TRANSITIONAL PHONOLOGIES AND THEIR IMPLICATION FOR ORTHOGRAPHIES: THE CASE OF ORA

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After an overview of the sound system, attention is given to nasals and nasalisation as they affect the representation of nasal vowels. In the handling of vowel sequences, evidence is elicited from related languages to show that they result from the loss of intervening consonants. The number of vowels ranges from two to about five across morpheme boundaries. With evidence from this and other languages, the paper examines the implications of such a transitional phonology for orthographic conventions.

Après une présentation du système de sons, l'attention est mise sur les consonnes nasales et la nasalisation dans leur effet sur la représentation des voyelles nasales. Dans le traitement des séquences vocaliques la preuve est tirée des langues apparentées pour montrer qu'elles sont le résultat d'une perte de consonnes intermédiaires. Le nombre de voyelles varie entre deux et cinq à travers des fontières des morphèmes. Avec la justification de cette langue et d'autres langues, cet article examine les implications d'une telle phonologie transitionnelle sur les conventions orthographiques.

0. INTRODUCTION

This paper aims at opening a dialogue on some aspects of the Ora orthography as well as arousing interest among linguists in a language with an unusual number of vowel sequences.

A number of works on Edoid languages have been written but it was only recently that Ora was classified as a North Central Edoid language. (Elugbe 1980). Ora belongs to the same sub-group as Edo and Esan. What I call Ora here is often referred to as Ora-Emai-Iuleha spoken in the south western areas of Owan local Government Area in the Bendel State of Nigeria. Neither Elugbe's classification nor any work known to me says whether Ora-Emai-Iuleha constitute dialects of one language, a language cluster or a dialect cluster. Most of my native speaker. informants claim that they belong to different languages but, as most linguists know, the feelings and intuitions of native speakers on such issues sometimes prove unreliable, as they often involve sociopolitical sentiments.

It is not my intention here to identify what should be a language or a dialect as it affects Ora. In this paper Ora is what is spoken in Eme, Sabongida, Uhomora, Oke and Ovbiokhuorin, and it is considered a dialect cluster. Whereas native speakers would say that they are quite distinct speech forms, most of the dialects are mutually intelligible, however minimally. My data is based on Emai.

1. THE SOUNDS OF ORA (AN OVERVIEW)

The following is the inventory of the consonants of Ora

1.	p	b	t	d		k	g	kp	gb	
		m		n						
	f	v	s	z	sh	kh	gh			h
				rl						
		vb		r	j				w	

Ora has seven oral vowel phonemes /**i e ẹ a ọ o u**/ contrasting in various environments as in:

2.	**i/e**	**emi**	'thing'	**i/ẹ**	**ígbe**	'ten'
		imɛ	'farm'		**ẹgbe**	'body'
	e/ẹ	**ẹkpe**	'kite'	**e/a**	**ẹwe**	'goat'
		úkpẹ	'seed'		**áwa**	'dog'
	ẹ/a	**ẹwe**	'goat'	**ẹ/ọ**	**ẹhọ**	'ear'
		áwa	'dog'		**ọha**	'wife'
	a/ọ	**ọha**	'wife'	**ọ/o**	**otọ**	'ground'
		ẹhọ	'ear'		**éto**	'hair'
	ọ/u	**kọ**	'sew'	**o/u**	**udu**	'heart'
		ku	'pour'		**údo**	'grinding stone'

Nasal vowels are found not only in the environment of oral consonants but also in contrast with their oral counterparts as in 3 below.

3.	**i/ĩ**	**èsi**	'horse'	**ọ/ọ̃**	**kọ**	'sow (seed)'
		ésĩ	'pepper'		**õkọ̃**	'teeth'
	e/ẽ	**ígbè**	'ten'	**o/õ**	**so**	'sew!'
		ígbẽ	'thorn'		**isõ**	'faeces'
	ẹ/ẽ	**ófẹ**	'rat'	**u/ũ**	**ku**	'pour'
		ófẽ	'fear'		**ókũ**	'sea'
	a/ã	**raré**	'pass by'			
		órã	'tree'			

Since oral and nasal vowels contrast and their distribution is not phonologically or morphologically conditioned, it is necessary to recognise seven nasal vowel phonemes for the language. Nasalised vowels also occur in the environment of nasal consonants (cf. section 5). The language has long vowels, but they are phonemically sequences of short vowels.

2. VOWEL CO-OCCURRENCE PATTERN

It is necessary to discuss the vowel co-occurrence pattern since this has some implication for the Edoid family as a whole. Like most seven-vowel systems, Ora has no vowel harmony, at least in nouns. Prefix vowels combine freely with stem vowels as illustrated below.

4.	**ímọ**	'children'	**éto**	'hair'
	éhọ	'ear'	**ígben**	'thorn'
	eken	'sand'	**ózi**	'crab'
	ọ́ba	'king'	**úri**	'rope'
	àzẹn	'witch'	**úkpe**	'year'

Unlike some Edoid languages, pluralisation in Ora is not generally indicated by prefix alternation between the singular and plural forms. If this was ever the case, it is lost or disappearing in the present form of the language as in Epie and Engenni (Donwa-Ifode: forthcoming). Pluralisation takes place by prefix vowel alternation only in a few nouns.

