẹdoid languages and often described as dialects of Urhobo even though some recent studies (Elugbe, 1975; Omamor, 1976a) show that there is no serious linguistic basis for so describing them. Elugbe (1979) groups them under the South Western branch of Ẹdoid along with Ẹruwa, Isoko and Urhobo.

1. THE VOWEL HARMONY SYSTEMS OF OKPẸ AND UVWIẸ

1.1 1973 STUDIES

In a 1973 paper titled: 'The Vowel Harmony System of the Okpẹ Monosyllabic Verb or Okpẹ: A Nine-Vowel Language with only Seven Vowels', Carl Hoffman gives evidence that [e] and [o] in Okpẹ sometimes behave in ways that would lead any analyst to treat them as members of the open rather than the closed vowel harmony set.[1] The facts 'lead inevitably to the conclusion that particular occurrences of the vowels [e] and [o] will have to be seen...as recent developments from some other vowel, probably *i̱ and *u̱ (i.e. /ɪ/ and /ʊ/)' (Hoffman, 1973:80). In other words, the vowels *i̱ and *u̱ of an earlier stage of the langauge have phonetically changed to [e] and [o]'...while at the same time preserving their

features of being the open-vowel counterparts of the high vowels i and u in their harmony behaviour and in their membership in the high vowel set'. On the basis of the phonological behaviour of some Okpẹ monosyllabic verbs relative to the formation of what Hoffman terms an 'infinitive'[2] (1973:85) and of specific tense forms, he demonstrates the existence at the phonemic level of the high unadvanced vowels /ɪ/ and /ʊ/ and concludes (102-3) that 'phonemically, Okpẹ is really still a nine-vowel language although phonetically it has only seven vowels'.

In 'Uvwiẹ: A Case of Vowels Merging?' (1973), the present writer shows that the situation in Okpẹ relative to the vowels /ɪ/ and /ʊ/ may not be peculiar to that language: '...it is rather difficult to auditorily determine whether there are phonetically seven or nine oral vowels in the language. But there is some internal evidence for postulating a nine-vowel system for Uvwiẹ' (113). This internal evidence involves **e** and **o** (termed e_2 and o_2 in Uvwiẹ) when they occur as the stem vowel in specific tense forms and in verbal nouns.

After examining the formant patterns of spectograms of two sets of vowels termed e_1 and o_1 and e_2 and o_2 occurring in prefix and stem position in Okpẹ and Uvwiẹ, Omamor says (1973:133):

> The results clearly show that in Uvwiẹ there is some acoustic difference between e_1 and e_2 on the one hand and o_1 and o_2 on the other. They demonstrate that in the stem position, e_1 and e_2 and o_1 and o_2 have non-overlapping formant patterns. In this position, both vowel pairs are separated by the first formant and the second formant does not seem to play any role in distinguishing these vowels. The same results, however, suggest that the distinction is not so clear in prefix position; there is overlapping in formant patterns at this point although there is still a little differentiation that could be drawn from F_1.[3] The results also show that there is a greater acoustic difference between the vowels in each pair in Uvwiẹ than in Okpẹ.

She concludes that although Uvwiẹ may not auditorily have a nine-vowel system, '...the formant patterns provide ample justification for postulating an underlying nine-vowel rather than a seven-vowel system for Uvwiẹ'.

It was clear from these two studies that vowel harmony in both Okpẹ and Uvwiẹ operates with the two sets of harmonising vowels shown below:

I Advanced		II Unadvanced/Retracted	
i	u	e_2	o_2
e_1	o_1	ẹ	ọ
a?		a	

In purely phonetic terms, the two sets of vowels would be:

Advanced		Unadvanced/Retracted	
i	u	ɪ	ʊ
e	o	ɛ	ɔ
a?		a	

The studies also showed that personal subject pronouns and most affixes occurring with verbs tend to have two different phonological shapes depending on the vowel harmony set of the stem vowel.

1.2 FROM 1973 TO THE PRESENT

From 1973 to today, a few more aspects of Okpẹ and Uvwiẹ have been investigated (Omamor, 1981, 1983, 1985, 1986) and other studies are still in progress. These show that vowel harmony in these two languages may not operate as simply as the 1973 studies indicated.

The purpose of this study, therefore, is to show that vowel harmony in Okpẹ and Uvwiẹ involves more than providing two shapes for specific morphemes, one occurring with open vowels and the other with closed vowels. Tense and other verbal forms will be examined to show how vowel harmony interacts with specific tenses and/or aspects and other grammatical categories to yield many more markers than was suggested by Hoffman (1973) and Omamor (1973). We shall also see how vowel harmony affects the process of verb-adjectivalisation via reduplication and verb-nominalisation in the two languages.

2. INTERPLAY BETWEEN VOWEL HARMONY AND GRAMMAR

Discussion in this section will centre around how vowel harmony affects the structure of the forms indicated. Illustrations will be provided from each of the two languages and the effect of vowel harmony will then be highlighted.

