

THE LIMITS OF ACCURACY IN THE DESIGN OF ORTHOGRAPHIES

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This paper examines the extent to which orthographies (especially the alphabet) may be based on an 'accurate' (usually abstract) analysis of the sound system of a language. Attention is focussed on the vowels of Urhobo which has seven phonetic and nine phonemic vowels, including two e's (e_1 , e_2) and two o's (o_1 , o_2). It is demonstrated that e_2 and o_2 are I and U respectively, thus making Urhobo a typical West African nine-vowel system, based on Advanced Tongue Root (ATR) or on the expanded pharynx (EXPANDED). Native speakers are found to favour and be at home with the current orthography which is based on a seven-vowel system. Attempts to be accurate in Okpe, a system similar to Urhobo, prove difficult and unpopular with native speakers.

Ce document étudie jusqu'à quel point l'orthographe (surtout de l'alphabet) peut se baser sur la façon correcte (habituellement abstraite) d'analyser le système de sons d'une langue. L'emphase est mise en particulier sur les voyelles d'Urhobo. Il y a sept voyelles phonétiques et neuf voyelles phonémiques en Urhobo, y inclue deux e's (e_1 , e_2) et deux o's (o_1 , o_2). Il est montré que e_2 et o_2 sont I et U respectivement, donc le système de voyelle d'Urhobo a neuf voyelles, un système typique de l'Afrique de l'ouest basé sur 'Advanced Root Tongue' (ATR) et sur le pharynx allongé. Les gens parlant cette langue de naissance préfère et sont plus à l'aise avec l'orthographe courante basée sur le système à sept voyelles. Les gens dont la langue maternelle est l'Okpe, un système semblable à l'Urhobo, ont de la difficulté et sont mal à l'aise lorsqu'on est trop exact.

O. INTRODUCTION

Current government interest in the use of minority languages of Nigeria in education directly challenges linguists to pay greater attention to reducing these minority languages to writing. Since most of these languages are unwritten or have inaccurate writing systems at variance with the facts of the languages, the linguist must of necessity attempt an accurate analysis of them as the basis for the writing systems he will propose. In trying to base his proposals on his accurate analyses, he will find himself face to face with the problem of changing established habits and matching theory against practice.

In this paper,¹ I present an analysis of the vowel system of the Agbarho dialect of Urhobo (regarded as the standard Urhobo dialect), which I will examine both in terms of analysis and in terms of orthographic practice. Urhobo is an Edoid language and is the best-known of the South-western Edoid subgroup.

1. THE VOWELS OF URHOB

Phonetically, there are seven oral and seven nasalized vowels in Urhobo, each oral vowel having a nasalized counterpart.

1.	Oral		Nasalized	
	i	u	ĩ	ũ
	e	o	ẽ	õ
	ɛ	ɔ	ɛ̃	ɔ̃
	a		ã	

Oral and nasalized vowels contrast, as in the following examples:

¹ This paper was first proposed for the LAN Conference in Port Harcourt in July, 1987. However, although the idea was born much earlier, the paper has gained from my experience with teachers of Okpe, late 1988.

- | | | | | | | |
|----|----|-----|----------------|----|-----|----------------------|
| 2. | a. | òrí | 'pomade' | d. | fá | 'thresh (e.g. rice)' |
| | | èrì | 'fish' | | fà | 'loosen, free' |
| | b. | sè | 'call' | e. | f̄ | 'be quiet' |
| | | s̄è | 'deny, refuse' | | f̄ | 'be neat, clean' |
| | c. | écf | 'door' | f. | ècò | 'to steal' |
| | | úkē | 'egg' | | ètò | 'hair' |
| | | | | g. | sù | 'rule, lead' |
| | | | | | fù | 'extinguish' |

So far I have not found /ĩ/ after stops or fricatives. Even so the evidence for postulating significant nasalization and therefore recognizing a set of seven nasal vowels is quite comprehensive, especially as the cases of /ē/ and /ō/ are beyond doubt.