5.	**ẹo ọkpá**	'one eye'	**ẹo evá**	'two eyes'
	émi ọkpá	'one word'	**émi evá**	'two words'
	ọkpa ọkpá	'one cock'	**ọkpa evá**	'two cocks' etc.

but

ómọ ọkpá	'one friend'	**ímọ éva**	'two friends'
ọ́hua ọkpá	'one hunter'	**íhua éva**	'two hunters'
ófe ọkpá	'one rat'	**éfe éva**	'two rats'
ọ́ha ọkpá	'one wife'	**éha éva**	'two wives'

We are unable to find any synchronic phonological conditioning factor for the choice of **i** or **e** in the plural. Ten vowels [**i ɪ e ɛ ə a ɔ o ɷ u**] have been postulated for proto-Edoid (Elugbe 1982); a language with seven vowels thus comes as a reduction of the proto ten-vowel system. In the North Central Edoid languages reflexes of the vowels *ɪ and *ɷ are usually [**e**] and [**o**] respectively. ɪ- is usually a plural prefix in Edoid. It is therefore possible that **e**- as a plural prefix in Ora is a reflex of proto *ɪ.

3. VOWEL SEQUENCES

Ora has a number of vowel sequences which are not all accurately represented in the orthography. At first sight, there does not seem to be any restriction on the vowels that form the various sequences, but these sequences can be classified into various groups.

i) Sequences of identical vowels: these are recognised as sequences and not phonemic long vowels because, apart from the fact that each member of the sequence is heard as a distinct nucleus they are parallelled by other non-identical sequences, as in ii), iii) and iv) below.

6.

évbii	'fat'	**uu**	'die'
áàmì	'female'	**òó**	'think'

ii) Opening sequences: sequences in which the first members are close vowels and the second members open vowels.

7.

éhíén	'nail'	**ígúe**	'village'
vbiẹ	'give birth'	**ruẹ**	'greet'
èrhia	'yam'		

iii) Closing sequences: these are sequences in which the first members are open vowels and the second members are close vowels.

8.

éséin	'saliva'	**ói**	'thief'
érhai	'lies'	**óimi**	'corpse'
ẹ́in	'tortoise'		

So far **i** is the only close vowel in this sequence.

iv) Sequences which do not belong to any of the above mentioned.

9.

oẹ	'leg'	**ẹ́kẹ́e**	'belly'
óa	'house'	**éa**	'three'
ẹ́o	'eye'	**àghae**	'knife'

Note that in this sequence type, **ọ** is not found in V_2 position. A few items are found with sequences of three vowels as in

10. **eea** 'forget'; **phioo** 'blow fire'; **oúu** 'cotton'

In a sequence of three vowels, two are always identical. Whereas vowel sequences of types (ii) and (iii) are widely attested in other Edoid languages (Donwa 1983; Elugbe

1982; Donwa-Ifode 1985) vowel sequences of types (i) and (iv) are uncommon. It has been noted that sequences of types (ii) and (iii) result from the loss of a C in a V_1CV_2 position in proto-Edoid (Elugbe 1982). Vowels that occur in V_2 position are mainly **i** and **u** (as well as **ɪ** and **ʊ** where the language has them). Incidentally, Ora has no **u** in this position.

Considering that Ora is a seven vowel language, and that ten vowels have been postulated for proto-Edoid it is not unlikely that other sequences of vowels attested in the language are the result of the merger of the close vowels **ɪ** and **ʊ** with other vowels. As noted earlier, reflexes of **ɪ** and **ʊ** in North Central Edoid are [e] and [o] respectively.

There is, however, synchronic evidence in other Edoid languages that the present V_1 V_2 sequences in Ora derive from the loss of an intervocalic consonant.

My comparative data confirms this. Cognate items from a number of Edoid languages show medial consonants separating the Ora VV sequences. The intervocalic consonants here range from stops (oral or nasal) to approximants.

11.	a) 'death'	b) 'thread/cotton'	c) 'thief'
Ora	**uu**	**oúu**	**ói**
Edo	**ughu**	**oru/ororu**	**oyí**
Urhobo	**ughwu**	**orúru**	**ozi**
Isoko	**ughwu/ugu**	**olúlú**	**oji**
Oloma	---	---	**oyi**
Degema	**uwú**	**irí**	**ozí**
	d) 'eye'	e) 'three'	f) 'think'
Ora	**éo**	**éa**	**òó**
Edo	**alo**	---	**roro**
Urhobo	**alo**	**era**	**rhorho**
Isoko	**ẹro**	**esa**	**rhorho**
Degema	**ụdhú**		
Engenni	**adhụ**		
Proto-Edoid	***adhi**		
	g) 'knife'	h) 'village'	i) 'witch'
Ora	**àghae**	**ígue**	**ozea**
Edo	---	**ígué**	---
Urhobo	**aghare**	**ighure**	**ọnieda**
Isoko	**aghare**	**ighure/igrue**	**ọrieda**
Degema	**ẹlẹgẹ́**		
	j) 'song'	k) 'house'	l) 'fat'
Ora	**ioo**	**oa**	**évbii**
Edo	---	**ugha** (room)	---
Urhobo	**ole**	**oghua** (room)	**eghwiri**
Isoko	**ole**	**ughuo** (house)	**ivbiri**
		ukpẹ (room)	
PE	---	***ughaG**	---

We can say that vowel sequences in Ora reflect the last stage (total loss) of consonant weakening in Edoid. The reconstructed forms found for some of the items such as 'eye' and 'house' have intervocalic stops (Elugbe 1980). It is equally noted that

different languages represent different stages of the weakening process while in a number of cases, Ora is at the last stage with a zero reflex. Thus vowel sequences in Edoid and Ora in particular, result from the weakening of consonants such as stop to fricative or affricate, then to an approximant which may be finally deleted. Such vowel sequences resulting from the loss of an intervocalic consonant, have been noted in a number of languages (Akinkugbe 1978 for Yoruba; Donwa 1983 and Donwa-Ifode 1985 for Isoko; Elugbe 1985 mentions this in passing for a number of Edoid languages).

