

**Outward-Looking y/Ø Alternations in Luganda\***

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- (1) *The problem:* In a number of Eastern Bantu languages an issue of “outward looking morphology” arises from the interaction of the verb stem (root + suffixes) and what precedes it.
- (2) Vowel-initial verb roots such as Luganda *-er-* ‘sweep’ and *-anj-* ‘spread (out)’ appear as such when preceded by a CV- prefix with which they fuse (Hyman & Katamba 1999: 371):
- a. infinitive prefix  

/ku-er-a/	→ kw-eer-a	‘to sweep’	/ku-anj-a/	→ kw-aanj-a	‘to spread’
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  - b. subject prefixes  

/tú-er-a/	→ tw-éèr-a	‘we sweep’	/tú-anj-a/	→ tw-àanj-a	‘we spread’
/mú-er-a/	→ mw-éèr-a	‘you pl. sweep’	/mú-anj-a/	→ mw-àanj-a	‘you pl. spread’
/bá-er-a/	→ b-éèr-a	‘they sweep’	/bá-anj-a/	→ b-àanj-a	‘they spread’
  - c. object prefixes  

/ku-gí-er-a/	→ ku-gy-éèr-a	‘to sweep it’	/ku-gí-anj-a/	→ ku-gy-àanj-a	‘to spread it’
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  - d. TAM and NEG prefixes  

/a-lí-er-a/	→ a-ly-éèr-a	‘s/he will sweep’	/a-lí-anj-a/	→ a-ly-àanj-a	‘s/he will spread’
/bu-tá-er-á/	→ bu-t-éèr-à	‘to not sweep’	/bu-tá-anj-á/	→ bu-t-àanj-à	‘to not spread’
- (3) The same roots surface with an initial [y] in other contexts: (i) when preceded by a prefix of another shape (V-, VV-, N-); (ii) when unprefixed (word-initially, initial in base of reduplication)
- (4) y- appears when there is a preceding V- or VV- prefix (assume y-epenthesis for now (cf. Dalgish 1974))
- a. subject prefixes  

/o-er-a/	→ o-yer-a	‘you sg. sweep’	/o-anj-a/	→ o-yaanj-a	‘you sg. spread’
/a-er-a/	→ a-yer-a	‘s/he sweeps’	/a-anj-a/	→ a-yaanj-a	‘s/he spreads’
/e-er-a/	→ e-yer-a	‘it (cl.9) sweeps’	/e-anj-a/	→ e-yaanj-a	‘it (cl.9) spreads’
  - b. reflexive object prefix  

/ku-eé-er-a/	→ kw-éé-yèr-a	‘to sweep self’	/ku-eé-anj-a/	→ kw-éé-yàanj-a	‘to spread self’
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  - c. TAM prefixes  

/tú-á-ér-á/	→ tw-áá-yèr-à	‘we swept’	/tú-á-ánj-á/	→ tw-áá-yàanj-à	‘s/he spread’
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- (5) y- appears after an N- prefix, either hardening to j- or nasalizing to ŋ- when there is a following nasal (= Meinhof's/Ganda Law)
- a. subject prefixes  

/N-er-a/	→ n-jer-a	‘I sweep’	/N-anj-a/	→ ŋ-jaanj-a	‘I spread’
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  - b. object prefix  

/a-N-er-er-a/	→ a-n-jer-er-a	‘s/he sweeps for me’	/a-N-anj-a/	→ a-ŋ-jaanj-ir-a	‘s/he despises me’
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- (6) y- also appears when there is no prefix
- a. word-initially  

/er-a/	→ yer-a	‘sweep!’	/anj-a/	→ yaanj-a	‘spread!’
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  - b. verb base-initially in reduplication  

/er-a + er-a/	→ y-er-aa + y-er-a	‘sweep here and there!’			(reduplicant ends in -aa)
/a-er-a + er-a/	→ a-yer-aa + yer-a	‘s/he sweeps here and there’			
/tú-er-a + er-a/	→ tw-éèr-aa + yer-a	‘we sweep here and there’			
	↑				

\*My thanks to Francis Katamba and Sharon Inkelas for teaching me more than I could possibly acknowledge here!

- (7) To summarize, such roots will be realized
- vowel-initially if preceded by a CV- prefix (of whatever kind)
  - y-initially otherwise
- (8) Two logical approaches to accounting for the above y-/∅ alternations (Meeussen's 1955 "unstable-y")
- set up one underlying form for such roots and derive the other (by rule or I/O constraint interaction)
  - set up allomorphs that are chosen in the right environment
- (9) Each approach presents a problem
- if there is a single underlying form, it likely should be with /y/ which would delete after a CV- prefix
  - however, there are numerous roots which have "stable-y" (Meeussen 1955)

