BANTU PHONOLOGY: AN OVERVIEW

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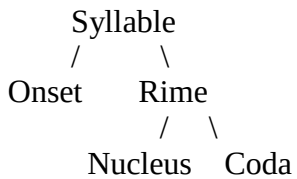
I.Structure of the Syllable

(1) General Structure of Syllable



- In general Bantu languages permit a complex onset, but no coda: (N)(C)(G)V
- E.g. Possible syllables: a, la, lwa, mya, nda, ndwa
- Some authors consider the NC sounds to be complex onsets (e.g. [mb], [nd]) while others consider them to be prenasalized stop phonemes (e.g. [^{m}b], [^{n}d]). It is often very hard to provide conclusive evidence one way or the other on this issue.

II. Vowels

(1) Two most common vowel inventories

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  a. 5 vowel system: i, e, a, o, u
  b. 7 vowel system: i, e, ɛ, a, o, ɔ, u

	Front	Back
High	i	u
Mid	e ɛ	o ɔ
Low		a

- Vowel length often contrastive. E.g. Cilungu

a. ú-kú-zík-à	‘to be deep’
b. ú-kú-zíík-à	‘to bury’
c. ú-kú-pél-à	‘to shave’
d. ú-kú-péél-à	‘to swing’
e. ú-kú-lúk-à	‘to weave’
f. ú-kú-lúúk-à	‘to remember, be homesick for’

- In some languages there is no underlying vowel length contrast, but there are in fact both short and long vowels phonetically. This can be due to a phonological process that always lengthens some vowel in a certain position. E.g. In Rutooro, the penultimate vowel of the phrase is lengthened.

a. e-ki-taabu	‘book’
b. e-ki-tabu kii-nu	‘this book’
c. a-ba-someesa	‘teachers’
d. a-ba-somesa ba-taano	‘5 teachers’

In addition to being lexical long vowels can also be derived

(1) Morphological Concatenation (Cilungu)

a. ú- kú- úm -à
PP-Inf-beat-FV
‘to beat’

b. ú- kú-ˈví- ˈík -à
PP-Inf- C8O-put-FV
‘to put them (C8)’

c. ú- kú-ˈyá -ˈám-à
PP-Inf-C2O-call-FV
‘to call them (C2)’

Vowel hiatus: What happens when there are two successive Vs underlyingly. Lots of possibilities:

Gliding (& Compensatory Lengthening)

(1) Kinyambo: across morphemes

	Underlying Representation	Surface Form	Gloss
a.	/o-ku-ij-a/	o-kw-iij-a	'come'
b.	/e-bi-aro/	e-by-aaro	'villages'
c.	/e-bi-oya/	e-by-ooya	'feathers'
d.	/o-bu-áto/	o-bw-áato	'boat'
e.	/o-ku-ét-a/	o-kw-éeta	'call'
f.	/e-bi-ára/	e-by-áara	'fingers'
g.	/e-mi-ézi/	e-my-éezi	'months'

- Rule: High Vowels become glides (i → y; u→ w) before (non-identical) vowel [+syll,+hi] → [-syll] /___V

- Kinyambo: within morphemes
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U.R.	Surface Form	Gloss
a. /mbúenu/	mbwéenu	'today’
b. /o-ku-túar-a/	o-ku-twáar-a	'carry’
c. /o-bu-súere/	o-bu-swéere	'marriage’
d. /o-ku-bíar-a/	o-ku-byáar-a	'plant’
e. /o-ku-ruan-a/	o-ku-rwaan-a	'fight’
f. /e-N-duano/	ee-n-dwaano	'quarrel’
g. /e-N-tuiga/	ee-n-twiiga	'girrafe'

- This assumption might enable one to eliminate /y/, /w/ from phoneme inventory.

- In some Bantu languages the mid vowels /o/ and /e/ also glide before V's.