4. VOWELS AT BOUNDARIES

Vowel assimilation, contraction, and glide formation are among the dynamic phonological processes which apply to vowels across morpheme boundaries. Where assimilation takes place, the vowel before the boundary (V_1) is usually assimilated to that after the boundary (V_2). Examples of these in Ora can be cited from many construction types:

12.				by assimilation		by contraction	
dẹ́	'buy'	**ọka**	'maize'	--->	**do:ka**	--->	**doka**
ghe	'see'	**ame**	'water'	--->	**gha:me**	--->	**ghame**
vba	'plait'	**éto**	'hair'	--->	**vbé:to**	--->	**vbeto**
dé	'buy'	**úri**	'rope'	--->	**dú:rí**	--->	**duri**
lọ	'grind'	**óka**	'maize'	--->	**ló:ka**	--->	**loka**

Just as assimilation is optional, contraction after assimilation is optional too. The assimilated forms (without contraction) are, however, commonly used. Where V_1 is a close vowel **/i/** or **/u/** glide formation applies as in:

13.						
	fi	'throw'	**udo**	'stone'	--->	**fjudo**
	si	'pull'	**ekpe**	'kite'	--->	**sjekpe**
	mu	'carry'	**ókọ**	'mortar'	--->	**mwókọ**

Although none of the processes exemplified in 12 and 13 is obligatory, it is interesting that they rarely apply when there are sequences of vowels before or after the boundary, or both before and after. The vowels on either side of the boundary are usually distinctly heard. When a sequence of vowels occurs before another sequence across the boundary, there is no obligatory assimilation or elision of any of the vowels as applies in some other Edoid languages (Donwa-Ifode 1985). There is no attempt to simplify the cluster. Thus, one can find as many as four to five vowels in a sequence:

14.						
	saé	'shoot'	**ói**	'thief'	--->	**saéói**
	vaé	'come'	**eán**	'here'	--->	**váéeá**
	oé	'leg'	**éa**	'three'	--->	**óaéa**
	ékée	'belly'	**éa**	'three'	--->	**ẹ́kéééa**
	eéá	'forget'	**uu**	'death'	--->	**eeauu**

In genitival constructions (involving noun plus noun) however, the situation is different, in that an optional part of a genitival morpheme (usually the consonant) may be inserted, even when there are single vowels on both sides of the boundary. Where it is not inserted the same process of assimilation (and contraction) as in example 12, or glide formation as in 13, may apply.

15.				by assimilation		by contraction/insertion	
ẹwe	'goat'	**igue**	'village'	--->	**ẹwi:gue**	--->	**ẹwigwe/ẹweghigwe** 'village goat'
ọ́ka	'maize'	**ọdan**	'husband'	--->	**ọ́kọ:dan**	--->	**ọ́kọdan/ókaghodan**
ọ́ka	'maize'	**ói**	'thief'	--->	**ọ́ko:i**	--->	**ọ́koi/ọ́kaghoi**
ẹ́o	'eye'	**ói**	'thief'	--->	**éo:i**	--->	**éoi/ẹoghoi**
évbae	'food'	**ói**	'thief'	--->	**évbae:i**	--->	**évbaoi/évbaeghói**

What is of interest here is the optional nature of the rules of assimilation and contraction, as well as that of the insertion of the genitival marker. This is a total confirmation that there is no limit to the number of permissible vowels in a sequence.

5. NASALS AND NASALISATION

A phenomenon worthy of mention, though not the main focus of this paper, is that of nasals and nasalisation. Following convention, segments with inherent nasality are referred to as nasals while those with derived nasality are referred to as nasalised segments. Nasal consonants and vowels are those segments which are inherently nasalised, forming part of the distinctive sounds of the language, while nasalised vowels and consonants are those which derive their nasality from being contiguous to nasal segments.

Ora has two nasal consonant phonemes. They are /**m**/, a voiced bilabial nasal, and /**n**/, a voiced alveolar nasal. In addition to these, the representation in the orthography gives the impression of a third [**ɲ**], a voiced palatal nasal, written 'ny'. We shall return to this problem later.

A vowel is automatically nasalised after a nasal consonant. The nasalisation of such vowels can be accounted for by the universal tendency for vowels to be at least slightly nasalised in the environment of nasal consonants.

16.	**/ímè/**	**[ímẽ̀]**	'farm'	**ámàkō**	**[ámãàkō]**	'hawk'
	/émẹ̀lá/	**[émẽ̀lá]**	'cow'	**tọ̀nọ́**	**[tɔ̀nɔ̃́]**	'dig'

The nasalisation of a vowel by a consonant does not generally extend beyond a syllable. Where there is a sequence of vowels after a nasal consonant, nasalisation may extend to the second vowel, but usually the degree is reduced towards the second vowel e.g./**míé**/ [**mĩ́ẽ́**] 'obtain'.

