Vowel Harmony in Yamba

Terri R. Scruggs

Introduction

Traditionally, when one speaks of Vowel Harmony, one thinks of, for example, Hungarian or Turkish. In such 'traditional' languages, all suffixes harmonize to the root of the word; that is, the vowels of one morpheme are more important than those of the other morphemes and they affect one (or all) of the features of all the other vowels in the word. But in Yamba, the process is somewhat different. Two clitics, one that occurs in noun phrases and one in verb phrases, undergo harmony based on the stem vowel of the head of the phrase. No other clitics or affixes follow this pattern of harmony. The following data give some examples of cases where it does not happen. The affixes are -à 'question marker', -ā 'if', and -àm/-ām 'my (sg/pl)', where low tone ` and mid tone ¯ distinguish certain morphemes.

(1)		'question marker'	'if he...'	'my...'[1]
'neck'	mi	mi-à	---	mi-àm/mi-ām
'farm'	nzum	nzu-à	---	nzu-ām
'cutlass'	fek	fe?-à	---	fe?-àm/fehe-ām
'go'	lo	lo-à	lo-ā	---
'sing'	yəm	yəm-à	yəm-ā	---
'hear'	yuk	yu?-à	yu?-ā	---
'break'	kɨp	kɨp-à	kɨp-ā	---

In spite of the consonant alternations in the above data, there is no vowel harmony. Aside from these four morphemes, no other vowel-initial suffixes have been found; hence, it is not possible to verify if the quality of the suffix vowel determines whether or not Vowel Harmony will occur.

The two suffixes in which Vowel Harmony does occur contain a vowel which is not a, but rather ə. All other suffixes containing this vowel have an initial consonant which does not undergo any alternation.

(2)	Citation	Causative
'sift'	kpes	kpes-sə
'white'	fəfəp	fəfəp-sə

Vowel Harmony has not been found to occur in suffixes that clearly begin with a consonant (or semivowel) in which that consonant (or semivowel) does not undergo alternation.

(3)		'that ...'	'his ...'
'neck'	mi	mi-na?a	mi-ye
'cutlass'	fek	fe?-na?a	fe?-ye
'banana'	gom	gom-na?a	gom-ye

Yamba is a Benue-Congo language spoken by about 35,000 people in the North-West Province of Cameroon, Africa. The data was collected during the period November 1977 to May 1979 while working in conjunction with the Summer Institute of Linguistics under the auspices of the National Office for Educational, Scientific and Technical Research (ONAREST). Two different men provided the data, one age 22 and the other between ages 40 and 50.

2. Harmonizing Suffixes

For the noun phrase, it is the clitic which indicates 'locative' that harmonizes with the vowel of the noun. For the verbs, it is the clitic which indicates 'repetitive action'. In Yamba most words, including nouns and verbs, are monosyllabic; hence, there is no need to specify the stem vowel more closely than just 'the stem vowel'. However, there are some disyllabic and compound nouns; in these cases the clitic harmonizes with the last vowel of the stem.

The locative marker is specified as -hə because in certain cases it does not harmonize and hence is identifiable. However, the existence of the h and the ə are not identifiable from the same set of data. The only place the h is seen is an instance where ə never occurs, as Vowel Harmony always takes place there.

The following data gives evidence for the vowel of the locative clitic.

(4)		Citation	Locative
(a)	'banana'	gom	gom-ə
	'(snake)'	nzwim	nzwim-ə
	'handle'	ŋkem	nkem-ə
	'hat'	tam	tam-ə
	'things'	bum	bum-ə
	'lake'	təm	təm-ə
(b)	'forest'	kop	kop-ə
	'hut'	tap	tap-ə
	'handle'	tep	tep-ə
	'(dust)'	dzəp	dzəp-ə
	'wing'	bap	bap-ə
(c)	'soldier ants'	ŋgɛs	ŋgɛs-ə
	'(leaves)'	wɛs	wɛs-ə

The repetitive marker, in contrast to the locative marker, always harmonizes exactly with the stem vowel of the verb and cannot be identified as being one vowel over another; its distinctive features are completely unspecified. It begins with the consonant h (which also appears

in the locative marker as seen in data (5)).

(5) (a)	Citation	Locative	(b)	Infin.	Repetitive
'neck'	mi	mi-hi	'trace'	fi	fi-hi
'hole'	wɨ	wɨ-hɨ[2]	'build'	či	či-hi
'hand'	bo	bo-ho	'catch'	ko	ko-ho
'hill'	nda	nda-ha	'shoot'	ta	ta-ha
'head'	tu	tu-hu	'vomit'	lu	lu-hu
'grave'	se	se-he	'transform'	be	be-he
'(basket)'	ŋgə	ŋgə-hə			

For the purposes of this paper, we will denote it with the shape -hə.