Ekegusii: /o-ko-ar-a/ → o-kw-aar-a 'to spread'; /e-a-om-a/ → y-o-om-a 'which has dried'

- In Bantu languages without a vowel length contrast, gliding will not be followed by compensatory lengthening of the vowel. E.g. Swahili /vi-akula/ vy-akula 'foods'

Vowel Deletion (& Compensatory Lengthening)

Word internally: Lungu

a. /ma-ino/ → m-iino

‘teeth’

(cf. li-ino ‘tooth’) 5-tooth

b. /ka- elek-a/ → k-eelek-a Nom-cook-FV

- ‘one who cooks’ a → ø / __ V

Word internally: Lamba

a. /u-ku-ofw-a/ → u-k-oofwa ‘to help’,

b. /u-ku-och-a/ → u-k-oocha ‘to burn’

- u → ø / __ o

- Across words (these cases are sometimes marked with an apostrophe):

<u>Lungu</u>

a. /na u-mu-rimi/ → n’ uu-mu-rimi ‘and the farmer’

b. /u-mu-sana u-kulu/ → u-mu-san’ uu-kulu ‘big waist’

Vowel Coalesence: (Lamba)

- Word internally: /a-ma-inso/ → a-m-eenso ‘eyes’ (cf. i-li-inso ‘eye’)

a + i → ee

- Across words: /N-le-fway-a u-mw-aana/ → N-de-fway oo mw-aana

  I-Prog-want-FV PP-C1-child’

  ‘I want the child’

a + u → oo

- (But /a/ deletes before /u/ word-internally): /a-ma-ulu/ → a-m-uulu ‘legs’ (cf. u-ku-ulu ‘leg’)

- Another possible hiatus resolving strategy is epenthesis (the insertion of a C between the Vs).

Rutooro (inserted glides shown in square brackets)

a. a-[y]et-a ‘he/she invites’ /a-et-a/

b. o-[y]at-a ‘you (sg) break’ /o-at-a/

c. o-[y]e-[y]et-a ‘you invite yourself’ /o-e-et-a/

- Additional lengthening and shortening processes Vowel Lengthening before NC cluster: (Kinyambo)
Underlying Rep.	Surface Form	Gloss
a. /u-ku-ful-a/	u-ku-ful-a	‘to wash’
b. /u-ku-n-ful-a/	u-kuu-m-ful-a	‘to wash me’
c. /u-mu-ntu/	u-muu-ntu	‘person’
d. /i-ci-nsanzo/	i-cii-nsaanzo	‘nest’

- (20) This pre-NC lengthening occurs within morphemes (like roots) as well (Kinyambo)

Underlying Rep.	Surface Form	Gloss
a. /o-ku-nunk-a/	o-ku-nuunk-a	'to smell'
b. /o-ru-hango/	o-ru-haango	'valley'
c. /o-bu-hángo/	o-bu-háango	'bigness'
d. /o-ku-tanbuk-a/	o-ku-taambuk-a	'to walk'
e. /o-ku-honder-a/	o-ku-hoonder-a	'to follow'

- There can also be rules which shorten vowels, e.g. in word-final position in Cilungu

/u-ku-zu-a/	Input
u-ku-zw-aa	Gliding & Comp Lengthening
u-ku-zw-a	Word-final Shortening ‘to bleed/leak’

Rule: V → [-long] / __ $_{w}$]

- Shortening when a syllable obtains more than two morae (i.e. becomes superlong)--Cilungu

  /ya-a-el-a/ UR

  ye e el-a Deletion & Comp Lengthening

  yeela Shortening

- The determination as to which of the 3 vowels delete is complex and not formalized here.

- (24) Vowel Insertion: In some languages words must have a minimum of two syllables. So, e.g. when you want to form the imperative of a monosyllabic verb, then a vowel is prefixed to it. Chichewa

- a. ku-vin-a ‘to dance’ vin-a ‘dance!’
- b. ku-ph-a ‘to kill’ i-ph-a ‘kill’
- c. ku-dy-a ‘to eat’ i-dy-a ‘eat’