(10) Stable-y verb roots have /y/ in all contexts (→ j or ɲ after a nasal)

a. infinitive prefix

/ku-yuz-a/ → ku-yuz-a 'to tear'      /ku-yab-a/ → ku-yab-a 'to be weak'

b. subject prefixes

/a-yuz-a/ → a-yuz-a 's/he tears'      /a-yab-a/ → a-yab-a 's/he is weak'  
 /bá-yuz-a/ → bá-yùz-a 'they tear'      /bá-yab-a/ → bá-yàb-a 'they are weak'

c. object prefixes

/ku-gí-yuz-a/ → ku-gí-yùz-a 'to tear it'      /ku-N-yuz-a/ → ku-n-juz-a 'to tear me'

d. TAM and NEG prefixes

/a-lí-yuz-a/ → a-lí-yùz-a 's/he will tear'      /a-lí-yab-a/ → a-lí-yàb-a 's/he will be weak'  
 /bu-tá-yuz-a/ → bu-tá-yùz-a 'to not tear'      /bu-tá-yab-a/ → bu-tá-yàb-a 'to not be weak'

(11) There are distributional constraints on the two kinds of [y] (Hyman & Katamba 1999: 408, n.45)

short vowel roots			long vowel roots					
stable-y	unstable-y		stable-y	unstable-y				
-yiC...	33	-iC...	0	-yiiC...	8	-iiC...	0	(C includes NC)
-yuC...	7	-uC...	0	-yuuC...	5	-uuC...	0	
-yeC...	9	-eC...	11	-yeeC...	2	-eeC...	0	
-yoC...	9	-oC...	14	-yooC...	3	-ooC...	0	
-yaC...	7	-aC...	60	-yaaC...	1	-aaC...	0	
<i>totals:</i>	65		85		19		0	

(12) Two important facts about V-initial roots emerge

- root-initial vowels are limited to /e, o, a/ (prefixes also cannot begin with /i/ or /u/), i.e. \*[{i, u}]
- root-initial vowels are always short (cf. -lim- 'cultivate' vs. -liim- 'to spy on'), i.e. \*[VV]

(13) Remaining analyses to consider

- posit two kinds of /y/; unstable-y = extrametrical or floating, which links unless there is a preceding CV- prefix (this is the Hyman & Katamba 1999 proposal, essentially a diacritic solution)
- start with V-initial representations: /-er-/ , /-anj-/ etc. and a rule of y-epenthesis, which would apply if the root is preceded by a V-, VV- or N- prefix, or no prefix (heterogeneous environments)
- assume allomorphy: both /-yer-/ and /-er-/ are lexicalized, the latter having a subcategorization restriction that it must—and can only—appear after a CV- prefix—I will argue this position.

(14) *Intuition:* The /-yer-/ allomorph is chosen when needed to provide an onset to the prominent root syllable. Applying an idea of Inkelas (2014: 45), a V-initial stem is still "bound, i.e. incomplete, requiring another affix to be structurally well-formed". The y-initial allomorph is thus, "free, complete, and well-formed".

(15) The condition on the /-er-/ allomorphs is local: only the preceding prefix can provide an onset

- /te-tú + er-á/ → tè-tw-éér-â 'we don't sweep' (+ indicates where the allomorph

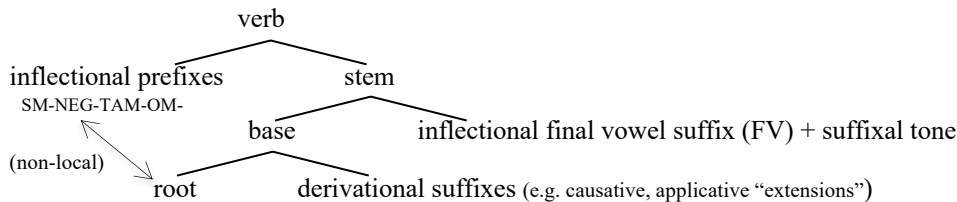
- /te-bá + er-á/ → tè-b-éér-â ‘they don’t sweep’ selection must be made)
- b. /te-ó + er-á/ → t-ó-yér-â ‘you sg. don’t sweep’  
/te-á + er-á/ → t-á-yér-â ‘you sg. don’t sweep’
- c. /tú-á + éér-á/ → tw-áá-yèr-à ‘we swept’ (\*tw-éér-à)
- d. /tú-á-eé-láb-á/ → tw-éé-làb-à ‘we saw ourselves’  
1PL-PST<sub>2</sub>-REFL-see-FV

(16) A supporting argument against a general y-insertion rule: prefixal V + V sequences are not resolved by [y]

- a. /tú-eé-láb-a/ → tw-éé-làb-a ‘we see ourselves’ (\*tú-yéé-làb-a)
- b. /o-a-láb-á/ → w-a-láb-à ‘you sg. saw’ (\*o-ya-láb-à)  
/e-a-láb-á/ → y-a-láb-à ‘it (cl.9) saw’ (\*e-ya-láb-à)  
/n-a-láb-á/ → n-a-láb-à ‘I saw’ (\*n-ja-láb-à)  
SUBJ-PST<sub>2</sub>-see-FV

