

VOWEL HARMONY IN KINDENDEULE AND CHINGONI LANGUAGES OF TANZANIA

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Abstract

This article describes vowel height harmony in Kindendeule and Chingoni, Bantu languages spoken in southern Tanzania. Kindendeule has a seven vowel system /i, e, E, a, ɔ, o, u/ and Chingoni has five vowels: /i, a, ɔ, u/. Both languages exhibit vowel height harmony described by Hyman (1999) as asymmetric. There are three vowels /i, a, u/ that appear in the -VC- structure of verbal extensions. Data from the two languages show that both front and back vowels of the roots lower the high front vowel of the suffix, as $i \rightarrow e/e, o C_-$ and $i \rightarrow E/E, \text{ɔ} C_-$. However, with suffixal /u/, only the back vowels lower it, as $u \rightarrow o/o C_-$ and $u \rightarrow o/o C_-$. The low vowel /a/ neither triggers nor is it affected by vowel harmony. As in other Bantu languages, the domain of vowel harmony is the stem. Inflections, both prefixes and suffixes, as well as deverbal affixes are not affected by vowel harmony.

1. Introduction

Vowel height harmony is a process that is attested in the majority of Bantu languages. In his study of the phenomenon across Bantu languages, Hyman (1999) identifies asymmetrical vowel height harmony based on how front vowels operate in the process vis-à-vis back vowels. The asymmetry is expressed in (1) below:

(1) Asymmetric vowel height harmony (Hyman 1999:237)

- a.) front height harmony: $*i > e / \{e, o\} C_-$
- b.) back height harmony: $*u > o / o C_-$

In seven vowel languages, both front and back vowels trigger lowering of front vowels. However, front vowels do not trigger lowering of high back vowels. This asymmetry is observed in the absence in five vowel systems of lowering effects on back vowels since they lack the second degree vowels. The objective of this paper is to describe vowel harmony in Kindendeule and Chingoni, two southern Tanzanian languages that have not been extensively documented.

Kindendeule is spoken by about 150,000 people (Ngonyani 2004). The estimates are based on the 2002 census population of Kindendeule speaking wards in Namtumbo district, Ruvuma region. The language is not listed in

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Guthrie's (1967-71) classification, but Maho and Sands (2002) assign it the referential number N.101. Recent studies indicate that its closest relatives are Kingindo (P.14) and Kimatengo (N.13) (Nurse 1988, 1999; Ngonyani 1994). Chingoni (also known as Kingoni or Tanzanian Ngoni) is assigned N.12 in Guthrie's classification. Judging by the 2002 census, there are probably 400,000 speakers of this language mostly in Songea district. Both are considered Rufiji languages. The exact subgrouping within Rufiji group is not completely clear yet. Nurse (1988, 1999) places Chingoni in the Rufiji language group together with Kingindo, Kimatumbi, Kindendeule, Kimatengo and Kimpoto. Ngonyani (1994) suggests even placing Chingoni outside the Rufiji group. Its structure, as described in Ngonyani (2003), however, shows Chingoni's close affinity with Kindendeule.

This article illustrates the properties of asymmetric vowel height harmony as discussed by Hyman. The data for this study were obtained from Ngonyani (2003) for Chingoni, and for Kindendeule, from Ngonyani (2004) and from the writer's knowledge as a native speaker. The article demonstrates that with respect to vowel height harmony, the two languages have very similar grammars. The description is presented in five sections. After this introduction, the vowel inventories of the two languages are presented in Section 2. Section 3 provides examples of root-internal vowel harmony, while Section 4 describes affixal vowel harmony. Remarks on some observations are discussed in Section 5 followed by concluding remarks in Section 6.

2. Vowel Systems

To discuss the harmony process, we must begin by describing the vowel inventories in the two languages. This section presents the vowel systems of the two languages.