- (25) Vowel Insertion in Cilungu: Optional /i/-insertion before word-initial NC

/n-ku-ziik -a/ UR

1s-PP-bury-FV

‘I am burying’

in-ku-ziik-a Phonetic realization

(26) Mid Vowel Harmony: Lamba

	Infinitive	Stative	Applicative	Gloss
a.	ku-čit-a	ku-čit-ik-a	ku-čit-il-a	‘to do’
b.	ku-fiimb-a	ku-fiimb-ik-a	ku-fiimb-il-a	‘to thatch’
c.	ku-tul-a	ku-tul-ik-a	ku-tuk-il-a	‘to dig’
d.	ku-fut-a	ku-fut-ik-a	ku-fut-il-a	‘to pay’
e.	ku-pat-a	ku-pat-ik-a	ku-pat-il-a	‘to scold’
f.	ku-paap-a	ku-paap-ik-a	ku-paap-il-a	‘to carry child’
g.	ku-čet-a	ku-čet-ek-a	ku-čet-el-a	‘to spy’
h.	ku-sek-a	ku-sek-ek-a	ku-sek-el-a	‘to laugh’
i.	ku-sonk-a	ku-sonk-ek-a	ku-sonk-el-a	‘to pay tax’
j.	ku-kos-a	ku-kos-ek-a	ku-kos-el-a	‘to be strong’

- Rule: i → e after a Mid Vowel (i.e. /i/ assimilates to height of preceding V)

i → e / {e,o} C0_ or [+syll] → [-hi] / [+syll,-hi,-lo] C0 _____

- In Lamba, the /i/ in the Perfective TAM suffix /-ile/ also undergoes harmony: tw-aa-li-fut-ile ‘we payed’; tw-aa-li-leemb-ele ‘we wrote’

- In Cilungu, it does not: tw-áá-kóm-ìlé ‘we have just cut’ (*twaakomele)
- Thus, for some phonological rules, it becomes necessary to annotate which specific morphemes it applies to, or which specific morphemes are exceptions. (Cf. English *im-possible* vs. *in-put*)

- Cilungu Transitive Reversive /-ul-/, /-ulul-/

a. ú-kú-zíík-à	‘to bury’	ú-kú-zíík-úl-à	‘to unbury’
b. ú-kú-fúúng-à	‘to lock’	ú-kú-fúúng-úl-à	‘to unlock’
c. ú-kú-fyéént-à	‘to tighten’	ú-kú-fyéént-úlúl-à	‘to loosen’
d. ú-kú-ꜜpóꜜómb-à	‘to tangle’	ú-kú-ꜜpóꜜómb-ólól-à	‘to untangle
e. ú-kú-pòt-à	‘to twist’	ú-kú-ꜜpóꜜt-ólól-à	‘to untwist’

.

u → o / o C_0__ (though in some other Bantu lgs: u → o / {e,o} C_0___)

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III. Phonology of Consonants

- Tense/Lax Vowel Harmony: In Ekegusii, laxness in root vowel spreads leftward iteratively

a. o-ko-mig-a	‘to squeeze’
b. o-ko-bun-a	‘to break’
c. o-ko-kor-a	‘to do’
d. o-ko-bet-a	‘to pierce’
e. ɔ-kɔ-mɔr-a	‘to sprout’
f. ɔ-kɔ-rɛɛt-a	‘to bring’

Homorganic Nasal Assimilation

Class 9 nouns in Kinyambo

-
  - ee-m-bwa ‘dog’
  - ee-ɱ-fuka ‘hoe’
  - ee-n-te ‘cow’
  - ee-ñ-jobe ‘antelope’
  - ee-ŋ-go ‘leopard’
- This pattern consistent morpheme-internally as well. E.g. *mk, *ñk, *nb, etc.
- For those interested in its shape before V’s: (as a clue to what UR should be)

a. ee-ñ-iimba ‘marimba’

b. ee-ñ-ama ‘meat’

Changes in liquids (r's and l's)

- Luganda l → r/ Front-Vowel__ mukira 'tail' /mukila/, erina 'name' /elina/
- Rutooro r → l/ Back-Vowel__ Front-Vowel ku-har-a 'to scratch'; ba-hal-e 'that they scratch'

- Sonority Hierarchy: Strongest Sounds to Weakest:

stop > affricate > fricative > nasal > lateral > rhotics > approximant > vowel

- (within each category: geminate stronger than singleton, voiceless stronger than voiced)

Processes of lenition (making a consonant weaker)

- Palatalization (a consonant becomes a palatal or aveo-palatal affricate or fricative due to the presence of an adjacent front vowel).