These two markers can be distinguished by tone but because tone is not relevant to the discussion, it will be omitted from this paper.

The only environment in which the h is seen on the surface is when the harmonizing suffixes occur with open syllables. However, it seems more likely that the h deletes after a closed syllable than that it is inserted here for the following reasons: first, in other places in which transition elements are inserted, they are not h. Why this one should be h is not clear. Secondly, other clitics and affixes that begin with vowels do not insert an h following an open-syllable stem (see data (1) examples 1 and 4).

The following rule of Vowel Harmony can be formulated based on (5).

(A) Vowel Harmony I

$$ə \text{ ---> } V_i \text{ / } V_i + h \text{ \_\_\_}$$

Now let us consider stems that end in a nasal consonant.

(6) (a)		Citation	Locative	(b)	Infin.	Repetitive
i.	'trap'	ndɨ̃ŋ	ndɨ-ɨ			
	'valley'	ntõŋ	nto-o	'love'	kõŋ	kõ-õ
	'bush'	ŋgãŋ	ŋga-a	'read'	tãŋ	tã-ã
	'cross'	ntə̃ŋ	ntə-ə			
	'bracelet'	mvĩŋ	mvi-i	'loosen'	fĩŋ	fĩ-ĩ
	'thatch'	ywĩŋ	ywi-i	'dig'	tũŋ	tũ-ũ
ii.	'farm'	nzum	nzu-u	'scratch'	kom	ko-o
	'stomach'	vəm	və-ə	'sing'	yəm	yə-ə
	'heart'	ntɨm	ntɨ-ɨ	'blow'	fim	fi-i
				'trap'	tam	ta-a

In this data it can be seen that several rules are operating. The first is the rule of h-Deletion, hinted at above.

(B) h-Deletion

i. $h \text{ ---> } \emptyset \text{ / } C + \text{\_\_\_ } V$

ii. $\begin{bmatrix} -\text{cons} \\ -\text{voc} \\ +\text{cont} \\ +\text{low} \end{bmatrix} \text{ ---> } \emptyset / [+\text{cons}] + \text{\_\_\_ } [+\text{syll}]$

Due to the fact that no other affix has been found that begins with an h, it is not necessary to specify the final vowel in rule B any further. h has been specified as [-cons, -voc]; this is due to the special quality of two segments h and ʔ which differ from all other nonvocalic segments in that vowel harmony occurs across them.

Following this, there is a rule of m- and ŋ-Deletion.

(C) Nasal Deletion

i. $\{^{m}_{ŋ}\}$ ---> Ø / V ___ + V

ii. $\begin{bmatrix}+cons\\+nas\end{bmatrix}$ ---> Ø / [+syll] ___ + [+syll]

Rule C is actually a much-simplified version of the actual nasal consonant deletion rule, but for the purposes of this paper we will ignore syntactic and morphological conditioning which can cause m, ŋ, both, or neither to delete.

Thirdly, there is the rule of Vowel Harmony.

(D) Vowel Harmony II

ə ---> V_i / V_i + ___

These three rules (B, C, and D) interact quite closely in that they are ordered one after another. h-Deletion must precede Nasal Deletion as the rules are written. Then Nasal Deletion must precede Vowel Harmony because if the nasal does not delete (as in data (1) examples 2 and 5), Vowel Harmony does not operate.

There is one more rule operating in this data. The ŋ seems to cause the previous vowel to be nasalized. This is a very low-level rule in Yamba.

(7) 'bird' swĩŋ
'gun powder' ŋkãŋ
'(fishnet)' nzũŋ
'brain' və̃ŋ
'cow' mbõŋ

The rule could be stated as follows.

(E) Vowel Nasalization

i. V ---> $\tilde{V}$ / ___ ŋ .

ii. [+syll] ---> [+nas] / ___ $\begin{bmatrix}+cons\\+nas\\+back\end{bmatrix}$.

The syllable boundary (.) is necessary to prevent a in ŋwa.ŋwe 'woman' or the first u in ku.ŋgup 'shoe' from being nasalized.

Looking closely at the data in (6) a very interesting fact can be seen. The rule of Vowel Nasalization occurs before Nasal Deletion in the case of the repetitives but after Nasal Deletion in the case of the locatives. It seems, then, that the ordering constraints for this rule are specific for certain morphological classes.