2.1 Kindendeule Vowel Inventory

Kindendeule has preserved the Proto-Bantu (PB) seven vowel system, as shown below:

(2) Kindendeule vowels

	FRONT	BACK	
HIGH	i	u	← 1 st degree vowels
	e	o	← 2 nd degree vowels
	ɛ	ɔ	← 3 rd degree vowels
LOW		a	← 4 th degree vowels

There are three front vowels and two back vowels. In addition there is the low vowel /a/. Their Proto-Bantu equivalents are presented in the following chart based on Guthrie's (1967-71) reconstruction.

(3) Proto-Bantu vowels

	FRONT	BACK
HIGH	i	ɥ
	ɨ	u
	e	o
LOW		a

The vowel contrast is demonstrated in the following sets of words.

(4)

[i]	ndila 'I am running away'	kupita 'to come out'
[e]	ndela 'path, way'	kupeta 'to pass'
[ɛ]	ndela 'sticks'	kupeta 'to winnow'
[a]	ndala 'flip-flop'	kupata 'to get'
[ɔ]	ndila 'I am taking'	kupata 'to twine'
[o]	ndola 'I am putting the load down'	kupota 'to knock'
[u]	ndula 'I am skinning (an animal)'	*kuputa

These examples demonstrate that the seven vowels in Kindendeule are contrastive. All them are reflexes of PB vowels. There is no contrastive vowel length.

2.2 Chingoni Vowel Inventory

Unlike Kindendeule, Chingoni has a five vowel system, which is a result of merging of PB *ɨ and *i to /i/ and *ɥ and *u to /u/. The full inventory is shown in (5) below:

(5) Chingoni vowel inventory (Ngonyani 2003:7)

	FRONT	BACK
HIGH	i	u
	ɛ	ɔ
LOW	a	

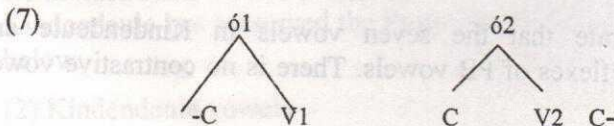
There are two front vowels, two back vowels, and the low vowel /a/. Contrasts in the Chingoni vowels are illustrated with examples of minimal pairs from Ngonyani (2003:7).

- | | | |
|-----|---------------------------|---------------------------------|
| (6) | [i] kugima 'to dig' | [ɛ] kugema 'to tap bamboo wine' |
| | [ɛ] kulɛmba 'to decorate' | [a] kulamba 'to lick' |
| | [a] kugana 'to want' | [ɔ] kugɔna 'to sleep' |
| | [ɔ] kuhɔma 'to stab' | [u] kuhuma 'to come out' |

In both languages, vowel length is not a contrastive feature, neither is tone. There are melodic tone patterns in both languages, but they are predictable and do not affect vowel harmony processes. For this reason, tone is not marked in this squib.

3. Root-Internal Vowel Harmony

Verbs exhibit vowel harmony based on vowel height. There are root-internal patterns of vowel harmony and suffixal patterns of vowel harmony. This section deals with root-internal vowel harmony. A large number of the radicals in both languages are monosyllabic with -CVC- structure. Root-internal harmony, therefore, is observed in bisyllabic -CVCVC- radicals or polysyllabic roots. The two syllables will be identified as $\delta 1$ and $\delta 2$, here shown with association lines to the consonants and vowels.



Root-internal patterns are observed in the fact that most of bisyllabic roots exhibit either identical vowels for V1 and V2, or vowels that tend to have the same height. Identical vowels in the radicals are illustrated in the following examples from Kindendeule:

(8)	Root	Gloss	V1	V2
	-kunjunda	'shake off'	u	u
	-holola	'leak'	o	o
	-kɔmɔla	'cough'	ɔ	ɔ
	-kangacha	'wonder'	a	a
	-teleka	'cook'	ɛ	ɛ
	-heketa	'cut'	e	e
	-kilima	'smear'	i	i

These examples show that all seven vowels can appear in the root as the first and second vowel. Verbs that have these patterns of vowels are quite abundant. The other pattern where many vowels seem to agree in height are also abundant. The following Kindendeule examples illustrate verbs that do not have the same vowel in the two syllables.