Just as there are nasalised vowels, there are also nasalised consonants. Nasal vowels as illustrated in 3 also have the effect of nasalising contiguous sonorant segments. When the conditioning segment is a vowel, nasalisation is regressive and may extend beyond a syllable until it is blocked by the presence of an obstruent or a prefix vowel. The nasalisation rule here is iterative, i.e. a phonological rule that can apply more than once to the same form.

17.	**/úrìrì/**	**[úrĩ̀rĩ̀]**	'cold'	**/áhiẹ̀hiẹ̀/**	**[áhĩ̀ẽ̀hĩ̀ẽ̀]**	'star'
	/íhẹ̀rẹ̀/	**[íhẽ̀rẽ̀]**	'five'	**/íkhùrù/**	**[íkhũ̀rũ̀]**	'iron'
	/éjẹ̀rẹ̀/	**[éjẽ̀rẽ̀]**	'breast'	**/ésẹ̀ì/**	**[ésẽ́ì]**	'saliva'

The question arises: how does one know that it is the final vowel that is significantly nasalised and none of the medial ones or even the consonants? If the nasalisation of the consonants is considered significant, then we will have in addition to /**m**/ and /**n**/ the phonemes /**r̃ h̃ ʃ̃**/ as well as seven nasal vowels, of course. In example 16 the nasalised

vowels could be accounted for by their contiguity to the nasal consonants, but we cannot say the same for the nasal vowels in the environment of obstruents in 17 and 3. If the medial vowels are considered nasals and the others nasalised, we would run into haphazard rules in an attempt to account for the direction of the process. However, once we accept that [j̃], [r̃] and [h̃] are not significantly nasalised, we can consider items like [ɪjɔ̃] 'mother', [oř̃ã] 'tree' as clear cases of nasalisation spreading leftwards when conditioned by nasal vowels. Two vowels in a sequence cannot be considered as nasals for we have no clear cases of /ṼṼ/ i.e. sequences of nasal vowels. It is always an oral vowel followed by a nasal, and the preceding vowel is not nasalised if it is a prefix.

18. /éĩ/ [éĩ] 'tortoise'

but

/ésẹ̀ì/ [ésẽ̀ì] 'saliva'

In Ora, therefore, we have both nasalised vowels and consonants just as we have both nasal vowels and consonants.

6. IMPLICATIONS FOR THE ORTHOGRAPHY AND LANGUAGE LEARNING

6.0 This section examines some of the implications of the phenomena discussed in the preceding sections for the orthography as well as for speech and language learning.

In devising or revising an orthography for any Nigerian language a number of principles have been outlined. These are accuracy, consistency, convenience, harmonisation and familiarity (Williamson 1986, for details).

Elugbe (1985) has discussed some problems in devising satisfactory orthographies for Edoid languages. In Ora, however, the main problems arise with the representation of nasals and nasalised segments, and with word division.

6.1 THE ALPHABET

The present alphabet of Ora is made up of the following letters with their phonetic equivalents given:

a	[a]	f	[f]	j	[j]	n	[n]	s	[s]	w	[w]
b	[b]	g	[g]	k	[k]	o	[o]	sh	[ʃ]	y	[y]
ch	[tʃ]	gh	[ɣ]	kh	[x]	ọ	[ɔ]	t	[t]	z	[z]
d	[d]	gb	[g͡b]	kp	[k͡p]	p	[p]	u	[u]		
e	[e]	h	[h]	l	[l]	r	[r]	v	[v]		
ẹ	[ɛ]	i	[i]	m	[m]	rl	[l̩]	vb	[β]		

6.2 NASALISATION AND THE ORTHOGRAPHY

In Ora, as in many other Nigerian languages with significant vowel nasalization, the nasal vowel is marked in the orthography by the use of -n after its oral counterpart. Thus /hɔ/ họ 'to lay eggs' but /hɔ̃/ họn 'to hear'. Others are ésin 'pepper', oran 'tree'. This convention appears straightforward and creates no problem where the nasal vowel phoneme occurs in the environment of oral consonants, particularly obstruents.

However, some redundancy is introduced in the orthography when

i) -n is marked after a nasalised vowel, i.e. a phonetic [Ṽ] is represented in the orthography.

ii) a nasalized consonant is marked by the use of n- this time placed before the consonant, giving the impression that it is the preceding vowel that is marked. We assume that it is the consonant that is marked as nasal because neither nasal nor nasalised vowels occur in prefix position, and some of the occurrences of the n- are before a stem initial consonant. The examples below illustrate our point.

19.

phonemic	phonetic	orthography	
/màmá/	**[m̀ãmã́]**	manman	'learn'
/miṛ́/	**[mĩrṹ]**	minrẹn	'ask'
/úrirĩ/	**[ũ̃rĩ̃rĩ]**	unrinrin	'cold'
/iherẽ/	**[iẖẽr̃ẽ]**	inhenren	'five'
/áhiẹhiẽ/	**[áhĩẽhĩẽ]**	anhiẹnhiẹn	'star'

The first problem becomes more complex when a nasalised vowel is represented after a nasal consonant, that is, a representation of the type NVn where N is a nasal consonant by virtue of its inherent nasality and Vn, a nasalised vowel which should not be represented in the orthogrphy following the principle of accuracy.

