

Long Vowels and Diphthongs in Miya and Hausa

Russell G. Schuh

1. INTRODUCTION

Miya and Hausa, two West Chadic languages spoken in northern Nigeria, both have vocalic inventories containing long and short vowels as well as two rising diphthongs.

(1)	MIYA			HAUSA		
	i:		u:	i:		u:
		ə		i		u
				e:		o:
				e		o
		a:			a:	
		a			a	
	a ⁱ		a ^u	a ⁱ		a ^u
	a			a		

The pronunciation associated with the symbol ə for Miya is most frequently a high, central vowel [ɨ], but it also has conditioned variants [i] and [u], found, in particular, when contiguous to the glides /y/ and /w/ respectively. Miya has no underlying mid vowels, though phonetic mid vowels do occur as conditioned variants of the low vowels and diphthongs (see Schuh (n.d.) for a detailed account of Miya phonology). All the vowels listed for Hausa are contrastive in at least some environments.

In this paper, I concentrate on the question of whether the phonetic long high vowels, [i:] and [u:], found in both languages should be analyzed as syllable rimes composed of two vocalic moras (/ii/ and /uu/) or as rimes composed of a short vocalic nucleus plus a glide coda (/iy/ and /uw/). I will conclude that Hausa requires the former analysis and Miya the latter. Although I will consider only the long high vowels in detail, the conclusions have similar implications for the analysis of diphthongs, i.e. whether [aⁱ] and [a^u] should be interpreted as /ai, au/ or /ay, aw/.

2. DISTRIBUTION OF RIMES

2.1 Consider first the distribution of the syllable rimes. In Miya, the follow-

ing rimes may appear in word final position:

(2) $-i:$, $-u:$, $-\text{ə}$, $-a$, $-a^i$, $-a^u$, $-aC$, $-aC$

"C" in the last two must be a sonorant consonant (nasal, liquid, or, I will argue, glide). Note that long $-a:$ is not a possible word final rime. Moreover, the presence of $-\text{ə}$ as a rime is always predictable: in word final position $-\text{ə}$ only appears where the preceding consonant is not a sonorant, e.g. *tal* 'beer' (but no **talə*) vs. *tasə* 'Acacia albida' (but no **tas*). If $[i:]$ and $[u:]$ were considered long vocalic rimes, the distribution of rimes would be strangely skewed: long high vowels, but not their short counterparts, could appear word final, whereas for low vowels, only the short one could appear word final.

If, on the other hand, we analyze $[i:]$ and $[u:]$ as $/iy/$ and $/uw/$ respectively, these rimes fall into the $-\text{ə}C$ type, with vowel quality accounted for by an independently needed rule which assimilates ə to a contiguous glide (cf. *tiyim* 'tooth' but no **təyim*, *tuwun* 'mine (f)' but no **təwən*). In fact, we can reduce the system of underlying vowels in Miya to $/a, a:/$, since we have eliminated long high vowels as underlying, and we can account for all short high vowels as being variants of a single vowel whose quality and positioning are entirely determined by sequence structure.¹ Similarly, the diphthongs will be $-aC$ rimes, i.e. $/-ay, -aw/$ rather than $/-ai, -au/$, the latter being vocalic sequences not otherwise found in Miya.

2.2 Turning to Hausa rime distribution, in word final position we find that all rime types are possible, i.e. all vowels (long and short), the diphthongs, and $-VC$ (where V must be short, since Hausa does not allow long vowels in closed syllables, and C is generally a sonorant, though this condition is not so rigidly observed as in Miya, cf. *takwas* 'eight'). Thus, one can find such minimal pairs or near minimal pairs as *ji:bi* 'day after tomorrow' vs. *ji:bi:* 'any meal', *ya:sa:mu:* 'he got (it)' vs. *ya:sa:mu* 'it was obtained', *dashe:* 'transplanting' vs. *(a) dashe* 'transplanted', *ba:ko:* 'stranger' vs. *Ba:ko* man's name, *da ra:na:* 'with the sun' vs. *da ra:na* 'at midday'. Thus, there is no distributional skewing as in Miya.