2.1 VOWEL HARMONY AND THE FORMATION OF IMPERFECT TENSE FORMS

The forms termed 'imperfect' are those whose use and interpretaton in Okpẹ and Uvwiẹ indicate a specifically imperfect meaning. They are usually interpreted as either continuous/progressive or habitual depending on the context in which they occur or the semantics of the particular verbs. When the sentences in which they occur contain an overt indication of past time e.g. a past time deictic adverbial, the forms are given a past imperfect interpretation.[4] Otherwise, they are construed as referring to imperfectivity in the present. Examples:

OKPẸ[5]

1. ne 'defecate'

mì é!né	'I am defecating/I ususally defecate'
wù é!né	'You are defecating/ you ususally defecate'
o é!né	'He/she/it is defecating etc.
àmí é!né	'We are...etc.
àrí é!né	'You (pl.) are...etc.
àyí é!né	'They are ...etc.

2. ze̱ 'run (away)'

mì á!zé[6] 'I am running (away)/I usually run (away)'
wù á!zé 'you are running (away) etc.
ọ á!zé etc.
àmí á!zé
àrí á!zé
àyí á!zé

These examples show that the formation of the imperfective verb form in this language is essentially effected by either an **e** occurring before a verb stem with an advanced vowel or an **a** occurring before a verb stem with an unadvanced vowel, i.e. in conjunction with the tonal pattern characteristic of the imperfective tense form. In the phonetic realisation of these forms, the **i/ị** of all subject pronouns involving these vowels is desyllabicised to yield the glide [j] before the imperfective marker, but the vowels of other pronouns are assimilated to the vowel marking imperfectivity.

We find, however, that when the vowel of the appropriate verb stem is any of the high vowels **u**, **ụ**, **i** or **ị**, the imperfective form is also suffixed by a vowel **-ẹ** for verb stems with a closed-set vowel and **-a** for those involving an open-set vowel.[7] This suffix vowel has the additional effect of desyllabicising the vowel of the preceding verb stem, yielding the glides [j] for **i** and **ị** and [w] for **u** and **ụ**. Examples:

3a.	du	'be big';	mì á!duá [mja dwa] wù á!dụá [wa dwa]
b.	fu	'swell/be swollen';	mì é!fué [mje fwẹ] wù é!fué [we fwẹ]
c.	rí	'eat';	mì á!rịá [mja rja] wù á!rịá [wa rja]
d.	bi	'be black/dark';	mì é!bié [mje bjẹ] wù é!bié [we bjẹ]

The fact that **a** alternates with **ẹ** as its closed-set counterpart suffix introduces some complication into the otherwise neat system of vowel harmony in Okpẹ. Hoffman (1973:98) draws attention to the fact that the vowel **ẹ** itself is a member of the open set which should not normally '... be able to co-occur with close vowels'. He finds no internal explanation for this disparity and suggests none. What seems important is that the verb forms (3b) and (3d) not only violate the co-occurrence restrictions operating within the word and the phrase in Okpẹ, they also represent the one instance in the present study in which the phrase as a secondary grammatical category does not contain just vowels from the same vowel harmony set. Although it is possible that **ẹ** may have originated from some other vowel historically, there are at the moment no clues as to the exact nature of that vowel.

The formation of the imperfective tense form in Uvwiẹ is much simpler than in Okpẹ. Examples:

UVWIE

4. ne 'defecate'

mẹ̀mẹ̀ é nè	'I am defecating/I usually defecate'
guẹ̀ é nè	'You (sg.) ...'
ọ̀yịn é nè	'He/She/it ...'
órìn é nè	'We are ...'
màmá é nè	'You (pl.) ...'
òwán é nè	'They are ...'

5. djẹ 'run (away)'

mẹ̀mẹ̀ á djẹ̀	órìn á djẹ̀
guẹ̀ á djẹ̀	màmá á djẹ̀
ọ̀yịn á djẹ̀	òwán á djẹ̀

6a. bi 'be black/dark'

mẹ̀mẹ̀ é bì	'I am getting/usually get black/dark'
guẹ̀ é bì	'You (sg) are ...'

b. rị 'eat'

mẹ̀mẹ̀ á rị̀	'I am eating/I usually eat'
guẹ̀ á rị̀	'You (sg) are ...'

c. du 'be big/grow'

mẹ̀mẹ̀ á dù	'I am growing/getting big/I usually ...'
guẹ̀ á dù	'You (sg) are ...'

d. furhu 'swell/be swollen'

mẹ̀mẹ̀ é fùrhù	'I am swelling up/usually swell up'
guẹ̀ é fùrhù	'You (sg) are ...'

The formation of the imperfective tense form in Uvwiẹ simply involves the occurrence of a specific vowel before the verb stem. This vowel is a if the verb stem has an open-set vowel (5, 6b and 6c); it is e if the verb stem has a closed-set vowel (4, 6a and 6d). (6a) through (6d) with high vowels show that, unlike Okpẹ, vowel height is of no special significance in the formation of the imperfective tense form.

Comparison of the facts relative to imperfective tense formation in Okpẹ and Uvwiẹ make it clear that it is the combination of vowel harmony and significant vowel height that accounts for the greater complexity in the Okpẹ system.