In 1975 the Committee on languages of the then Mid-Western State (now Bendel State) suggested that significant nasalisation should be marked by the use of this -n after the vowels. It was also added that sometimes, even after nasal consonants, it is necessary to mark nasalisation. They give the following examples as a justification for this assertion:

ọmọ 'friend'; ọmọn 'child'

Both words are not consistently represented thus in the Ora written materials available. In the speech of all our informants the final vowels are equally nasalised auditorily and confirmed by oscillomink tracings made from four Ora speakers. Although Elugbe, who was also a member of the 1975 Committee, claims to have confirmed instrumentally that the final ọ of 'friend' is not nasalised or as nasalised as in that of 'child', my instrumental data differs. Nasalisation tends to be reduced in the [ọ] of 'friend' only when the speaker is conscious of the letter representation.

My informant, who can read and write the language, marks the nasalisation of the final ọ of 'child' with 'n' as well as some of the other items in example 19. There is also an extreme consciousness in his speech to nasalise the final ọ of 'child' more heavily than that of 'friend'. The presence of the final n is what reminds a learner or reader to nasalise the vowel heavily, although my informant as well as two others, claim that they would know by the context which [ɔmɔ̃] ('friend' or 'child') is meant.

The other informant, who cannot write, tries to nasalise one of them more heavily but rather inconsistently. One wonders if the two words are not homophonous, and whether native speakers are only trying to make a distinction on the basis of a known orthographic rule which is not based on adequate phonological or phonetic facts.

According to the principle of accuracy, a good orthography should represent all the distinctive sounds of the language and not the derived phonetic representation. This means that an accurate phonological analysis serves as a basis for a good orthography. If all the distinctive sounds are not represented we would have cases of ambiguity.

The presence of homophonic words is possible in world languages, but there is no ambiguity because of the context. So in Ora also there would be no ambiguity created by writing 'friend' and 'child' in the same way without a final n. If the -n of 'child' is retained it is perhaps for familiarity and acceptability and not accuracy.

The major problem raised by this recommendation or practice is in determining whether a nasalised vowel which occurs in the environment of a nasal consonant is underlyingly oral or nasal. That is, how do we know whether a phonetic [NṼ] is an underlying /NṼ/ or /NV/.

We have already stated that in a sequence of two vowels following a nasal, the first is more heavily nasalised, since nasalisation reduces towards the second vowel. This is the only case where there is a difference in the degree of the nasalisation of any two segments. Apart from this, there is no difference in the degree of nasalisation between a nasal vowel and its nasalised counterpart elsewhere in the language (at least on the basis of our data).

We are not aware of any language specific or universal evidence that nasal vowels should be restricted to the environment of oral consonants. It is thus possible for a nasal vowel to occur in the environment of a nasal consonant just as oral vowels can occur in the environment of both nasal and oral consonants. According to Ferguson (1963), the neutralisation of the contrast between nasal and oral vowels usually occurs in the environment of nasals. Here, only [Ṽ] occurs. By this universal tendency, we should perhaps represent all [Ṽ] after nasal consonants as Vn. If we do this, the problem of redundancy in the orthography still remains. I am therefore suggesting a simple solution.

I suggest that all [Ṽ] after nasal consonants be represented a /V/ and derive [Ṽ] by a nasalisation rule. Although there is no sychronic evidence in the language to justify this, there is some historical evidence that Ṽ in this environment is underlyingly /V/. Hyman (1972) presents evidence from other Kwa (most of which are now new) languages that nasal vowels have their origin in the nasalising influence of nasal consonants which were later lost. Elugbe and Williamson (1973), however, give evidence of proto-nasal vowels. Amayo (1976) presents a different case for Edo (Bini) a North Central Edoid language. Donwa-Ifode (forthcoming) provides evidence from South Western Edoid languages (SWE), that synchronic nasal vowels in SWE originate from the influence of nasal consonants. The nasal consonants are lost after the nasal vowel is phonemicised. Thus one finds the similar correspondence as these below in various dialects of the different languages:

20.	NṼ	~	CṼ	
	ɔ̀ɲɛ	~	**ɔ̀jɛ̃**	'his' (Isoko)
	úŋwe	~	**úhwẽ**	'nose' (Isoko and Urhobo)

Every phonetic Ṽ in the environment of a nasal is therefore phonemically /V/. On the basis of the evidence provided from related languages, the suggestion that Ṽ after a nasal not be marked in the orthography, should be considered.

Similarly, a nasalised consonant should not be marked in the orthography as shown in 19. Apart from the redundancy created by this practice, it introduces some ambiguity. For instance, the consonant 'y' marked as nasalised 'ny' [j̃], could be read as a palatal nasal [ɲ] as in other languages. This naturally violates the principle of harmonisation, as well as accuracy as the language has no /ɲ/ but [j̃] arising from the influence of a nasal vowel.

Apart from nasal consonants written as 'm' and 'n', significant nasalisation of a vowel should be marked only after a nasal vowel occurring at the end of a word. Even if nasalisation in these environments is treated as a prosody, the presence of a single final -n would trigger nasalisation. The iterative rule of vowel nasalisation would still hold since a final -n would also mean the nasalisation of every sonorant before the -n (within the stem).