(17) The Luganda case provides a challenge for bottom-up, inside-out morphology. The “outward-looking” root-allomorph selection, prohibited by Carstairs’ (1987) Peripherality Constraint, has been much discussed in various approaches including, lexical, constructional and distributed morphology (Bobaljik 2000, Paster 2009, Embick, 2010, Caballero & Inkelas 2013, Inkelas 2014, Svenonius 2014, Deal & Wolf, in press, Gribanova & Harizanov, in press, among others). As Paster (2009: 27) succinctly puts it: “the subcategorization approach predicts that there should be no examples of, e.g., affix-conditioned root allomorphy”.

(18) The traditional view of the internal structure of the Bantu verb (Meeussen 1967)



(19) A further argument for allomorphy is that the inflectional suffixal tone assigned by various TAMs cannot be correctly mapped without knowing if the root is going to have a y- or not (Hyman 1992)

(20) In the relative clause present tense, a H tone is assigned to the second mora of the stem

- a. (èno gyè tù-) -sìb-á ‘it’s this that we tie’ (→ tù-sìb-â)
- b. (èno gyè tù-) -sàsú-l-à ‘it’s this that we pay’
- c. (èno gyè tù-) -sùmú-lùl-à ‘it’s this that we untie’

(21) Both y- and V- allomorphs follow the same pattern

- a. (èno gyè tù-) -èr-á ‘it’s this that we sweep’ (→ tw-èèr-â)  
(èno gyè ò-) -yèr-á ‘it’s this that you sg. sweep’ (→ ò-yèr-â)
- b. (èno gyè tù-) -àgál-à ‘it’s this that we love’ (→ tw-ààgál-à)  
(èno gyè ò-) -yàgál-à ‘it’s this that you sg. love’

(22) The first syllable of CVVC... and CVNC... stems counts as two tone-bearing units (TBUs)

- a. (èno gyè tù-) -síg-à ‘it’s this that we smear’ (→ tù-síig-à) (\*LH rising tones in  
(èno gyè tù-) -sàásìr-à ‘it’s this that we pity’ (→ tù-sáásìr-à) Luganda)
- b. (èno wè tù-) -línd-à ‘it’s this that we wait for’ (→ tù-líínd-à)  
(èno gyè tù-) -síndìk-à ‘it’s this that we send’ (→ tù-sííndìk-à)

(23) The first syllable of VNC... stems counts as one TBU; the first syllable of yVNC... stems counts as two

- a. (èno gyè tù-) -ànj-á ‘it’s this that we spread’ (→ tw-àànj-â)  
(èno gyè tù-) -àmbál-à ‘it’s this that we wear’ (→ tw-ààmbál-à)

- b. (èno wè ò-) -yàáj-à 'it's this that you sg. spread' (→ ò-yááj-à)  
 (èno gyè ò-) -yám̀bàl-à 'it's this that you sg. wear' (→ ò-yáám̀bàl-à)

(24) What the differences in (23a,b) mean is:

- we first have to know if the alternating stem begins with a y- or not before we can assign the suffixal stem H tone to the correct mora
- we can't know if the alternating stem will begin with y- or not until we know what it is preceded by (if anything)
- since the CV- vs. V-, VV- or N- prefix can be anything (subject, negation, TAM, object), the prefix + stem sequence is not likely a "macrostem" defined by the syntax
- the closest prefix could of course be considered the first cyclic expansion in a bottom-up (surfacy) morphological account—but this would not solve the tonal problem.

(25) All of the above conflicts and analytic indeterminacies disappear once we consider the y/Ø alternation to be one of root allomorphy (cf. recent work by Archangeli & Pulleyblank 2015)

- every V-initial root has a y-initial allomorph; and crucially:
- both allomorphs have to be simultaneously built up in parallel by adding any derivational suffixes, the inflectional FV and tonal suffix, as per the verbal structure in (18)
- it is the entire V-initial *stem* that inherits the subcategorization frame for an immediately adjacent CV-prefix—reminiscent of Hayes' (1990) "pre-compiled phrasal phonology"
- the two stems built up in parallel compete, with various constraints ultimately selecting one or the other, e.g. CV-V... is preferred to CV-yV... in order to minimize structure, i.e. two syllables (Hyman & Katamba 1999: 374)
- such alternate stem forms are reminiscent of the complementary "morphomic stems" (Aronoff 1994, Blevins 2003), with the difference that the y- and Ø- stem forms are dependent on the phonological shape of the adjacent prefix (if any), not different parts of the paradigm

(26) An important remaining question concerns how many other cases there are which produce complications for building up the Bantu verb inside-out as per (18), and how these may require us to revise our thinking.\*

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\*See for example Marlo et al (2014) for a case from Kikuria where suffixal Hs have wider effects than expected.