2.2 VOWEL HARMONY AND PAST TENSE FORMS

The formation of past tense forms is discussed in detail in Hoffmann (1973:88-94) and Omamor (1973). The two studies show that the past tense in Okpẹ is marked by the suffix -rV where V can be i, ị, u or ụ depending on the nature of the stem vowel of the appropriate verb.[8] It is ị for all open-set vowels except ụ ([ɷ]), and i for all closed-set vowels except u. When ụ and u occur as stem vowels, the vowel of the past tense marker is ụ and u respectively, i.e., [ɷ] and [u].

The situation in Uvwiẹ parallels the one in Okpẹ except that the consonant of the suffix marking past tense in this language is n and not r. In other words, past tense in Uvwiẹ is marked by a suffix -nV̀ attached to the verb stem with V̀ manifesting as i, i̇, u or u̇ in the same circumstances as for Okpẹ. Examples:

OKPE

7.	ò bírí	'it was/became black'	ọ̀ rírí	'he ate'
	ò kpérí	'he killed'	ọ̀ dérí	'he bought'
	ò nérín	'he defecated'	ọ̀ tínrín	'he refused'
	ò sórí	'he stole'	ọ̀ tọ́rí	'he lived long/ it lasted long'
	ò húrú	'he died'	ọ̀ hárí	'he took/it succeeded'
			ọ̀ sụ́rú	'he sang'

UVWIE

8.	ò bínì	'it was/became black/dark'	ọ̀ rínì	'he ate'
	ò nénì	'he defecated'	ọ̀ dénì	'he bought'
	ò ténì	'it was enough'	ọ̀ sín-nì[9]	'he refused'
	ò chónì	'he stole'	ọ̀ tọ́nì	'he lived long/ it lasted long'
	ò gúnù	'he died'	ọ̀ sụ́nù	'he sang'
			ọ̀ shánì	'he went'

The left hand and right hand columns illustrate the marking of past tense on the verb in Okpẹ and Uvwiẹ. They also reveal that although the vowel a is said to be common to the two sets of harmonising vowels (cf. Section 1.1 above), it actually behaves like an open or unadvanced vowel in the process of past tense formation.[10] The examples with nasalised vowels also show that such vowels behave in the same way as their oral counterparts vis à vis past tense formation; they require, however, that -rV̀ in Okpẹ be realised as -rV́.

We find from (7) and (8) that vowel height exerts the same influence on the marking of past tense in the two languages, and that what seems like a proliferation of markers partially results from vowel harmony acting in conjunction with significant vowel height.[11].

The fact that nasalised vowels in Okpẹ and Uvwiẹ behave in the same way as their oral counterparts means that -rV̀ in Okpẹ has eight possible phonetic realisations, i.e., the four possibilities with oral vowels plus four possibilities involving the corresponding nasalised vowels. However, Uvwiẹ where the past tense suffix itself involves the nasal consonant n has just four shapes associated with the same marker. The examples cited as (9) confirm what has been said here about the possible shapes in which the past tense marker surfaces in Okpẹ when the associated verb stem has a nasalised vowel.[12]

OKPE

9.	ò nérín	'he defecated'	ò kpénrin	'it peeled'
	ò gbónrín	'it stank/got rotten'	ò tónrín	'he dug'
	ò dínrín	'it overgrew/it is overgrown (of hair and grass)'	ò dánrín	'he flew'
	ò búnrún	'it was much/plenty'	ò fúnrún	'it was clean/white'

When the forms in (9) are compared with those cited in (7), it becomes clear that the vowel of the past tense marker -rV́ in Okpẹ is nasalised if the associated verb stem has a nasalised vowel. In other words, for all nasalised unadvanced vowels except ụn, -rV is realised as -rín whereas for all nasalised advanced vowels except un, it is -rin. For ụn and un, it is -rún and -rún respectively.

2.3 VOWEL HARMONY AND FUTURE TENSE FORMS

Futurity in the two languages is expressed in two different ways. Hoffman (1973) does not discuss future tense forms in Okpẹ; and Omamor only focusses on one way in which futurity is expressed in the language e.g.:

10. dẹ 'buy'

	Singular		Plural	
1st	mí nà dẹ́	'I will buy'	àmí nà dẹ́	'we will buy'
2nd	wú nà dẹ́	'you will buy'	àrí nà dẹ́	'you will buy'
3rd	ọ́ nò̀ dẹ́	'he will buy'	àyí nà dẹ́	'they will buy'

11. fe 'be rich'

	Singular		Plural	
1st	mí nè fé	'I will be rich'	àmí nè fé	'we will be rich'
2nd	wú nè fé	'you will be rich'	àrí nè fé	'you will be rich'
3rd	ó nò̀ fé	'he will be rich'	àyí nè fé	'they will be rich'

The verb in (10) has an unadvanced vowel as stem vowel, whereas the one in (11) involves an advanced vowel. These and other examples show that futurity may be expressed by a morpheme nV̀ occurring before the appropriate verb stem.