Thus, with or without a final -n, the vowels after nasal consonants will still be nasalised. I do not think any major problem of ambiguity or non-acceptablility will be created considering the limited number of such items. Indeed, the removal of this final -n would not necessarily be unfamiliar, as the convention is not even consistently applied. Speakers, readers and learners by intuition expect the vowel after a nasal consonant to be nasalised.

Whether or not this 1975 recommendation was based on accurate phonological analysis, one should not forget the learner's or reader's perception of the linear sequence, and the precipitant factor of change at this level. A child having been used to nasalising vowels after nasal consonants, and producing nasal vowels elsewhere (signified by the presence of a final -n, after an 's' for instance), may be tempted to pronounce a final [n] after a hitherto expected nasalised vowel, and thus introduce a final consonant in the syllable or word. The orthographic device will no doubt be the precipitant for the morphological change.

A similar case obtains in Esan where nasal vowels are said to contrast after nasal consonants, and therefore represented with a final -n as in

21.	**nọ**	'to grind'	**nẹ**	'to run'
	nọn	'to ask'	**nẹn**	'to defecate'

It is also added (Okojie and Ejele in Agheyisi 1987) that these nasal vowels contrast with their oral counterparts only after /**n**/ and never after /**m**/, the second nasal consonant in the language.

If the degree of nasalisation is the criterion for the determination of significant and non-significant nasalisation in the environment of nasal consonants, then all vowels in this environment should be subjected to instrumental investigation; this will of course be impossible. Orthography experts, in order not to generate unnecessary structural changes by being prescriptive, should aim at an intermediate stage between abstract accurate representations and concrete phonetic representations.

6.3 WORD DIVISION AND THE ORTHOGRAPHY

This study of the Ora vowel system also has implications for word division. Among the dynamic processes which create problems for word division cited by Elugbe (1985), are glide formation, vowel elision, and, we may add, other morpheme boundary processes such as assimilation and contraction, insertion etc. It may make the Ora case easier to understand if we start with less complex examples from known Edoid languages.

In Isoko and Urhobo assimilation, whether followed or not by contraction, elision and glide formation take place under different conditions and in different directions. For instance, the initial vowel of a demonstrative adjective often assimilates to the final vowel of the preceding noun. Below are examples that are identical in some dialects of both languages. These phenomena have been discussed for Isoko in Donwa (1983) and Donwa-Ifode (1985).

22.	ọ́mọ́ ọnana	pronounced **[ɔ́mɔ́:nana]** or **[ɔ́mɔ́nana]**	'this child'
	aje ọnana	pronounced **[aje:nana]** or **[ajenana]**	'this woman'
	ọlẹ́ ọjena	pronounced **[ɔlɛ́:jena]** or **[ɔlɛ́jena]**	'that yam'

Similarly in verb plus noun constructions, as well as genitival constructions, there is an optional assimilation, with or without contraction, but in a different direction. It is the vowel after the boundary that effects the change.

23.	dẹ ọlẹ́	pronounced **[dɔ:lɛ́]** or **[dɔlɛ́]**	'buy yam'
	da udi	pronounced **[du:di]** or **[dudi]**	'drink wine'

In genitival and other construction types, the direction of assimilation is the same as in the verb plus noun constructions. Where there is a sequence of vowels, elision applies to a final close vowel before the boundary prior to assimilation as the Isoko examples below demonstrate:

24.	kai ẹ́the	-->	ka ẹ́the	--> **[kɛ:the]** or **[kɛthe]**	'lock door'
	uzou ọ́mọ́	-->	uzo ọmọ	--> **[uzɔ́:mɔ́]** or **[uzɔ́mɔ́]**	

In Edo, Elugbe notes that the unusual number of vowel elisions creates problem for the orthography as in:

25.	zẹ ẹdo	pronounced	**[zɛdo]**	'speak Ɛdo'
	ẹdẹ ọkpa	pronounced	**[ɛdɔkpa]**	'one day'

In forms as the above, one is in doubt whether to write the words in their full forms or elided forms as

26. zẹ ẹdo or zẹdo
ẹdẹ ọkpa or ẹdọkpa

The same problem applies in the Isoko and Urhobo examples in 23 above, as well as a number of languages whose orthographies appear in the fifth manual of the Orthographies of Nigerian Languages.

In an attempt to resolve the problem of word division precipitated by the boundary processes, a number of proposals have been made and different methods adopted. It is suggested for instance that:

(a) both items be written as different words without any indication of a missing vowel (Amayo 1974, and Agheyisi 1987 etc.),

(b) a hyphen or apostrophe be used to mark the quality of the unknown vowel as has been the practice in some languages, e.g. Yoruba,

(c) both words be represented as one word.

The principle of accuracy demands that all the underlying distinctive sounds of a language be represented in the orthography and none of the surface predictable ones (Williamson 1985). Sometimes these underlying forms may be too abstract and unfamiliar to both the reader and the learner. Where they are not abstract, however, either by our analysis or an on-going change, we should aim at representing all the distinctive forms in a consistent manner. In all the examples cited so far in this section, there is no reason why the full forms of each word cannot be written; the elided or assimilated and contracted forms are not represented.