If we consider Hausa long vowels and diphthongs to be underlyingly $/VV/$, permissible Hausa syllable structure can be summarized very simply as $CV\left(\begin{array}{c} V \\ C \end{array}\right)$. If, however, we were to adopt the $V + G$ analysis of long vocalic rimes proposed for Miya, a syllable such as $[Ci:]$ would be underlyingly $/Ciy/$, syllables of

the type /Ca:/ would be underlyingly /Caa/, with no counterpart to the claimed /Ciy/.² The same might be said for Miya, but as we will see, in Hausa, the long vocalic rimes [i:, u:, e:, o:, a:] share a number of structural properties, whereas in Miya they share no properties other than phonetic length, as far as I know.

3. EVIDENCE FOR OR AGAINST CONSONANTAL GLIDE CODAS IN RIMES

3.1 The regular plural formation rule for Miya is a reduplication pattern of the shape -aCaw, where C is the last consonant of the noun stem:

(3)	<i>atar</i>	'squirrel'	pl.	<i>atararaw</i>
	<i>maadzə</i>	'river'		<i>maadzadzaw</i>
	<i>kwakwi</i>	'granary'		<i>kwakwiyaw</i>
	<i>mudu</i>	'python'		<i>muduawaw</i>
	<i>varay</i>	'seed'		<i>varayayaw</i>
	<i>saw</i>	'tail'		<i>sawawaw</i>

By analyzing the rimes of long high vowels and diphthongs as underlying /VC/, no special rules are needed to account for the consonant in the reduplicated part of the plural. Were these rimes analyzed as /VV/, we would need a devocalization rule to convert the second V to C before applying plural formation, a complication of the phonology with no independent justification.

3.2 Hausa has a number of vowel shortening rules, some of which are illustrated in (4). The examples in (4a) illustrate a general rule which shortens a vowel in a closed syllable, in this case where a suffix -n indicating previous reference is added to a noun. The examples in (4b) illustrate a fairly productive process which allows a proper name to be created from a common noun by shortening the final vowel. (Most common nouns end in long vowels). The examples in (4c) illustrate a non-productive relation between verbs and their pluractional counterparts, the latter being formed by reduplicating initial CVC of the stem.³

(4)	a. Closed syllable shortening:		
	<i>gidaa</i>	'house'	<i>gidan</i> 'the house'
	<i>riimii</i>	'kapok tree'	<i>riimin</i> 'the kapok tree'
	<i>tsuntsuu</i>	'bird'	<i>tsuntsun</i> 'the bird'
	<i>birai</i>	'monkeys'	<i>biran</i> 'the monkeys'
	<i>kibau</i>	'arrows'	<i>kiban</i> 'the arrows'

b. Proper name formation:

<i>markaa</i>	'height of rainy season'	<i>Marka</i>	name of woman born at this time
<i>baakoo</i>	'stranger'	<i>Baako</i>	man's name
<i>bakii</i>	'black'	<i>Baki</i>	"Blackie"
<i>kumaatuu</i>	'cheeks'	<i>Kumaatu</i>	name of someone with fat cheeks

c. Verbs and related pluractionals:

<i>taaraa</i>	'gather'	<i>tattaraa</i>	'gather many'
<i>kiiraa</i>	'forging'	<i>kirkiraa</i>	'invent'
<i>duukaa</i>	'stoop'	<i>duudukaa</i>	'crouch down'

If we analyze long vowels as underlyingly /VV/, the rule(s) needed to account for such processes can be simply formulated as $V \rightarrow \emptyset$ in the appropriate environments. An analysis where long high vowels and diphthongs are underlying /VC/ would require either a complication of the shortening rule or an extra rule vocalizing the glide before shortening in the environments in question.

3.3 Hausa singular/plural pairs like those illustrated in (5) provide further data showing the undesirability of the /VC/ rime analysis.