(9)	Root	Gloss	V1	V2
	-labuk-a	'eat breakfast'	a	u
	-pyagil-a	'sweep'	a	i
	-kobal-a	'stumble'	o	a
	-kɔmbal-a	'become thin'	ɔ	a
	-kamul-a	'catch, hold'	a	u
	-lebat-a	'step on'	e	a
	-pogek-a	'close'	o	e
	-lɔbel-a	'become drunk'	ɔ	ɛ

These examples demonstrate that the vowel /a/ appears with any other vowel in the verb. In some examples, /a/ appears in the first syllable of the radical, and it appears in the second syllable in others. One noticeable feature is that when one focuses on the second and third degree vowels, the vowels /o/ and /ɔ/ do not appear in V2. This will become even clearer when we consider how suffixes harmonize.

Most polysyllabic verbs appear to have stem endings that are similar to verb extensions. The patterns of vowel harmony in such verbs are similar to verbs that are clearly made of roots and extensions.

(10)	-kopela	'blink'
	-lumbila	'roar'

- | | |
|----------|-------------|
| -pogeka | 'shut' |
| -lobela | 'get drunk' |
| -lɔŋgela | 'talk' |

Thus, **-kopela** 'blink,' is a good example of two vowels of the same height in Kindendeule. However, **-el-** is also an allomorph of the applicative extension **-il-**. There is no recognizable verb **-kopa** in the language. It appears **-kopela** may have fossilized into a root form. On the other hand, while **-lɔŋga** is no longer an active root in Kindendeule, it is a recognizable radical in comparative Bantu.

There are extremely few bisyllabic verbs that mix up levels of the vowels of the first and second syllable.

- (11) **-kɔbingana** 'mixed up'
-yombihana 'hurrying'

In the first word, the first vowel is a third degree vowel while the second vowel is a first degree vowel. The second word has a second degree vowel followed by a first degree vowel. Such patterns are very rare. No statistical analysis has been attempted on Kindendeule to determine the percentage of polysyllabic verbs that lack root-internal harmony.

4. Suffixal Vowel Harmony

Suffixal vowel harmony is found in the alternations of verb extensions. In this section, sample data on the alternations in the two languages are presented. The data show that there are three suffixal vowels.

- (12) i u
 a

Furthermore, the examples will reveal that these vowels are not affected by the stem vowels in the same way.

4.1 Kindendeule Extensions

Using Meeussen's (1967) list of verb extensions, we identify the alternations of Kindendeule verb extensions and present them in table. 1

Table 1: Verb extensions in Kindendeule

Extension	Allomorphs
Reversible	-ul-, -ol-, -ɔ l-
Impositive	-ik-, -ek-, -ɛk-
Intensive	-ih-, -eh-, -ɛh-
Causative	-ih-, -eh-, -ɛh-
Applicative	-il-, -el-, ɛl-
Stative	-ik-, -ek-, -ɛk-
Reciprocal	-an-

These extensions are made of -VC- structure and have three vowels in their basic forms, namely, /u/, /i/, and /a/. The underlying forms of the extensions are applicative -il-, impositive -ik-, intensive -ih-, causative -ih-, stative -ik-, reciprocal -an-, and reversible -ul-. The vowels of verbal suffixes harmonize with the stem-final vowels. For example, the vowel of the applicative suffix -il- varies according to the height of the vowel in the preceding syllable, resulting in the alternations /-il-/, /-el-/, and ɛl-/. The following examples have -CVC- root structure. The vowel of the root is the V1, and that of the suffix is V2.