The vowel of this morpheme is ọ when the following verb has an open-set vowel and is in 3rd pers.sg., and o if the verb has a closed-set vowel. For all other persons, this vowel is a with open-set vowels and e with closed-set vowels.

Other examples show that vowel height also affects the marking of futurity. In addition to co-occurring with the future tense marker nV̀, monosyllabic verb stems with a closed-set high vowel carry an additional suffix o while their open-set counterparts have a suffix ọ. The presence of this suffix vowel has the further effect of desyllabicising the high vowel of the verb stem to yield the glides [j] for i and ị and [w] for u and ụ eg. the future tense forms of bi 'be black/dark', fi 'leak, hu 'die', sụ 'sing', dụ 'grow/be big' and rị 'eat':

12. **mí nè bió** 'I will be/become black/dark'   **mị́ nà rị́ọ́** 'I will eat'
ó nò fió 'it will leak'   **ọ́ nọ̀ rhị́ọ́** 'he will come'
ó nò huó 'he/she/it will die'   **ọ́ nọ̀ sụ́ọ́** 'he will sing'
ó nò kuó 'it will be cheap'   **ọ́ nọ̀ dụ́ọ́** 'he will grow'

(13) and (14) illustrate the other way in which futurity is sometimes expressed in Okpẹ:

13. <u>**nya**</u> 'to go'

Sg. 1. **mị̀ a!sá mà nyá** 'I am going to/will go'
2. **wụ̀ a!sá mà nyá** 'you are...'
3. **ọ̀ [a]!sá mà nyá** 'he is going...'

Pl. 1. **àmị́ a!sá mà nyá** 'we are...'
2. **àrị́ a!sá mà nyá** 'you are...'
3. **àyị́ a!sá mà nyá** 'they are...'

14. <u>**rhe**</u> 'to know'

Sg. 1. **mị̀ á!sá mè rhé**   Pl. **àmị́ á!sá mè rhé**
2. **wụ̀ á!sá mè rhé**   **àrị́ á!sá mè rhé**
3. **ọ̀ [á]!sá mè rhé**   **àyị́ á!sá mè rhé**

15a. **mị̀ á!sáà nyá [mja saa ɲa];**   **nya** = 'to go'
b. **wụ̀ é!séè fé [we see fe];**   **fe** = 'be rich'
c. **ọ̀ [á]!sáà dẹ́ [ọ saa dẹ];**   **dẹ** = 'to buy'

In (13) futurity is marked by **a sa ma** occurring between the subject pronoun and the verb stem if it has an open vowel. If, however, the vowel of the verb stem comes from the closed set, as in (14), the last vowel of this marker is **e**. The effect of vowel height on this second marker of futurity is the same as that outlined for **nV̀** earlier. Like all other tense forms in Okpẹ, future tense forms also have a characteristic tonal pattern which can be inferred from (15a).

The examples of (15) represent common stylistic variants of (13) and (14).

In the phonetic realisation of forms such as (13) through (15), **i/ị** of all pronouns subject is desyllabicised to yield the glide [j] before the initial vowel of the mark of futurity. The vowel of the 2nd pers. sg. pronoun subject is usually assimilated to the initial vowel of the same marker, whereas it is this initial vowel that gets assimilated to the 3rd pers. sg. pronoun subject **o/ọ**. The examples of (15) illustrate some of these processes.

There are indications that the choice between the forms cited as (10) through (12) on one hand, and those of (13) and (14) on the other, is a direct function of definable pragmatic considerations. Such discussion is outside the scope of this paper, but is the focus of attention in a separate study by the present writer.

The interplay between vowel harmony and grammatical categories such as tense and person is such that the future marker in Okpẹ can have any of <u>four</u> different shapes with significant vowel height introducing a little more complexity into the system of

marking. The fact that Okpẹ distinguishes a 'will' and 'going to' form in expressing futurity, and that vowel harmony and significant vowel height interract with the two separate forms, complicates the picture even more with a resulting proliferation of markers.

The situation in Uvwiẹ matches the one described above in many respects. For instance, futurity is marked in two different ways. One method involves the morphemic marker **móò/mọ́ọ̀**, harmonising with the vowels of the following stem. The other possibility involves exploiting the tonal resources of the language. Vowel height also influences the marking of futurity in Uvwiẹ. Examples of **móò/mọ́ọ̀**:

16. de 'buy'

Sg.	1.	**mì mọ́ọ̀ dẹ́**	Pl. 1.	**órìn mọ́ọ̀ dẹ́**
	2.	**ù mọ́ọ̀ dẹ́**	2.	**màmá mọ́ọ̀ dẹ́**
	3.	**ọ̀ mọ́ọ̀ dẹ́**	3.	**òwán mọ́ọ̀ dẹ́**

17. fe 'be rich'

Sg.	1.	**mì móò fé**	Pl. 1.	**òrín móò fé**
	2.	**ù móò fé**	2.	**màmá móò fé**
	3.	**ò móò fé**	3.	**òwán móò fé**