(5) a.	<i>birnii</i>	'city'	pl.	<i>biraanee</i>
	<i>kaskoo</i>	'clay bowl'		<i>kasaakee</i>
b.	<i>wurii</i>	'place'		<i>wuraaree</i>
	<i>damoo</i>	'monitor lizard'		<i>damaamee</i>
c.	<i>haalii</i>	'circumstance'		<i>haalaayee</i>
	<i>reemaa</i>	'rock dassie'		<i>reemaayee</i>
	<i>zoomoo</i>	'hare'		<i>zooaayee</i>
	<i>suunaa</i>	'name'		<i>suunaayee</i>
	<i>kiifii</i>	'fish'		<i>kiifaayee</i>
	<i>bauree</i>	'fig tree'		<i>bauraayee</i>

The plural types illustrated in (5a-c) are in complementary distribution. For words with a medial CC sequence, such as those in (5a), long -aa- is inserted between the two consonants, and the final vowel is -ee; for those with an initial CV syllable (V being short), long -aa- is added, the second consonant is reduplicated, and the final vowel is -ee; for those with initial syllables having long vocalic rimes, including diphthongs, the plural is marked by a suffix -aayee. (See Schuh 1972, Newman 1972, Leben 1980, and references cited therein for more information on these plurals.) As in the statement of the vowel shortening rule(s) above, the statement of the plural formation rule is straightfor-

ward if we analyze all the long vocalic rimes as /VV/, but would be considerably more complex if they were analyzed as /VC/.

It is worth noting here that the schema presented above for permissible Hausa syllable structure, viz. CV($\begin{matrix} V \\ C \end{matrix}$), leaves open the possibility of CVG (G = glide) syllables, since there is no restriction stated against the second C being G. Thus, we would predict rimes of the type /iy, uw, ay, aw/ alongside /ii, uu, ai, au/. Hausa does, in fact, seem to require recognition of such rimes. Note the following singular/plural pairs:

(6)	<i>miikii</i>	'ulcer'	pl.	<i>miyaakuu</i>
	<i>duutsee</i>	'stone'		<i>duwaatsuu</i>
	<i>kaimii</i>	'spur'		<i>kayaamee</i>
	<i>kyaree</i>	'door panel'		<i>kyawaaree</i>

These nouns have plurals which suggest that the rime of the initial syllable should be /VC/, e.g. /miykii/ inserts -aa- between the medial CC sequence to give plural *miyaakuu*. (The first two examples in (6) belong to a class ending in -uu rather than -ee in the plural, but otherwise the distribution of the inserted long -aa- is the same.) While we may want to allow such underlying structures to account for singular/plural pairs like these, they represent an unproductive historical remnant from a time when Hausa phonology may have been more like that of Miya. In modern Hausa the productive pattern is to treat long vowels and diphthongs as /VV/, even where historically they derive from *VC sequences, as in (7). (See Schuh 1972 and references cited there for the sound change which vocalized syllable final velars.)

(7)	<i>buuzuu</i>	< *bugzu	'Tuareg'	conservative plural	<i>buɣaaɟee</i>
				modern plural	<i>buuzaaɟee</i>
	<i>ɓaunaa</i>	< *ɓakna	'buffalo'	conservative plural	<i>ɓakaanee</i>
				modern plural	<i>ɓaunaayee</i>

Likewise, *kiifii* 'fish', seen in (5c), comes from original *kirfi (see Newman 1970 for vocalization of *r > y in Hausa).

3.4 One argument that would appear to favor a VG analysis for long high vowels and diphthongs in Hausa is the presence of an intervening glide when vocalic suffixes follow these rimes. For example, when the feminine suffix -aa is added to a noun (Newman 1979b), there is an intervening glide -y- or -w- depending on the quality of the preceding vowel, e.g. *huntuu* 'naked (m)', fem. *huntuwaa*, *shudii* 'blue (m)', fem. *shuudiyaa*. This is not a strong argument against a /VV/

analysis since devocalization of vowels between vowels is common cross-linguistically (cf. French *fuir* 'to flee' but *fuyons* 'we flee', pointed out in discussion at the conference by Jean Lowenstamm). Moreover, in Hausa a rule of "Glide Insertion" is independently required to account for the medial glides in forms where there are no high vowels or diphthongs from which to derive the glides, e.g. *shaayar* 'to water' (from *shaa* 'to drink' + *-ar* "causative"), *sooyayyaa* 'mutual love' (from *soo* 'to love' + *-ayyaa* "reciprocal noun formative"). This process of glide insertion will account for all apparent cases of devocalization, obviating the need for such a rule in Hausa.