(13)	yib-a	'steal'
	yib-il-a	'steal from/for'
	yemb-a	'sing'
	yemb-el-a	'sing for/with'
	kɛm-a	'call'
	kɛm-ɛl-a	'call for/with/at'
	kang-a	'push'
	kang-il-a	'push to/for/with'
	tɔ l-a	'take'
	tɔ l-ɛl-a	'take for/with/from'
	bol-a	'teach'
	bol-el-a	'teach for/with/at'
	tul-a	'skin'
	tul-il-a	'skin with/for/on'

The allomorph -il- appears in stems with first degree vowels /i/, /u/, or fourth degree /a/. The allomorph -el- appears after stems which contain second degree vowels /e/ or /o/, while -ɛl- is found in stems with third degree vowels /ɛ/

or /ɔ/. While **-el-** and **-ɛl-** are evidently triggered by mid vowel of the roots, **-il-** appears with high vowels as well as the open /a/. Therefore **-il-** does not harmonize with /a/, which indicates that the underlying form of the suffix is **-il-**. The same pattern vowel alternation applies to the other extensions that have /i/, namely, impositive **-ik-**, the stative **-ik-**, intensive **-ih-**, and causative **-ih-**. The alternations can be shown using the verbs from (13).

(14)	yib+il+a	→ "	yib-il-a	'steal from/for'
	yemb+il+a	→ "	yemb-el-a	'sing for/with'
	kɛm+il+a	→ "	kɛm-ɛl-a	'call for/with/at'
	kang+il+a	→ "	kang-il-a	'push to/for/with'
	tɔl+il+a	→ "	tɔl-ɛl-a	'take for/with/from'
	bol+il+a	→ "	bol-el-a	'teach for/with/at'
	tul+il+a	→ "	tul-il-a	'skin with/for/on'

These examples show the high front vowel of the suffix is lowered in accordance with the level of the vowel of the radical. Both front and back vowels cause the affix vowel to lower.

Lowering of the suffix vowel does not function the same way for all suffixes. The reversion suffix has the other first degree vowel. The vowel height harmony for the reversion is illustrated in (15).

(15)	hib-a	'plug'
	hib-ul-a	'unplug'
	hyek-a	'cover'
	hyek-ul-a	'uncover'
	tɛg-a	'set a trap'
	tɛg-ul-a	'undo a trap'
	pang-a	'arrange'
	pang-ul-a	'disorganize'
	hɔma	'stab'
	hɔ m-ɔla	'pull out knife, spear, etc'
	tong-a	'string'
	tong-ol-a	'pick fruit from tree'
	humb-a	'conceal'
	humb-ul-a	'discover'

Unlike the extensions with the front vowel /i/ in which both front and back vowels trigger lowering of the suffix vowel, the reversion suffix harmonizes only when the stem has back vowels. The reversion vowel /u/ appears with the front vowels in the root as well as the low vowel. Therefore, **-ul-** is the

underlying form of the reversive suffix since it does not show phonological conditioning in those environments.

- (16)
- | | | |
|-------------------|--------------------|------------------------------|
| hib+ul+a | → hib-ul-a | 'unplug' |
| hyek+ul+a | → hyek-ul-a | 'uncover' |
| tæg+ul+a | → tæg-ul-a | 'undo a trap' |
| pang+ul+a | → pang-ul-a | 'disorganize' |
| h ∩ m+ul+a | → h ∩ m-∩la | 'pull out knife, spear, etc' |
| togg+ul+a | → togg-ol-a | 'pick fruit from tree' |
| humb+ul+a | → humb-ul-a | 'discover' |

When the stem vowel is a front vowel, the extension retains its underlying form **-ul-**. When V1 is /o/ or ∩/, the vowel of the extension is lowered and becomes identical to V1. Thus, the asymmetry noted by Hyman (1999) is very well demonstrated in these two languages.

Suffixal /a/ does not harmonize, as examples from reciprocal suffix **-an-** in (17) demonstrate.

- (17)
- | | |
|--------------------|----------------------|
| yig-a | 'imitate' |
| yig-an-a | 'imitate each other' |
| peng-a | 'block' |
| peng-an-a | 'block each other' |
| kâm-a | 'call' |
| kâm-an-a | 'call each other' |
| kang-a | 'push' |
| kang-an-a | 'push each other' |
| k ∩ ng-a | 'deceive' |
| k ∩ ng-an-a | 'deceive each other' |
| yop-a | 'ask' |
| yop-an-a | 'ask each other' |
| tum-a | 'send' |
| tum-an-a | 'send each other' |

These examples demonstrate that the same form of the reciprocal suffix **-an-** appears for all stems regardless of their vowels.