<u>Lamba</u>

a. u-ku-kak-a ‘tie’	u-ku-kač-il-a ‘tie for’	tw-aa-li-kač-ile ‘we tied’
b. u-ku-las-a ‘pierce’	u-ku-laš-il-a ‘pierce for’	tw-aa-li-laš-ile ‘we pierced’

k → č /___ i

s → š /___i (There are no phonetic [ki] or [si] sequences)

<u>Kinyambo:</u> Class 7 /ki-/

a. /e-ki-ara/ → e-č-aara ‘finger’

b. /e-ki-oya/ → e-č-ooya ‘feather’

- Possible analysis: /e-ki-ara/ → e-či-ara → e-č-aara (there could be another analysis)
- Sometimes a post-nasal consonant becomes voiced. Yao

a. ku-tum-a ‘to order ku-n-dum-a ‘to order me’

b. ku-pelek-a ‘to send’ ku-m-belek-a ‘to send me’

- (39) ‘Consonant Mutation’ Cilungu

- Consonants change their shape before 3 suffixes: Past /-ile/, Short Causative /-i/, Nominalizer /-i/

a. u-ku-pik-a	‘shoot’	tw-aa-pis-ile	‘we shot’
b. u-ku-kal-a	‘buy’	tw-aa-kaz-ile	‘we bought’
c. u-ku-omb-a	‘be wet’	u-ku-omv-y-a	‘make wet’ (/u-ku-omb-i-a/)
d. u-ku-laand-a	‘talk’	u-ku-laanz-y-a	‘make talk, court’ (/u-ku-land-i-a/)
e. u-ku-omb-a	‘work’	u-mu-omv-i	‘worker’
f. u-ku-luung-a	‘hunt’	u-mu-luunz-i	‘hunter’

b → v p → f

č,k,t→ s

d,g,l → z n → ñ

- But: Not triggered by /i/ in other suffixes: u-ku-pik-il-a ‘to shoot for’, u-ku-ful-ik-a ‘to be washed’.

- Processes of fortition:
- [l] / [d] alternation in Cilungu

a. u-lu-limi ‘tongue’ (Cl. 11)
b. i-n-dimi ‘tongues (Cl. 10)

c. u-ku-lem-a ‘to grab’
d. u-ku-n-dem-a ‘to grad me’

e. -lem-e ‘that you grab’
f. n-dem-e ‘that I grab’

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l → d/ n ___

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- Glides becoming stops or affricates post-nasally in Cilungu

a. u-ku-way-a ‘to give pain’
b. u-ku-m-bay-a ‘to give me pain’ /u-ku-n-way-a/
c. u-ku-yeenz-a ‘to be red’
d. n-ǰeenz-e ‘that I be red’ /n-yeenz-e/

w → b /[+nas] ____
y → ǰ / [+nas] ____

- Sometimes a nasal causes fortition in a following consonant. Kikongo

a. ku-pun-a	‘to deceive’	ku-m-phun-a	‘to deceive me’
b. ku-tal-a	‘to look at’	ku-n-thal-a	‘to look at me’
c. ku-fil-a	‘to lead’	ku-pfil-a	‘to lead me’
d. ku-sib-a	‘to curse’	ku-tsib-a	‘to curse me’

- Consonant-insertion in Cilungu

a. u-kuu-n-ǰ-imb-a ‘to dig me up’ /u-ku-n-imb-a/
b. n-ǰ-imb-e ‘that I dig up’ /n-imb-e/
c. u-kuu-n-g-um-a ‘to beat me’ /u-ku-n-um-a/
d. u-kuu-n-g-am-a ‘to call me’ /u-ku-n-am-a/

ø → ǰ/ n +Front-V
ø → g/ n +Back-V

Geminate Reduction in Cilungu

a. u-ku-nuunsh-a ‘to smell’ /u-ku-nunsh-a/

b. u-kuu-nuunsh-a ‘to smell me’ /u-ku-n-nunsh-a/

Meinhof’s Rule

- C → ø / N_V N (C)