18. **mì móò bíò** 'I will be/ become black/dark' **mì mọ́ọ̀ ríọ̀** 'I will eat'
ò móò fíò 'it will leak' **ọ̀ mọ́ọ̀ rhíọ̀** 'he will come'
ò móò gúò 'it will die' **ọ̀ mọ́ọ̀ rúọ̀** 'it will ripen (of boils)'
ò móò kúò 'it will get cheap' **ọ̀ mọ́ọ̀ dúọ̀** 'it will grow/be big'

Note that the future tense form has a characteristic tonal pattern associated with it. The forms in (18) involve high vowels, with the closed-set high vowels in the left hand column and the open-set in the right. It is also clear from (18) that in addition to co-occurrence with a preceding **moo/mọọ**, monosyllabic verb stems with high vowels in Uvwiẹ require a suffix vowel to express futurity. This vowel is **ò** with closed-set vowels and **ọ̀** with open-set vowels. Unlike Okpẹ, the suffix vowel in Uvwiẹ does not desyllabicise the vowel of the verb stem. (16) through (18) parallel the Okpẹ examples (10) through (12) and a comparison of the two sets highlights the essential differences between the marking systems of the two languages.

The following examples illustrate how futurity sometimes uses tonal resources in Uvwiẹ:

19a. de 'buy'

Sg.	1.	**mí dẹ́**	Pl. 1.	**órín dẹ́**
	2.	**ú dẹ́**	2.	**màmá dẹ́**
	3.	**ọ́ dẹ́**	3.	**òwán dẹ́**

b. cho 'steal'

Sg.	1.	mí chó	Pl.	1.	órín chó
	2.	ú chó		2.	màmá chó
	3.	ó chó		3.	òwán chó

20. kpo 'leave/go home'

Sg.	1.	mí kpóò	Pl.	1.	órín kpóò
	2.	ú kpóò		2.	màmá kpóò
	3.	ó kpóò		3.	òwán kpóò

21. sha 'go/walk'

Sg.	1.	mí sháà	Pl.	1.	órín sháà
	2.	ú sháà		2.	màmá sháà
	3.	ọ́ sháà		3.	òwán sháà

22a. bi 'be black/dark'

Sg.	1.	mí bíò	Pl.	1.	órín bíò
	2.	ú bíò		2.	màmá bíò
	3.	ó bíò		3.	òwán bíò

b. ri 'eat'

Sg.	1.	mí ríò	Pl.	1.	órín ríò
	2.	ú ríò		2.	màmá ríò
	3.	ọ́ ríò		3.	òwán ríò

c. gu 'die' ú gúò 'you are going to die'
ru 'ripen (of boils) ọ́ rúò 'it will ripen'

The data available suggests that the pattern exemplified by the forms shown in (19) is probably peculiar to transitive verbs, while the one exemplified by (20) through (22c) is associated with intransitive verbs or intransitive uses of specific verbs. The examples in (20) and (21) involve non-high vowels as the vowel of the verb stems while those of (22) involve high vowels. Forms with high vowels in the verb stem have a suffix **o** for closed-set high vowels and **ọ** for open-set. Verb stems with non-high vowels have their stem vowels lengthened to accomodate the tonal pattern associated with futurity.

The distinction between future tense forms with the morphemic marker **moo/mọọ**, and those in which futurity is expressed by the tonal resources of the language is essentially a distinction between 'will' and 'going to'. The choice between the two seems to be dependent on pragmatic constraints outside the scope of this study.

Although the structure of the future tense forms in Okpẹ and Uvwiẹ is influenced by vowel harmony, significant vowel height and specific grammatical factors such as person (Okpẹ) and transitivity (Uvwiẹ), the network of influences results in greater complexity in the Okpẹ marking system.

2.4 VOWEL HARMONY AND THE FORMATION OF VERBAL NOUNS

Both Hoffman (1973) and Omamor (1973) discuss the role of vowel harmony in the formation of verbal nouns (termed infinitives by Hoffman) in Okpẹ and Uvwiẹ. They will therefore not be discussed in detail here. But they are included in order to present as complete a picture as possible of the ways in which vowel harmony interacts with grammar in the two languages, especially as they also represent one instance in which the interplay between vowel harmony, grammar and other aspects of phonology does not result in the complexity found in the tense forms discussed above.

Virtually all verbs in Okpẹ and Uvwiẹ can form nouns in the way suggested by the following table:

OKPE

Verb stem		Related Verbal Noun
kpe	'kill'	èkpé
so	'steal'	èsó
bi	'be black'	èbió
rhi	'be tall'	èrhió
ri	'eat'	èrió
tịn	'refuse'	ètiọ́n
sụ	'sing'	èsụ́ọ́
fụn	'be clean/white'	èfụọ́n
fọ	'be cold/quiet'	èfó
dẹ	'buy'	èdé
nya	'go/walk'	ènyá

UVWIE

kwe	'kill'	èkwéèmú
cho	'steal'	èchóòmú
bi	'be black/dark'	èbíòmú
ru	'do'	èrúòmú
ri	'eat'	èríòmú
sịn	'refuse'	èsíọ́nmú
sụ	'sing'	èsúọ́mú
dẹ	'buy'	èdéèmú
sha	'go/walk'	èsháàmú
gua	'be strong/hard'	èguàmú

Verbal nouns in Okpẹ are formed by the prefixation of e/ẹ harmonising with the vowel of the verb stem. Verb stems with one of the high vowels i, ị, u and ụ take an additional harmonising suffix o/ọ. This suffix vowel then desyllabicises the stem vowel of the verb to yield the glides [j] for i and ị and [w] for u and ụ. All verbal nouns from monosyllabic verbs in Okpẹ have a characteristic LOW-HIGH tonal shape, whereas disyllabic verbs yield trisyllabic verbal nouns with a LOW-HIGH-LOW tonal pattern.