2. VOWEL HARMONY

An examination of the noun normally suggests that there is no vowel harmony in Urhobo:

- | | | | | |
|----|------|-------------|-----|------------|
| 3. | èvé | 'goat' | èdà | 'matchets' |
| | ègɔ | 'bottles' | òdē | 'name' |
| | ɔ̀bò | 'doctor' | òdà | 'matchet' |
| | òbò | 'hand, arm' | àsò | 'night' |
| | | | òsè | 'suitor' |

However, vowel patterning in the verb provides some evidence of vowel harmony. The 3rd person singular form of the simple past is presented below:

- | | | | | | | |
|----|----|---|----|----|---------------|-----------------|
| 4. | a. | ò | fí | rì | 'he threw' | (he-throw-past) |
| | b. | ò | sé | rì | 'he called' | (he-call-past) |
| | c. | ò | ré | rè | 'he ate' | (etc) |
| | d. | ò | dé | rè | 'he bought' | |
| | e. | ò | dá | rè | 'he drank' | |
| | f. | ò | rɔ | rè | 'he survived' | |
| | g. | ò | có | rì | 'he stole' | |
| | h. | ò | só | rò | 'he sang' | |
| | i. | ò | rú | rù | 'he did' | |

Students of vowel harmony would immediately identify the $o \sim \text{ɔ}$ alternation in the 3rd person singular pronoun. Based on that alternation, the vowels fall into two groups (we ignore nasalized vowels which behave exactly as their oral counterparts):

- | | | | | |
|----|---------|---|---------|---|
| 5. | group 1 | | group 2 | |
| | i | u | e | o |
| | e | o | ɛ | ɔ |
| | a | | | |

Two vowels, /e/ and /o/, appear in both groups because they can go with either of the two shapes of the 3rd person singular pronoun (cf 4b with 4c and 4g with 4h). If we now label e and o in group 1 as /e₁ o₁/ and those in group 2 as /e₂ o₂/, 5 can be presented as 6:

6.	group 1		group 2
	i	u	e₂ o₂
	e₁	o₁	ɛ ɔ
			a

The possible conclusion we might draw from this data is that Urhobo's seven vowels are derived historically from nine. An absolute neutralization rule has merged /e₂ o₂/ with /e₁ o₁/. From our knowledge of vowel systems in the rest of Edoid, we know that the two vowels suggested by /e₂ o₂/ are /ɪ ɔ̃/ respectively. The closely related languages of Isoko and Eruwa both have nine vowel systems which include /ɪ/ and /ɔ̃/.

Further evidence in support of the analysis of /e₂ o₂/ as /ɪ ɔ̃/ comes from the infinitive/gerund forms of these verbs:

7.	a.	èfjó	'to throw, throwing'	(fɪ 'throw')
	b.	èsé	'to call, calling'	(sɛ ₁ 'call')
	c.	èrjǒ	'to eat, eating'	(rɛ ₂ 'eat')
	d.	èdɛ́	'to buy, buying'	(dɛ́ 'buy')
	e.	èdá	'to drink, drinking'	(dà 'drink')
	f.	èrɔ́	'to survive, surviving'	(rɔ́ 'survive')
	g.	ècò	'to steal, stealing'	(cò ₁ 'steal')
	h.	èswǒ	'to sing, singing'	(sò ₂ 'sing')
	i.	èrwó	'to do, doing'	(rù 'do')

Matching 7 with 6, we note that **i u e₂ o₂** are the four vowels which, as verb stem vowels, attract a suffixal **o** or **ɔ** and then become a glide. /i u/ are the closest vowels in group 1 while /e₂ o₂/ are the closest in group 2. We may therefore justifiably set up /e₂/and /o₂/ as /ɪ/ and /ɔ̃/ respectively.

8. The nine vowels of Urhobo

EXPANDED/ATR		NONEXPANDED/NON-ATR	
i	u	ɪ	ɔ̃
e	o	ɛ	ɔ
			a

In 8 we have now entered /ɪ/ and /ɔ̃/ even though what we have phonetically are [e] and [o]. We have also properly entered the vowels under the typical West African vowel harmony labels [EXPANDED]/[ATR]. Group 1 vowels are [+ATR] while group 2 are [-ATR].