4.2 Chingoni Extensions

The alternations of the verb extensions in Chingoni listed in the following table.

Stem	Extension	Meaning
hib	hib-ul-a	'unplug'
hyek	hyek-ul-a	'uncover'
tæg	tæg-ul-a	'undo a trap'
pang	pang-ul-a	'disorganize'
h ∩ m	h ∩ m-∩la	'pull out knife, spear, etc'
togg	togg-ol-a	'pick fruit from tree'
humb	humb-ul-a	'discover'

Table 2: Verb Extensions in Chingoni

Extension	Allomorphs
Reversive	-ul-, -ɔl-
Impositive	-ik-, -ɛk-
Intensive	-ih-, -ɛh-
Causative	-ih-, -ɛh-
Applicative	-il-, -ɛl-
Stative	-ik-, -ɛk-
Reciprocal	-an-

The asymmetric pattern of vowel height harmony described in Kindendeule is attested in Chingoni. The only difference, as already noted, is that Chingoni has a five vowel system. We begin with the applicative verb, which represent all extensions with high front vowels. Chingoni vowel harmony affects the vowel of the applicative suffix, as the following examples show:

- (18) **kuyiv-a** 'to steal'
akuvayiv-il-a 'she/he is stealing from them'
kugeg-a 'to carry'
akumgeg-ɛl-a 'she/he is carrying for him/her'
kutam-a 'to sit'
kutam-il-a 'to sit on'
kul ɔ l-a 'to look'
akuml ɔ -ɛl-a 'she/he is looking on behalf of him/her'
kuyup-a 'to ask for'
akumyup-il-a 'she/he is asking for him/her'

The allomorph **-il-** appears after roots with /i/, /a/, and /u/. When the stem has /ɛ/ or /ɔ/, the suffix that appears is **-ɛl-**. As in Kindendeule, the pattern observed with the applicative extension applies also to the impositive, stative, intensive, and causative, all of which have the vowel /i/. When V1 is /a/, V2 is not lowered.

As in Kindendeule, the extension with the high back vowel is the reversive. The vowel is not lowered by front or low vowels.

- (19) **dind-a** 'shut'
dind-ul-a 'open'
tɛg-a 'set a trap, curse'

- tɛg-ul-a 'unset the trap, remove a curse'
- pang-a 'arrange'
- pang-ul-a 'disorganize, disarrange'
- hɔm-a 'stab'
- hɔm-ɔl-a 'pull out knife, spear, etc'

The only vowel that lowers the suffix vowel is /ɔ/ in the radical or stem.

The low vowel suffix **-an-**, which is the reciprocal extension, does not have alternations. It remains the same regardless of the vowels of the root.

- (20) ping-a 'block'
- ping-an-a 'block each other'
- kɛm-a 'call'
- kɛm-an-a 'call each other'
- land-a 'follow'
- land-an-a 'resemble each other'
- kɔng-a 'deceive'
- kɔng-an-a 'deceive each other'
- yup-a 'ask for'
- yup-an-a 'ask each other'

The examples presented in this section show the same pattern for the two languages. The data reveal characteristics that are discussed in Hyman (1999) and reiterated in the following section.

5. Further Observations

From the data discussed in the foregoing section, the vowel height harmony in Kindendeule and Chingoni can be summarized by the following table which uses data from Kindendeule.

Table 3: Suffixal vowel height harmony

V ₁ /V ₂	i	e	ɛ	a	ɔ	o	u
i	yib-il-a			yig-an-a			hib-ul-a
e		yemb-el-a		peng-an-a			hyek-ul-a
ɛ			kɛm-el-a	kɛm-an-a			tɛg-ul-a
a	kang-il-a			kang-an-a			pang-ul-a
ɔ			ɔl-ɛl-a	kɔng-an-a	hɔm-ɔl-a		
o		bol-el-a		yop-an-a		tong-ol-a	
u	tul-il-a			tum-an-a			humb-ul-a

The pattern of harmony is very similar to what is found in Kimatumbi described by Odden (1996) and the table is identical to Hyman's (1999).