The situation in Uvwiẹ is different from that in Okpẹ. Monosyllabic verb stems involving non-high vowels form verbal nouns by:

(i) lengthening their stem vowels
(ii) suffixation of -**mú**/-**mụ́** harmonising with the verb stem
(iii) the prefixation of **e**/**ẹ** harmonising with the verb stem.

Verb stems with high vowels are suffixed by a harmonising **o**/**ọ** before (ii) and (iii) take place.

The above shows that any complexity in the formation of verbal nouns in Okpẹ and Uvwiẹ results from an interaction between vowel height and vowel harmony, rather than from the operation of vowel harmony per se. To the extent that verbal nouns in Okpẹ do not have the suffix associated with their counterparts in Uvwiẹ, the overall process of verbal noun formation in Okpẹ is less complex than in Uvwiẹ.

2.5 VOWEL HARMONY AND VERB ADJECTIVALISATION

The derivation of adjectives from a specific sub-class of verbs in Okpẹ and Uvwiẹ is described in detail in Omamor (1986:9-10). These adjectives are either partial or total reduplications of particular verbs. The following table illustrates the two types of reduplication described in that study:

Verb stem	Type I Reduplication	Type II Reduplication	
'be...'	'rather...'		
OKPẸ			
dụ 'be big/grow'	**dụ̀ádụ̀** 'rather big'	**ò**dụ́**à**dụ̀	'big/large'
kamụ	**kà**á**k**à**mù**	**ò**kụ́**k**à**mù**	'small'
gbaụn	**gbà**á**g**bà**ụ̀n**	**ò**gbụ́**g**bà**ụ̀n**	'hard/strong'
lọhọ	**lò**ó**l**ò**hò**	**ò**lú**l**ò**hò**	'soft/gentle'
gbe	**gbè**é**g**bè	**ò**gbé**g**bè	'dirty'
bi	**bì**é**b**ì	**ò**bí**è**bì	'black/dark'
fụn	**fù**á**f**ù**n**	**ò**fú**à**fù**n**	'white/clean'
rhomu	**rhò**ó**r**hò**mù**	**ò**rhó**r**hò**mù**	'good/beautiful'
biomu	**bì**ó**b**ì**òmù**	**ò**bió**b**ì**òmù**	'bad/deteriorate'
UVWIẸ			
grẹn	**grẹ̀ngrẹ́n**	**ù-grẹ́ngrẹ̀n**	'cold/quiet/ gentle'
kamụ	**kà**ká**m**ú	**ù-**ká**k**à**mù**	'small'
gụa	**gụà**gụ**á**	**ù-gụá**gụ**à**	'hard/strong'
gbe	**gbè**gb**é**	**ù-gbé**g**bè**	'dirty/filthy'
bi	**bì**b**í**	**ù-**bí**b**ì	'dark/black'
fụn	**fù**n**f**ú**n**	**ù-fụ́**n**f**ù**n**	'white/clean'
rhomu	**rhò**r**h**ó**mú**	**ù-**rhó**r**hò**mù**	'good/beautiful'
nurẹn	**nù**nú**r**ẹ́**n**	**ù-**nú**n**ù**r**ẹ̀**n**	'bad/ugly'

In Okpẹ Type I reduplications are partial reduplications made up of two parts of which the second corresponds to the original verb stem. The first part of a Type I reduplication whose verb stem does not have a high vowel is made up of:

(i) the initial consonant of the original verb stem, followed by

(ii) the lengthened form of the stem vowel of a monosyllabic verb; or

(iii) the lengthened form of the first vowel of a disyllabic verb.

For verb stems with high vowels, **e** is suffixed to those with **i** and **u**, **a** to those with **ị** and **ụ** e.g.:

bi	'be black/dark'	**bìébì**	'rather black/dark'
fu	'swell/be swollen'	**fùéfù**	'rather swollen'
fụn	'be white /clean'	**fùáfụ̀n**	'rather white/clean'
kịn	'be sour'	**kịánkịn**	'rather sour'

All Type II reduplications in Okpẹ have a harmonising prefix vowel **o/ọ**. In addition, the long vowel of the corresponding Type I reduplication is reduced to the short vowel unless the vowel concerned is **a**, **ẹ**, **ị** or **ọ**. In this case, the long vowel of the Type I reduplication is replaced by the vowel **ụ**.

Thus, in Okpẹ, verb adjectivalisation via reduplication is controlled by either vowel harmony or vowel harmony acting with significant vowel height.