A number of languages with long established writing systems have been using the apostrophe to repressent a lost vowel between two words as in Yoruba. Thus, if there is

any change towards writing the full forms, the familiarity principle will be broken and the reform may be rejected. So far some written works in Isoko and Urhobo are inconsistent in the representation of forms like these, but a recommendation has been made to write all forms fully as in the case of all languages represented in manual V of the Orthographies of Nigerian Languages, with the exception of Urhobo.

Iweh, the Urhobo contributor to this manual, insisted that a hyphen be used to indicate the lost vowel. Agheyisi (1987: ii) states that, with the single exception of Urhobo, it was generally agreed that items be spelt in their full forms irrespective of how they are pronounced. She disassociates other members of the committee from the Urhobo stand. Unfortunately, one finds that no consistent rule is applied in the use of this hyphen in the Urhobo sample text. Thus one finds forms like:

27a.	--V- óbáró ẹra--	'progress'
b.	kpare obáro	'--- towards progress'
c.	Me dy-étíne ---	'I have used this medium--'
		(Agheyisi 1987:74)

One would have expected a hyphen between the last two items of a. and between the two items of b. Going through the whole text one sometimes gets the impression that the hyphen is used to mark the elided vowel of the function words only, but c. above shows the contrary.

The question that remained unanswered after our two-day deliberation was how a learner would be able to identify the quality of the lost vowel. In addition, no cognisance was taken of the directionality of assimilation and contraction which vary according to the conditioning factor. Naturally, as the acceptability of any orthography by the native speakers is important, the principle of familiarity may overrule that of accuracy; but in a case like this the principle of familiarity and therefore acceptability is not 'threatened' as the hyphenated forms are not consistently used in most of the existing works in the language.

6.4 TOWARDS A SOLUTION

My concern is for a greater understanding, re-assessment and harmonisation of the orthographies of these related and co-territorial languages. Orthographers should consider seriously whether to represent speech as it is heard, or prescribe ways of representing speech differently (no matter what the degree of this difference may be) from what is heard; that is whether to go strictly from sound to letter, letter to sound or find an intermediate level between the two in revising or devising orthographies.

If words with contracted or elided vowel forms are written together, whole phrases may be written as one word. In the following example, common to some dialects of Isoko and Urhobo, 28a represents the contracted, spoken form and 28b represents the items in their full forms:

28a.	**ọ dọlode**	'he bought some yam yesterday'
28b.	**ọ dẹ ọlẹ odẹ**	

If 28a with the assimilated and contracted vowels is represented in the orthography, how would a learner or reader know that he is actually dealing with more than a word? The major advantage of the use of the hyphen in the compounded forms lies in the fact that the learner knows that something is missing although he may not know what it is.

A number of linguists, e.g. Amayo (1974) Williamson (1985), think that the resolution of the problem lies in a good grammatical analysis. It follows that every language would have a different way of representing word division depending on its grammatical structure. For Edo (Bini) for instance, Amayo suggests that a noun and its modifier should be written separately. If there is no uniform way of dividing words in the orthographies of genetically related or co-territorial languages, the principle of harmonisation is not adhered to.

I do not think that conventions should be strictly language dependent. If this is done strictly our orthographies may continue to undergo revisions, modifications etc., unless an early decision on an accurate, convenient and harmonised way of establishing them is taken.

On the basis of the examples provided and partly in agreement with Amayo and Williamson, we suggest that not only should nouns and their modifiers be written separately but that all content words, nouns, verbs, adjectives, as well as function words, be written in their full forms. As people have different idiolects a number of these boundary processes, which are often optional, will then be applied according to the learner/reader speech style. The basic achievement will be that the learner can spell each word in its full form correctly without being in doubt of the quality of any missing segment.

An alternative to this is to use the hyphen or apostrophe only between a function word and a content word. As function words constitute a closed set, the use of these notations to represent their lost vowels, will not create as much problem as would be the case if all elided vowels were so represented. For instance, the number of hyphens in a passage will be reduced; the quality of the vowel of the items can readily be made known by giving a list of their full forms in an early part of the text as the items are limited in number.

6.5 THE GENITIVE CONSTRUCTION IN ORA

The problem in Ora is not, however, exactly the same as in some other languages. Whereas any of the above alternatives will work for Ora, there is another major problem, that of representing genitival constructions. Whereas the language permits unusual sequences of vowels, in genitival constructions an epenthetic consonant 'gh' [ɣ] is optionally used between both nouns. The nature of the vowel that occurs with this consonant is unknown and cannot therefore be represented in isolation as a guide. Whereas some languages have an optional CV genitival marker and a high tone which is obligatory, with or without the seegmental morpheme, the only segmental reflex of the genitival marker in Ora is the consonant 'gh' [ɣ]. In Isoko and Urhobo one can say, depending on the speed of speech, either 29a, b, c, d, e or f:

29 a. **obe ọ rọ́ óni** b. **obe ọ róni** c. **obe róni**
d. **obe óni** e. **oboọ́ni** f. **obóni**

'book that of mother' i.e. 'mother's book'

One knows the quality of the vowels of the linking morphemes between the nouns. Thus, if we choose to use a hyphen or apostrophe in 29b and write obe ọ r-oni 'mother book', the reader can quickly check the glossary or table of notations or conventions to see what 'r-' in this environment is in its full segmental form.