This analysis receives further support from the vowel system of Okpe and Uvbie (Uvwie) where Hoffmann (1973) and Omamor (1973) have reported similar phenomena and analysis.

3. THE REPRESENTATION OF URHOBOW VOWELS IN URHOBOW ORTHOGRAPHY

In sections 1 and 2 above, we discussed two aspects of Urhobo vowels: nasalization and vowel harmony. We noted that nasalization is significant and, in section 2, we demonstrated not only that there is vowel harmony in Urhobo but also that the phonological system of Urhobo reflects a nine-vowel system even though it contains only

seven vowels phonetically.

In Urhobo orthography, the representation of nasalization follows the common practice of indicating nasalization by writing an 'n' after the vowel or vowels to be nasalized. Thus the items in 2 above would be written orthographically as in 9:

9.	a.	òrí	'pomade' ²	d.	fà	'thresh (e.g. rice)'
		èrìn	'fish'		fàn	'loosen, free'
	b.	sè	'call'	e.	fọ	'be quiet'
		sèn	'deny, refuse'		fọn	'be clean, neat'
	c.	écé	'door'	f.	ècó	'to steal'
		úkẹn	'egg'		ẹ̀tòn	'hair'
				g.	sù	'rule, lead'
					fùn	'extinguish'

This practice is suspended in a number of cases. For example, although [n] and [l] belong to the same phoneme /l/ ([n] occurs always before nasal vowels while [l] occurs only before oral vowels), Urhobo orthography does not use just one symbol for the one significant sound represented by [l] and [n]. Instead, both are written:

10. [l] and [n] in Urhobo orthography

phonetic		phonemic	orthographic
[nì]	'look'	/lì/	ni
[nẹ̀]	'defecate'	/lẹ̀/	ne
[nù]	'pull out'	/lù/	nu
[lò]	'shine'	/lò/	lo
[là]	'burn'	/là/	la

It may be argued that this represents a case of over-differentiation: more symbols are used than absolutely necessary. It should be noted, however, that the availability of two Roman symbols, one for each allophone, has been helpful. In the same language /w/ and /j/ both have two allophones each - one oral and the other nasalized. In each case, the difference is indicated through the nasality of the vowel (as against the l/n case where the difference is indicated in the allophones):

11.	phonetic		orthographic
	òwḗ	'leg'	òwọ
	úwé	'nose'	úwén
	jà	'write'	yà
	ḗà	'walk'	yàn

The situation with the vowels is different. Urhobo orthography uses seven vowel symbols and represents exactly seven vowels.

² There is no tone-marking in current Urhobo orthography.

12.	phonetic	phonemic	orthographic (phonetic)	orthographic (phonemic)
	i	i	i	i
	e	e ₁	e	e
	e	e ₂	e	ɨ
	ɛ	ɛ	ɛ	ɛ
	a	a	a	a
	ɔ	ɔ	ɔ	ɔ
	o	o ₁	o	o
	o	o ₂	o	ɔ
	u	u	u	u

Omamor (1988 and personal communication) prefers the orthographic representation founded on the 'accurate' analysis of the language as having nine vowels. In fact, in her 1988 work on Okpẹ, she introduces exactly the phonemically based set of symbols (see 12 again). The overriding consideration in such a proposal is accuracy. In particular, the following kind of question is posed. Given two verbs, *so* 'sing' and *co* 'steal', for example, how is the learner or reader to know which *o* (*o*₁ or *o*₂) he is dealing with at any given moment? In order to save the learner or reader this problem, *su* and *co* are proposed: the *o*₂ in *so* 'sing' is a [-ATR] vowel and is therefore subdotted. The same argument applies to *e*₁ and *e*₂: *e*₂ is a [-ATR] vowel, *ɨ*. In this way the orthography properly represents the underlying phonemic vowel contrasts in the language.

However, there are compelling reasons why one should ignore the apparent accuracy of the nine-vowel approach to the writing of these vowels in favor of the seven-vowel approach. Some of the reasons relate to our interpretation of accuracy; others derive from practical attempts at teaching the accuracy-oriented system.