Nilamba: lu-limi ‘tongue’; /n-limi/ → nimi

Luganda: o-lu-bambo ‘peg’; /e-N-bambo/ → e-m-bambo → emmambo ‘pegs’

Nasal Harmony: Lamba

a. tul-a	‘dig’	tul-il-a	‘dig for’
b. pat-a	‘scold’	pat-il-a	‘scold for’
c. pum-a	‘flog’	pum-in-a	‘flog for’
d. ŋaŋ-a	‘snigger’	ŋaŋ-in-a	‘snigger for’

- (51) “Imbrication” (= in some cases what we might call “modified stem”)

Rule: …VC-ile → ViCe /l/ deletes ; C and following i (of /ile/) undergo metathesis

<u>Cilungu</u>

a. /ya-a-fung-ul-ile/	b. /ya-a-fung-an-ile/	UR
ya-a-fung-ul-ie	ya-a-fung-an-ie	l-deletion (from –ile)
ya-a-fung-u-i-l-e	ya-a-fung-a-i-n-e	metathesis of C (of extension) and i
ya-a-fung-w-ii-l-e		gliding (& CL)
	ya-a-fung-ii-n-e	vowel deletion (& CL)
‘they unlocked’	‘they locked each other’	

- While a few Bantu languages have stress (e.g. Swahili), most are tonal What kinds of tonal contrasts are there within the syllable?
- Kinyambo: Syllable/tone combinations: tá, tà, táà, tàà (*táá, *tàá): Phonologically the TBU is the syllable, and tone realized phonetically on first V

- Lamba: Syllable/tone combinations: tá, tà, táá, tàà (*táà, *tàá): Phonologically the TBU is the syllable, and tone realized phonetically on all V's in syllable

- Cilungu: Syllable/tone combinations: tá, tà, táá, tàà, táà, tá!á, tàá: Phonologically (as well as phonetically) the TBU is the mora or V.

- It's often the case that contour tones—Falling and Rising—are only allowed on long vowels and not short ones (i.e. *bâ, *bǎ). In some languages Rising tones are prohibited on long vowels as well.

- Tonal distinctions in nouns: may be on every syllable

Ekegusii: 4-way tonal distinction in noun root

LL	ó-bò-rèmù	‘land’
LH	ó-mò-mùrá	‘brother’
HL	ó-mò-kérà	‘tail’
HH	é-kè-nyónyó	‘chin’

2-way tonal distinction in verb roots:

Kinyambo

a. o-ku-nag-a ‘throw’ b. o-ku-roond-a ‘pick up’

c. o-ku-nág-a ‘lose’ d. o-ku-róond-a ‘choose’

- Location of H (when it appears) is always on the first syllable of the root regardless of the number of syllables it contains (e.g. /o-ku-kóror-a/ 'cough', */o-ku-korór-a/)

Lamba - Root H shifts onto syllable before root

a. u-kú-shil-a ‘to draw line’ /u-ku-shíl-a/

b. u-kú-fiimb-a ‘to swell’ /u-ku-fímb-a/

Kikuyu - Root H shifts onto the following syllable of the stem.

a. ko-tom-á	‘to send’	/ko-tóm-a/
b. ko-hetók-a	‘to go’	/ko-hétok-a/
c. ko-riríkan-a	‘to remember’	/ko-rírikan-a/

- Often there will be different tonal “melodies” which indicate tense/aspect.

E.g. In Cilungu

- some tense/aspects add a H tone onto the Final Vowel of the stem
- some tense/aspects add a H to every syllable of the stem but the first one
- some tense/aspects add a H to every syllable of the stem but the first and last ones
- some tense/aspects don’t add any additional H to the stem

- This results in minimal pairs such as:

a. tw-áà-fùl-à	‘let us start to wash’
b. tw-áá-fúl-à	‘and then we started to wash’
c. tw-áá-fúl-ꜜá	‘we have just washed’
d. tw-áá-fùl-á	‘we have already washed’