Moving on to stems that end in nonnasal consonants:

(6)	(a)		Citation	Locative	(b)		Infin	Repetitive
	i	'house'	ndap	nda?-a	'speak'		čep	če?-e
					'peel'		yup	yu?-u
					'cross'		wap	wa?-a
					'blow'		fwəp	fwə?-ə
					'break'		kɨp	kɨ?-ɨ
	ii.	'coco'	kut	ku?-u	'plug'		tset	tse?-e
		'calabash'	mvət	mvə?-ə	'cut'		čit	či?-i
		'trap'	ntat	nta?-a	'chase'		bɛt	bɛ?-ɛ
		'body'	nit	ni?-i				
	iii.	'cutlass'	fek	fe?-e	'ask'		fek	feh-e
		'thigh'	buk	bu?-u	'hear'		yuk	yuh-u
		'grinding stone'	ŋgok	ngo?-o	'tell'		tsok	tsoh-o
		'cloth'	čək	čə?-ə	'wait'		tək	təh-ə
		'book'	ŋwak	ŋwa?-a	'work'		fak	fah-a
		'stem'	ndik	ndi?-i	'say'		dɨk	dɨh-ɨ

Again, there are several rules operating in this data. The first is the rule of h-Deletion established above, rule B. The second rule for this data has several parts. Rule F deals only with the nouns.

(F) Consonant Weakening

$$\begin{Bmatrix} p \\ t \\ k \end{Bmatrix} \text{ ---> } ? \text{ / V } \_\_\_ + \text{V}$$

The counterpart of this rule for the verbs has two different parts. The first part is similar to rule F.

(G) Non-Back Consonant Checking

$$\begin{Bmatrix} p \\ t \end{Bmatrix} \text{ ---> } ? \text{ / V } \_\_\_ + \text{V}$$

The second part is an operation similar to the one s undergoes as will be seen in rule (K) below .

(H) Back Consonant Weakening

k ---> h / V ___ + V

The third rule for this data is, once again, a rule of Vowel Harmony.

(J) Vowel Harmony III

$$\text{ə ---> } V_i \text{ / } V_i \begin{Bmatrix} h \\ ? \end{Bmatrix} + \_\_\_$$

The rules are also ordered with respect to each other. Rule B, h-Deletion, must precede rules F, G, H, (these 3 are mutually exclusive), and they in turn must precede the rule of Vowel Harmony (J).

The final set of data to be examined contains stems ending in s.

(9) (a)	Citation	Locative	(b)	Infin.	Repetitive
'fire'	mis	mih-i	'sneeze'	tis	tih-i
'(basket)'	kpɛs	kpeh-e	'take out'	fis	fih-i
'hill'	nzes	nzeh-e	'yawn'	gɛs	gɛh-ɛ
			'reach'	wɛs	wɛh-ɛ

There are two solutions to this data. In one the s of the stem deletes such that C V s + h V ===> C V + h V. In the second, the h of the suffix deletes and then the s weakens to h; that is, C V s + h V ===> C V s + V ===> C V h + V. It is not clear which of these two solutions is the better. However, despite the fact that it looks like the second solution involves an extra rule making that analysis more complex, that one was chosen as the better solution for the following reasons: (a) it preserves a generality, (b) it actually makes use of existing rules, h-Deletion which is needed elsewhere and Obstruent Weakening which will be seen in rules F' and G' below,and (c) it avoids a further ordering constraint which would be necessary if s had to delete before the h deleted. The solution which involves simply s-Deletion actually is the one requiring more rules.

Hence, we will say that for this data there are three rules operating; h-Deletion (rule B) is the first. The second rule changes s to h.

(K) s-Weakening

s ---> h / V ___ + V

The third rule operating is that of Vowel Harmony as stated in V.H. III, rule J, and the same constraints of ordering occur here: the h deletes, then the stem-final consonant undergoes its specific change, and then Vowel Harmony occurs.

Taking a closer look at the rules of Vowel Harmony I, II, and III (rules A, D, J), we can collapse them into a single rule.

(A') Vowel Harmony

i. ə ---> [a e i o u ɨ ə ɛ] / [a e i o u ɨ ə ɛ] ({h ʔ}) ___

ii. [+syll, -high, -low, -round, +back] ---> [+syll, αhigh, βlow, γround, δback, εnas] / [+syll, αhigh, βlow, γround, δback, εnas] ([-cons, -voc, +low])

It no longer seems relevant that there is a morpheme boundary in the environment, sometimes before the [+low] glide, and sometimes after it. But it is necessary that this rule be ordered after h-Deletion (B).