3.5 Miya has several types of pluractional verb formation in complementary distribution depending on root structure. We will consider here only roots of the shapes CəCCə, CəC, and CV, pluractionals of which are illustrated in (7):⁴

(7)	a.	<i>vərkə</i>	'give birth'	plurac.	<i>varka</i>
		<i>təkən</i>	'beat drum'		<i>takəna</i>
		<i>buwya</i>	'break (stick)'		<i>ɓawya</i>
	b.	<i>pər</i>	'cut'		<i>pəpəra</i>
		<i>tsəga</i>	'sit down'		<i>tsatsəga</i>
		<i>tiy</i>	'hit'		<i>tatiya</i>
		<i>kwiy</i>	'catch'		<i>kwakwiya</i>
	c.	<i>sa</i>	'drink'		<i>səsa</i>
		<i>pə</i>	'collect'		<i>pəpə</i>

Type (7a) applies to a root with three consonants, inserting *-a-* between the first two consonants and adding final *-a*; type (7b) applies to roots with two consonants, adding an initial syllable consisting of C_1a- and adding final *-a*; type (7c) applies to roots with a single consonant, adding an initial syllable consisting of $Cə-$. For the types illustrated in (7a, b), if we analyze the rimes [i:, u:] as /VG/ where $G = C_2$ of the root in each case, the appropriate pluractional patterns will automatically apply. If roots such as 'hit' and 'catch' given in (7b) had only one root consonant, we would expect type (7c) to apply.

3.6 Hausa has several vowel lengthening processes, two of which are illustrated in (8). The examples in (8a) illustrate the lengthening of final vowels of Grade III and irregular intransitive verbs to form verbal nouns. The examples in (8b) illustrate the lengthening of final vowels of nouns before the genitive linkers *-n-* (for masculine nouns) and *-t-* (for feminine).⁵

(8) a. Verbal noun formation:

<i>shiga</i>	'enter'	VN	<i>shigaa</i>
<i>kooshi</i>	'be sated'		<i>kooshii</i>
<i>gudu</i>	'run'		<i>guduu</i>

b. Lenthening before genitive linker:

<i>faada</i>	'palace'	<i>faadaa-t-aa</i>	'my palace'
<i>maage</i>	'cat'	<i>magee-n-aa</i>	'my cat'
<i>agoogo</i>	'watch'	<i>agoogoo-n-aa</i>	'my watch'
<i>tikiti</i>	'ticket'	<i>tikitii-n-aa</i>	'my ticket'
<i>aku</i>	'parrot'	<i>akuu-n-aa</i>	'my parrot'

By analyzing the long vocalic rimes here as /VV/, the lenthening rule is straightforwardly the doubling of the vocalic mora of the syllable (or changing of the vowel length feature to [+long]). Were the long high vowel rimes analyzed as having a final glide, they would require a rule of "Glide Addition", a rule entirely different from that required for the non-high vowels.

3.7 A second piece of evidence favoring the /VV/ analysis of long high vowels in Hausa is the so-called "ablaut" relation between certain verbs and their verbal nouns and between certain intransitive verbs and related forms:

(9)	<i>keeraa</i>	'forge'	<i>kiiraa</i>	'forging'
	<i>tseeree</i>	'escape from'	<i>tsiira</i>	'escape'
	<i>sooyaa</i>	'fry'	<i>suuyaa</i>	'frying'
	<i>tsoofoo</i>	'old'	<i>tsuufa</i>	'grow old'

Historically, this relationship can be accounted for by a no longer productive vowel lowering process (Newman 1979a). If the rimes in these syllables were not vocalic units, an explanation of both the historical process that led to the alternation as well as the synchronic statement of the relationship would be needlessly complex.

4. CONCLUSION

In this paper I have tried to show that although both Miya and Hausa have certain phonetic vocalic segments in common, the underlying nature of these segments differs. Miya turns out to have no underlying contrasts among high vocalic rimes at all, either in quality or in quantity; all apparent contrasts are accounted for by the presence or absence of glides as syllable codas and by the conditioning of vowel quality by contiguous consonants. Hausa, on the other

hand, has a full range of twelve contrastive vocalic rimes.