This cannot be done for the genitival marker in Ora. Whereas there are monosyllabic morphemes made up of single segments in Edoid languages, such segments

are usually syllabic. Unfortunately 'gh' is not syllabic and does not bear a tone; it is rather followed by a floating high tone, which effects changes on neighbouring tones. Since 'gh' cannot be written in isolation, perhaps it should be written with one of the two nouns. If it is written as part of the first, a word final consonant would be introduced. This would be a violation of the sequential structure of segments in the language.

Perhaps, it could be written as part of the following noun. Whereas word initial consonants occur in the language, all nouns begin with a vowel prefix. From our discussion so far, it is clear that we do not consider writing the whole phrase as a single compound word with intervocalic 'gh', which would be acceptable by the structural pattern. In a situation like this, the only alternative is the use of the hyphen or apostrophe between the genitival 'gh' and the initial vowel of the second noun as in 30.

30a.	**ẹgho ọbo**	**ẹgho gh-ọ́bo**
	'money' 'doctor'	'money of doctor'
b.	**úvi ẹ́we**	**úvi gh-ẹ́we**
	'rope' 'goat'	'rope of goat'
c.	**awa ọba**	**awa gh-ọ́ba**
	'dog' 'king'	'dog of king'

The point here is that we are dealing with a phonology in transition. In a number of the New-Benue Congo (particularly Edoid which is our focus) languages, there is a floating high tone genitival marker. In a few, there is still evidence of a segmental morpheme with a high tone as in Urhobo; in others the only reflex of a segmental morpheme linker is a non-tone bearing consonant as in Ora, while in the rest, the only reflex of a genitival linker is a floating high tone.

Where we have a system still in transition as in Ora, our orthographic convention should neither facilitate nor hinder the change. By representing the linker 'gh' with a hyphen or apostrophe we have only represented the fullest alternative of the speech we hear, without any prescriptions.

Of equal interest is this transitional phonology for language learning and acquisition. It has been popularly hypothesized and discussed by various linguists that language change (sound change in our case) is effected in part at the level of language acquisition. Some evidence here and there has been advanced in support of this. The only way that this hypothesis may be finally proved wrong or right is by studying the phonetic and phonological properties of the speech patterns of different age groups with documentary data from different languages.

A few of my pilot studies have shown this to be true. A preliminary study of the phonetic variations in the speech of Isoko adults and children revealed this from speakers of the same dialect living in the same village. All alveolar fricatives before front vowels were pronounced [s] or [z] by the adults in all environments, but these sounds were pronounced [ʃ] and [ʒ] by children in words like [esi]/[eʃi] 'pig' [uzi]/[uʒi] 'sponge'.

If cases like these already exist, orthographers may be precipitating more changes at the level of the learner by being too abstract or superficial in their conventions. By this proposed convention for Ora one cannot be accused of reintroducing the out-going genitival linker as a whole but simply representing the part of it, 'gh', which is the only segmental reflex of the linker. The use of the hyphen (or apostrophe) in this case does not only indicate the absence of a segment, but of one whose quality is unknown. This should actually serve as evidence for opting for the representation of the full forms of all

items in the orthography except in cases where the quality of the segment is unknown, but where there is evidence that there was originally an existing segment constituting part of a morpheme which is still on its way out. This will of course be unnecessary for cases where segments are lost due to synchronic phonological processes. The convention further helps to maintain the structural pattern of the language, not only by separating a lone consonant from the initial vowel prefix of the noun, but also by not introducing a closed syllable.

If on the other hand, one does not include this 'gh', one would be indirectly prescribing an obligatory omission of 'gh' for a reader/learner who is already used to pronouncing it in his own idiolect. These are problems to be taken into consideration in designing orthographies for transitional phonologies.

7. SUMMARY AND CONCLUSION

This paper has demonstrated problems in devising orthographies for languages with transitional phonologies.

Among the major issues raised are the representation of nasal vowel phonemes after nasal consonants; its implication for the learner and thus its role as a precipitant for structural change. We have therfore argued against the marking of nasal vowels after nasal consonants (with the use of a post vocalic -n) in orthographies. With or without the post vocalic -n the vowel will still be nasalised. This is a phonetic universal tendency, except that the degree varies from language to language and from speaker to speaker.

One of the most interesting features of general phonetics and linguistic theory as it affects the acquisition of speech in this language is the pervasiveness of a hitherto unfamiliar sequence of vowels. Native speakers of the language generally have no difficulty in pronouncing vowel clusters ranging from two to five. Whereas these sequences are permissible in the language, there is an optional epenthetic genitival consonant linker, the representation of which creates a problem in the orthography of the language. We suggest that this consonant be represented in the orthography with a hyphen between it and the following noun. The hyphen or apostrophe in such a case differs from the convention used elsewhere as it signifies a lost vowel whose quality is synchronically unknown, but part of a morpheme whose only reflex is a non-syllabic consonant.

On word division it is suggested that all words be represented in their full forms as this is the only way by which a learner can know the concrete representation and therefore spelling of any item. The paper equally argues that where dynamic processes create problems in the choice of a convention in the orthography, one should aim midway between a more abstract phonological and a more concrete phonetic representation. This should be the case particularly when confronted with transitional phonologies such as Ora.

It is hoped that the material presented so far will help not only in the revision of Ora orthography and those with similar problems, but will be useful to teachers of English as a second language to speakers of Ora as well as some other Edoid languages. We hope it will also be useful to teachers of any of the three major Nigerian languages to these same people, with the implementation of the Federal Government Policy on Language in Education.

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