An attempt at collapsing the rules that deal with obstruent-final stems, Rules F and K for the nouns, might look like this:

(F') Obstruent Weakening I (nouns only)

$$\begin{bmatrix} +\text{cons} \\ -\text{son} \\ <-\text{cont}> \end{bmatrix} \text{===>} \begin{bmatrix} -\text{cons} \\ -\text{voc} \\ +\text{low} \\ <-\text{cont}> \end{bmatrix} \; / \; [+\text{syll}] \_\_\_ + [+\text{syll}]$$

For the verbs a similar attempt could be made, combining rules G H K.

(G') Obstruent Weakening II (verbs only)

$$\begin{bmatrix} +\text{cons} \\ -\text{son} \\ \langle -\text{cont} \\ -\text{back} \rangle \end{bmatrix} \text{===>} \begin{bmatrix} -\text{cons} \\ -\text{voc} \\ +\text{low} \\ <-\text{cont}> \end{bmatrix} \; / \; [+\text{syll}] \_\_\_ + [+\text{syll}]$$

It does not appear that these two rules may be combined in any succinctly written form, in spite of their obvious similarities as far as the change that is made and the environment in which the change happens.

So far, it has been seen that all verbs undergo some rule involving the stem-final consonant and subsequent Vowel Harmony and that not all nouns do. There seems to be some systematic way in which this happens for the nouns. Stems whose final consonant is a bilabial usually do not undergo a consonant-change rule and vowel harmony. For the m's (data 4a and 6ii) the percentage is considerably less than half for those that do undergo these operations; for the p's (data 4b and 8i), the percentage is far less than that for those that do undergo these operations. There does not seem to be any kind of phonological conditioning that decides which m-final stems will change and which will not; in fact, the near homonyms ndùm 'mole' and ndúm 'husband' act differently. But difference in tone is not the factor causing the difference in derivation. Other high-tone nouns túm '(animal)', nzwím '(snake)' ŋkúm 'chief' do not follow suite with ndúm 'husband'. Even in the data given in 6 (ii), only the first and last nouns have high tone; the other is a low-tone noun just as is ndùm 'mole'.

With the s-stem nouns though, there does appear to be a phonological distinction between those that will change and those that do not. If the vowel of the stem is i or e (data 9a), Obstruent Weakening and Vowel Harmony will operate; if the stem vowel is ɛ (data 4c), these two rules will not operate.

Noun stems that end in Ø, t, k, and ŋ always undergo the change.

One further note needs to be added about the s-final and p-final stems that I have cited as candidates for undergoing the change. In all cases, they may undergo the changes optionally. Both routes are open to them.

(10)	'in the house'	mə	ndap-ə	mə	nda?-a
	'in the fire'	sə[3]	mis-ə	sə	mih-i
	'in the (basket)'	sə	kpes-ə	sə	kpeh-e

As explanation for this, there are two possible choices: either the language is changing so that the Vowel Harmony process(es) are becoming more widespread, or these processes have begun to limit their distribution. It is difficult to tell which is the case and I do not have any dialect comparisons of locative phrases at hand to make a check from them.

In the case of 'in the house', the only p-example, one could speculate that this happens because of the extreme frequency of the word, 'house'; the people say 'we talk that way when we're not talking properly or when speaking fast'. That it is a fast speech rule which is invoked only in the case of one much-used phrase is a possible explanation; this could be interpreted to mean that the process is spreading.

For the case of the s's, I have no immediate explanation, speculated or otherwise.

3. Dialect Forms

We could perhaps look at one other area of the phonology for a clue. There are some verb forms which appear to be long (or at least longer than the general case for verbs); that is, there seems to be what might be called an echo vowel after the stem-final consonant. Some of these 'long' forms have cognate 'short' (short means 'usual canonical shape') forms which give evidence that the long form may actually be the stem + hə, the 'repetitive' marker.

(11)	te?	'sew'	te?-e	'patch' (sew repeatedly)
	tsok	'tell'	tsoh-o	'preach' (tell repeatedly)

These two examples show that the words in the following data may (some do) have short forms (that is, the nonrepetitive form). And some may not actually be repetitive forms but they certainly resemble the repetitive forms in phonological shape. That is, the 'stem-final' consonant is always ?, h, or the two vowels are nasalized indicating the loss of an ŋ, and the two vowels at the end of the word (with or without a consonant between them) are identical. This is just the situation for all verbs that clearly have a repetitive and nonrepetitive form.