I have concentrated on the analysis of long high vowels, but have pointed out in some cases that similar analyses apply to diphthongs, i.e. in Miya, diphthongs are best analyzed as the vowel /a/ followed by a glide, whereas in Hausa they are best analyzed as true vocalic sequences /ai, au/. This paper thus provides additional support for the claims of Newman and Salim (1981), who cited a number of arguments against the /ay, aw/ analysis for Hausa assumed by some researchers. I have included some of those arguments here, e.g. the nature of vowel shortening (cf. 4a) and plural formation (cf. 5c, 7). Other types of evidence presented here could only apply to monophthongal vowels, e.g. vowel lengthening (cf. 8). However, given the generally parallel behavior of long vowels and diphthongs in Hausa, these arguments can be viewed as strengthening the /VV/ analysis of both long vowels and diphthongs.

NOTES

*I collected data on Miya during 1982-83 while I was a visiting Professor in the Department of Nigerian and African Languages at Ahmadu Bello University, Zaria. This field work was supported by a grant from the Wenner-Gren Foundation. My thanks to Sarkin Miya and the people of Miya for my enjoyable visits there and especially to Vaziya Ciroma for his patience and his interest in work on his language. Travel to the 17th Conference on African Linguistics was made possible by a grant from the UCLA Academic Senate.

1. I have discussed the distribution of the short high vowels only in word final position. The following statement informally accounts for the full distribution: The maximal Miya syllable is CVC and no syllable may end in a non-sonorant consonant; if /a(a)/ is not present to separate impermissible sequences, insert ə.
2. Parsons (1970), who analyzes the long high vowels as high V + G, proposes to analyze [a:] as /ah/. I see little justification for such a proposal other than a desire for symmetry, and it also leaves us with the question of how to analyze the short and long mid vowels, e(:) and o(:). For this, Parsons proposes a notion of "syllabic prosody", which, as far as I can see, also has no justification other than to preserve the system proposed for the high and low vowels.
3. I have described these processes as vowel "shortening" in all cases. The types in (4b, 4c) historically more likely involved vowel lengthening (see Schuh 1984:196-197 for some discussion of final long vowels on common nouns, though I no longer believe that the path suggested there for deriving these long vowels is correct). However, even if we take this historical view, a /VC/ analysis for long vocalic rimes has undesirable consequences.
4. Unfortunately, I do not have as full a range of data for pluractionals as I would like. For example, I have no examples of pluractionals from Cuw roots such as zuw 'to leave', for which I would predict ?zazuwa (cf. tatuwa

- 'wipe out bowl with finger, a pluractional presumably from ?*tuw*, though I do not have this form as a non-pluractional). Nonetheless, enough data is available to make the main facts about pluractional formation clear.
5. In the standard dialect, this lengthening process can be illustrated only with first person possessors since all other possessive pronouns begin with a consonant, causing the vowel to shorten in the resultant closed syllable (cf. 4a), e.g. /*aku-n-ka*/ (lengthening) → *akuu-n-ka* (shortening) → [aku-n-ka] 'your (m.sg.) parrot'. In "Western" dialects, where third person masculine possessives are *na-i* 'his (m)', *ta-i* 'his (f)' and thus do not close the syllable, lengthening is heard as expected.

REFERENCES

- Leben, William R. 1980. A metrical analysis of length. *Linguistic Inquiry* 11:497-509.
- Newman, Paul. 1970. Historical sound laws in Hausa and in Dera (Kanakuru). *Journal of West African Languages* 7:39-51.
- Newman, Paul. 1972. Syllable weight as a phonological variable. *Studies in African Linguistics* 3:301-323.
- Newman, Paul. 1979a. The historical development of medial /*ee*/ and /*oo*/ in Hausa. *Journal of African Languages and Linguistics* 1:173-188.
- Newman, Paul. 1979b. Explaining Hausa feminines. *Studies in African Linguistics* 10:197-226.
- Newman, Paul and Bello A. Salim. 1981. Hausa diphthongs. *Lingua* 55:101-121.
- Parsons, F.W. 1970. Is Hausa really a Chadic language? Some problems of comparative phonology. *African Language Studies* 5:218-251.
- Schuh, Russell G. 1972. Rule inversion in Chadic. *Studies in African Linguistics* 3:379-397.
- Schuh, Russell G. n.d. Miya phonology. ms. [Chapter in a descriptive grammar of Miya, in preparation.]

Department of Linguistics
UCLA