Verb adjectivalisation is a less complex process in Uvwiẹ. Type I reduplications are either partial reduplications of disyllabic verb stems or total reduplications of monosyllabic ones. The partially reduplicated forms are made up of the first syllable of the verb stem followed by the full form. They are all characterised by LOW-HIGH-HIGH tonal pattern.

Type II reduplications have a low tone-bearing prefix **u/ụ** which harmonises with the stem vowel. This vowel and the tonal shape LOW-HIGH-LOW-LOW of which the last low tone only surfaces on reduplications of disyllabic verb stems is all that distinguishes this class of reduplications from their Type I counterparts.

The relative simplicity of verb adjectivalisation via reduplication in Uvwiẹ derives from the fact that vowel height, though significant in the language, plays no role in this particular process. This is different from Okpẹ where vowel height combines with vowel harmony to introduce greater complexity.

2.6 VOWEL HARMONY AND THE SUBJECT-VERB CONCORD MARKER IN OKPẸ

Comparison of sentences with noun as subject and others with pronoun as subject reveals that the former require that a subject-verb concord marker occur between them and a following verb. Examples from Okpẹ:

23a. **ọ̀mọ́ ná ọ̀ tẹ́mrụ́n wáàn-náná.**
child Det. CONC. speak+past just now
'the child spoke just now.'

b. **ọ̀mọ́ ná ò sérí wáàn-náná.**
child Det. CONC. fall+past just now
'the child fell just now.'

c. **èmọ́ ná ì sérí wáàn-náná**
children Det. CONC. fall+past just now
'the children fell just now.'

d. **èmọ́ ná ì tẹ́mrún wáàn-náná**
children Det. CONC. speak+past just now
'the children spoke just now.'

e. **ọ̀ tẹ́mrún wáàn-náná**
he speak+past just now
'he spoke just now.'

f. **ò sérí wáàn-náná**
he fall+past just now
'he fell just now.'

The concord marker in (23a) through (23d) is underlined in each sentence. A comparison of these and other sentences with their (e) and (f) counterparts and similar sentences, shows that the subject-concord marker in Okpẹ only features where the subject slot is filled by a noun rather than a pronoun. The subject-verb concord marker is **o/ọ** harmonising with the stem vowel of the associated verb. In the case of plural subject nouns, the subject-verb concord marker is a harmonising **i/ị**.

There is, however, evidence that when the subject of a sentence is a plural noun and the tense of its associated verb is either imperfective or a 'going to' future, the shape of the concord marker is different. In such cases the subject-verb concord marker is a harmonising **e/a**. Examples:

24. Imperfective: **ọ̀mọ́ ná ọ́!zẹ́** 'the child is running/runs'
ọ̀mọ́ ná ó!né 'the child is defecating'
ẹ̀mọ́ ná é!né 'the children are ...'
ẹ̀mọ́ ná á!zẹ́ 'the children are running'

25. Going-to future:
ọ̀mọ́ ná ọ́!sámà zẹ́ 'the child is going to run'
ọ̀mọ́ ná ó!sémè sé 'the child is going to fall'
ẹ̀mọ́ ná é!sémè sé 'the childen are going to fall'
ẹ̀mọ́ ná á!sámà zẹ́ 'the children are going to run (away)'

One might argue that the change in the shape of the plural subject-verb concord marker is brought about by some interaction between vowel harmony, plurality (of the subject noun) and tense (of the verb, even though the 'will' future form with **nV̀** as marker does not have the same effect. There are, however, sentences which indicate that modality may also combine with plurality to interact with vowel harmony and produce the same result as the one noted above, for example:

26. Ọ̀mọ́ ná ó sèí!né. 'The child can/is able to defecate'
Ọ̀mọ́ ná ọ́ sàí!zé. 'The child can/is able to run'
Ẹ̀mọ́ ná á sàí!zé́. 'The children can/are able to run'
Ẹ̀mọ́ ná ḗ sèí!né. 'The children can/... defecate'

We find, however, when the above examples are compared with the next set, that it is the tense associated with the modal in the above examples rather than the modal per se that combines with plurality to influence the operation of vowel harmony.

27. Ọ̀mọ́ ná ò séì nè. 'The child was able to defecate'
Ọ̀mọ́ ná ọ̀ sáì zè. 'The child was able to run/escape'
Ẹ̀mọ́ ná ì sáì zè. 'The children were able to run/escape'
Ẹ̀mọ́ ná ì̀ séì nè. 'The children were able to defecate'.

The only difference between the forms in (26) and those in (27) is that the tense associated with the modal in the latter is past whereas that of the former is imperfective. The shape of the plural subject-verb concord marker associated with the modal in past tense is the more common i/ị. We therefore conclude that it is the imperfectivity associated with the modal in the examples of (26) that accounts for the shape which the plural subject-verb concord marker assumes in them, and not modality per se.

In summary, the singular subject verb concord marker has two basic shapes determined by the operation of vowel harmony, whereas its plural counterpart has four possible phonetic shapes, two of which result directly from the interaction between vowel harmony and grammatical factors like plurality, and tense. The slight proliferation is a direct result of a combination of factors, rather than the operation of vowel harmony per se.