For the words in question, the variations (which are known) for two of the other Yamba dialects are given. Mbem is the main dialect, Bom is north of it, and Rom is off to the south-west. Mbem is the most progressive of all the dialects because it is the largest, is located on the only road through the territory, and has been the centre for education and health resources for thirty to forty years.

(12)		Mbem	Bom	Rom
a.	'patch'	te?e	te:r	tyɛt ~ tyekə
	'plug'	tse?e	tsərkə	tsekə
	'curl up'	ke?e	kɛpkə	kekə
	'fall'	kɛ?ɛ	karkə	kaykə
	'hang'	kə?ə	kərkə	kəkə
b.	'forfeit, lose'	maha	makə	makə
	'hide'	swihi	swikə	swɛkə

	Mbem	Bom	Rom
'extinguish'	lihi	limkə	limŋə
'preach'	tsoho	tsəkə	---
'descend'	suhu	sukə	sukə
'lean'	yəhə	yɨkə	yəkə
'be ready'	fɨhɨ	fwɨkə	fɨkə
c. 'dry by heat'	yãã	yɛ̃nkə	yãŋə
'refuse'	dzɛ̃ɛ̃	dzɛ̃nkə	dzəŋə
'hang'	bɛ̃ɛ̃	bãnkə	bãyŋə
'shift'	sõõ	sə̃ŋə	sõŋə
'lie down'	nõõ	nõŋə	---
'descend'	tsõõ	tsə̃ŋə	tsəmə
'bend'	zõõ	zəm	zəmŋə
'bury'	tũũ	tũŋə	tũŋə
'appear'	yə̃ə̃	yɛ̃nkə	yə̃ĭŋə ~ yə̃ŋa
'turn'	bɨ̃ɨ̃	bə̃ə̃	bwĭŋə
'be pregnant'	zɨ̃ɨ̃	zumkə	zɨmŋə

Note: the data from Bom and Rom was collected from two grandfathers and was not checked with other younger speakers of these dialects. The vowel changes are beyond the scope of this paper.

This data supports several parts of our analysis thus far:

(a) the vowel of the 'repetitive' is probably ə
(b) the intervocalic h can and usually does indicate a k-final stem (for verbs at least)
(c) the intervocalic ? may derive from a stem-final k (although not for verbs in the data seen previously)

However, in the (a) and (b) sections of data (12), the kə from Rom and Bom may represent the actual suffix added and our previous rule B would have to be amended to be a k-Deletion rule instead of h-Deletion if that rule were needed. Data from Bom shows an r in the middle of several words and much more data can be brought to bear to show that Bom r's often correspond to Mbem ?'s in syllable-final position. The data from Rom shows simple deletion of the stem-final consonant (if there is evidence for one in Rom). For the Mbem data of (b), the rule of k ---> h could be easily modified to accommodate this data. For most of the (b) data from Bom and Rom it is difficult to say which k-rule is operating: k-Deletion from -kə or k-Deletion before the kə suffix. Within the (c) data, there are five examples from Bom which show evidence for -kə as the suffix. It appears that the k has disappeared totally from Mbem. In Bom the k generally stays following front vowels and deletes elsewhere; in the latter case (Bom) the ə of the suffix usually remains unchanged. In Rom the k looks as if it always deletes, but in two cases after a stem-final m, it may be that the ŋ is the k of the suffix having assimilated to the nasality of the m. The stem-final nasal usually stays without nasalizing (in the case of ŋ) the following vowel (which is just as the Vowel Nasalization rule as previously stated predicts).

4. Conclusion

In conclusion then, we can say that there seems to be some property of the suffix -hə (or /-kə/) that invokes Vowel Harmony in the Mbem dialect. There are three cases where this is not generally the case; p-final nouns, m-final nouns, and /Cɛs/ nouns, but these are very much the exception rather than the rule. Because of the dialect situation as outlined above, we also suggest that Vowel Harmony is an innovation of the most progressive dialect rather than a vestige of an older form of the language.

Footnotes

[1] àm/ām is representative of several possessive affixes. The others are:

-àvès/āvès	'our' (sg. & pl.)
-àwé/āwé	'your (pl.)' (sg. & pl.)
-àwó/āwó	'their' (sg. & pl.)

´ indicates high tone.

[2] There is also a variant wɨrə which might suggest a citation form of wɨr. This does not occur in this dialect but does in other dialects.

[3] The difference between the two prepositions 'in' reflects direction. mə means 'up into' and sə means 'down into' from the speaker's view point.