The domain of vowel harmony in these two languages is the verb stem. The verb in the two languages, as in other Bantu languages, has the following template¹.

(21) Elements of the verb morphology (adapted from Meeussen 1967:108)

Pre-initial	Initial	Post-initial	Tense & Aspect	Infix	Root	Extension	Post-final
REL/COND	SM	NEG	TNS/ASP	OM	Radical	Ext	FV/ASP

The stem consists of the root and the verb extensions. All affixes appearing before the radical are not affected by vowel harmony. This is demonstrated by the examples below.

- (22) a.) **mw-ana ywa-a-ki-ti-gəg-el-a** **ki-bega a-bok-ite**
 1-child 1REL-1SM-PT-us-carry-AP-FV 7-pot 1SM-leave-PF
 'The child who brought us the post has left.'
- b.) **na-ki-bw-ene ki-bega cha-a-ki-ti-bomb-el-a** **n-geni**
 I-PT-see-PF 7-pot 7REL-1SM-PT-us-mold-AP-FV 1-guest
 'I saw the pot that the guest made for us.'

In (22a), the radical has a third degree /e/ which causes the vowel of the applicative to lower to the third degree level. However, the vowels preceding the root remain high front vowels. Likewise, in (22b), the root has a second degree vowel causing the front vowel of the applied suffix to lower to the second degree, but no such lowering for the prefixes.

¹ Abbreviations

AP	Applicative suffix	ASP	Aspect marker	COND	Conditional marker
FV	Final vowel	NEG	Negative marker	OM	Object marker
PF	Perfective marker	PT	Past tense marker	REL	Relative marker
SM	Subject marker	TNS	Tense marker		

Not all suffixes are subject to vowel harmony. Only verb extensions are affected by the harmony process. Inflectional suffixes, namely, subjunctive **-e**, and perfective **-iCe**, are not harmonized. This is illustrated with the perfective suffix **-iCe** in Kindendeule as shown in (23):

(23)	yib-a	'steal'
	ayib-ite	'she/he has stolen'
	yemb-a	'sing'
	ayemb- ite	'she/he has sung'
	kâm-a	'call'
	akâm- ite	'she/he has called'
	kang-a	'push'
	akang- ite	'she/he has pushed.'
	t ÷ l-a	'take'
	at ÷ l- ite	'she/he has taken'
	bol-a	'teach'
	abol- ite	'she/has taught'
	tul-a	'skin'
	atul- ite	'she has skinned'

The perfective suffix is part of inflection and is not subject to the vowel harmony rule. These examples show that vowel harmony in the two languages is stem-controlled. Harmony propagates from the radical rightwards to the verb extension.

Even derivations that are not verbal extensions are not subject to this rule. This is quite clear when one examines the examples or deverbal nouns:

(24)	a.)	ku-hina	'to dance'
		ki-hino	'a dance'
	b.)	ku-lunda	'to pile up'
		li-lundo	'a pile'

In these two examples, verb roots with high vowels take the nominalizing suffix **-o**, but do not lower or change the height of the suffix.

5. Conclusion

The description presented in the foregoing sections reveals that in both Kindendeule and Chingoni, front height vowel harmony operates independently of back height harmony. While both front and back vowels lower high front

vowels of the verb extension /i/, only back vowels lower the extension that has the high back vowel /u/. It is also noted that the low vowel /a/ in the root does not lower suffixal vowels. Also suffixal /a/ is not affected by the other root vowels. The domain of vowel harmony in both languages is the radical and verb extensions. Inflectional affixes, both prefixes and suffixes, are not affected by harmony, neither are deverbal derivational affixes. These are characteristics of asymmetrical vowel height harmony (Hyman 1999).

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