3. SOME CONCLUDING REMARKS

Vowel harmony, acting alone or in conjunction with significant vowel height, nasalisation or even grammatical factors such as person or transitivity, dominates a variety of grammatical processes such as the formation of some tense forms, the nominalisation of verbs and the process of verb-adjectivalisation via reduplication. The result is a complicated but rich and interesting system in which vowel harmony plays a major part.

What has been noted in respect of specific grammatical processes in this study may be true of many (if not all) others in the languages concerned or even in other Ẹdoid languages. That question cannot be resolved in a single study. It must await the results of future research on these and other Ẹdoid languages. But this study provides further validation of the 1973 analyses of Okpẹ and Uvwiẹ as phonemically nine-vowel languages in which vowels must be regrouped first in terms of the harmony set to which they inherently belong and secondly in terms of a height feature which separates vowels in these languages into a high set and a low set.

NOTES

[1]The labels 'open' and 'closed' correspond to '(tongue-root) unadvanced' and '(tongue-root) advanced' respectively with which they are used interchangeably. The distinction involved is the same as what Tucker (1966, cited in Antell et.al, 1973:3) subsumes under the labels open/lax vs. close/tense respectively.

[2]Hoffman's infinitive (1973:85-86) is a verbal noun similar in use, function and interpretation to what is sometimes described as a gerund. Hoffmann himself explains in a footnote (5, p. 108) that his choice of label was determined solely by the fact that his '...informant produces this form as the equivalent of the English infinitive with to'.

[3]The open/unadvanced vowels were shown to consistently have a lower F_1 than their closed/advanced counterparts. Jenewari (1973: 60-61) refers to X-ray studies of vowels in Okrika by Orupabo (1973) showing the two sets of harmonising vowels separated by F_1 in this same way as being distinguished by differences in 'pharynx width controlled by advancing tongue root.' Jenewari describes this as consistent with a claim by Halle and Stevens (reported in a personal communication by Lindau) that '... the widening of the pharynx has considerable effect on the lowering of Formant one [F_1]'.

[4]The tense and aspect systems in these two languages are described in some detail in a separate study under preparation.

[5]The orthography used here is largely impressionistic as a full description of the sound system is yet to be completed. It takes cognisance, however, of the recommendations of the panel set up by the Bendel State Government in 1974 to report on the question of an adequate orthography for all the languages spoken in the state. Here, as elsewhere, ẹ = [ɛ]; ọ = [ɔ]; i̱ = [ɪ] and u̱ = [ʊ]. Tones are marked thus: ́ = High, ̀ = Low and ! = a downstepped high tone.

[6](i) The downstep has been used to ensure consistency with the practice in Hoffmann (1973). I am not myself certain whether what we have is a down-stepped high tone, a raised low tone or whatever.

(ii) No tones are marked on the citation form of verbs in this study because the indications are that in these languages, as in most other Ẹdoid languages, verbs derive their tones from the syntactic contexts in which they occur. They therefore do not have any inherent tone in isolation.

[7]Both Hoffmann (1973) and Omamor (1973) point to the significance of vowel height in Okpẹ and Uvwiẹ. They provide evidence to show that in addition to recognising two sets of harmonising vowels, there is a further need to regroup the vowels into a high set and a low set.

The behavior of the high vowels i, i̱, u̱ and u relative to the formation of imperfective tense forms in Uvwiẹ suggests that the influence of vowel height in this language may not quite be as all-pervasive as it is in Okpẹ.

[8]Although most of the forms that will be cited as examples in this section translate into appropriate past tense forms in the better-known languages

of the world, there are verbs whose -rV suffix-bearing forms actually describe a present state. This is the case with fe 'be rich'; ò fẹ́rí 'he is/was/became rich', for instance.

[9]The hyphen in this example is used to keep the two n's occurring in such forms separate so as to ensure accuracy with respect to phonetic realisation.

[10]Jenewari (1973: 62) describes the 'neutrality' of a in relation to the two sets of harmonising vowels in Kalabari as 'superficial' because, '... in terms of harmony behaviour, it is inherently a member of the unadvanced set'.

[11]The expression 'significant vowel height' in this study refers to the feature that distinguishes vowels of the high set in Okpẹ and Uvwiẹ from those of the low set. It is this feature (cf. footnote 7) that necessitates regrouping vowels in these languages into a high set made up of i, ị, u̱ and u and a low set comprising e, o, ẹ, ọ and a.

[12]Nasalisation is indicated orthographically by an n occurring after the vowel that is nasalised. When two nasalised vowels follow each other, this n is usually placed after the second of such vowels.

[13]This example and others involving the vowel a in the present study confirm the point made earlier with respect to the behaviour of a vis à vis the two sets of harmonising vowels in Okpẹ and Uvwiẹ. Here, as elsewhere, a behaves as if it is simply a member of the unadvanced or open set, even though it is said to be common to the two vowel harmony sets. See also footnote (11).

The point made in footnote (6) in connection with other examples featuring a downstepped high tone applies with equal validity to these ones.

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