First of all, it is by no means obvious or certain that the difference between the two *e*'s and *o*'s is now lexically relevant even though it remains valid for certain phonotactic operations. For example, a native speaker invariably knows whether the *e* in a word should undergo glide formation or not (e.g. *re* 'eat' *ɛrjɔ* 'to eat'). The learner can be taught to recognize these. A dictionary of Urhobo can indicate such vowels through the grammatical information it gives about each verb.

Secondly, the phonemically 'accurate' system runs into problems with vowel cooccurrence. Given two vowels, one (a prefix) at the beginning and the other in the stem (e.g. *oda* 'matchet'), this system would have to look at the stem to decide that the *o* in *oda* is in fact *ɔ* (representing *ɔ* or *o*₂), and that the *e* in *eda* 'matchets' is *ɨ* (representing *i* or *e*₂). In actual practice this system is not foolproof. Both in individual polysyllabic words and in compound or complex words, it is not always clear just which *o*'s and *e*'s must be treated as [-ATR] and so subdotted.

In practical situations both in and outside the classroom, the native speakers prove to be more at home with the seven-vowel approach than with the nine. This was obvious from the experiences with prospective teachers of Okpẹ when I and two other colleagues attempted to teach them a new, accurate nine-vowel orthography. We had to resort to such tricks as 'if the first vowel of the word is subdotted or is *a*, then change *e* to *ɨ* and *o* to *ɔ*'. By this rule *ɛbe* 'book' would become *ɛbɨ*. Similarly, we had to say 'if the stem vowel (usually the vowel after the first consonant) is subdotted or is *a*, change *e* to *ɨ* and *o* to *ɔ*'. That we had to resort to such nonlinguistic techniques is, in my view, evidence

that we were working against the linguistic instincts of the native speaker.³

I suspect that it may be argued that these teachers were laboring under interference from the seven-vowel Urhobo orthography. However, that would only support our argument that the seven-vowel Urhobo practice was well assimilated because it is nearer the speakers' competence in, or inherent knowledge of, the vowel system of Urhobo.

In these circumstances, a seven-vowel analysis of Urhobo is valid for orthographic purposes. Where there is absolute neutralization such as the one caused by the historical change by which proto-South-Western Edoid *ɪ > e and *ɔ > o without reference to context, then the designer of a writing system as a whole will do well to base his alphabetic on the post-neutralization forms which are more phonetic.

Again, even the fact that e₂ and o₂ behave like ɪ and ɔ respectively in glide-forming environments does not detract from the validity of our position: by becoming glides between a consonant and another (non-identical) vowel, the vowels already mark themselves out as close vowels. In any case, in such situations, we can write them as i and u respectively without any problem. In fact, any attempt to discriminate between i and e₂ and between u and o₂ in vowel sequences in stems is bound to fail. For example, Proto-Edoid *vɪɛ 'cry, weep' and *ɬiɔ 'give birth' both have reflexes in Urhobo viɛ [vjɛ̃] and vbiɛ [vjɛ̃] respectively. There is no need to attempt accuracy by writing viɛ: the two sequences, one originally [-ATR] and the other [+ATR], have now become iɛ. The subdotted ɛ in the sequence does not help us to determine which i should be subdotted. The only way we can tell which of the sequences was originally [+ATR] and which [-ATR] is to try them in harmony-inducing environments. Then we find viɛ attracts the prefix ɸ while vbiɛ attracts o. Therefore, the iɛ sequence in viɛ is [-ATR] while that in vbiɛ is [+ATR].

Finally, any revision of an orthography must take into account just how established that system is. Although Urhobo has no comprehensive and modern writing system, the publication of the Bible in Urhobo is a major achievement of the system now in practice. Any proposals for change will have to take into account the system adopted in the Bible. To that extent, radical innovations such as those of Omamor (1988) are still easier to pursue in languages without any literature than in languages with some established tradition.

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Received April, 1991.

³ I have also found with Adult Education students in my practical orthography class, that the seven vowel system is easier to learn for native speakers of Urhobo and Uvwie.