

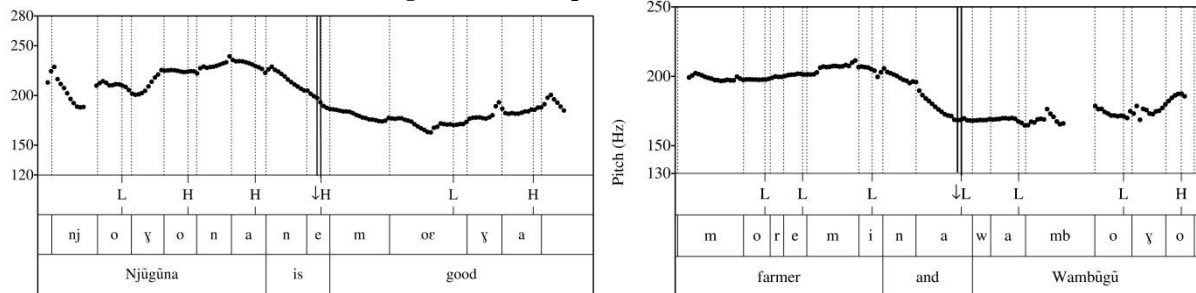
# Downstep and phonological phrases in Kikuyu

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**Introduction.** Downstep ( $\downarrow$ ) in Kikuyu (Bantu, E51) attests several interesting properties; (i) It lowers the pitch of both H and L tones contrary to many Bantu languages where downstep only affects H tones; (ii) It can trigger a raising of L tones as the sequence  $[H\downarrow L]$  is banned; (iii) It applies across word boundaries at the edge of a prosodic domain while cross-linguistically it commonly applies *within* a domain (Yip 2002). This study provides an acoustic reproduction of the data of Clements & Ford (1981) along with new data from a northern Kikuyu speaker and proposes a rule refinement in the syntax-phonology framework that accounts for the syntactic distribution of downstep. I claim that downstep marks the right edge of a phonological phrase (p-phrase).

**The tonal effects of downstep.** Kikuyu has an H(igh) - L(ow) tonal opposition. The source of downstep is a floating L tone;  $\textcircled{L}$  or  $\textcircled{\text{\'}}$ , that has arisen through a rightward tone shift and appears final in the tonal pattern of certain words. The presence of  $\textcircled{L}$  is lexical conditioned for nouns and modifiers, and grammatical for verbs, forming part of the tense-aspect marking.  $\textcircled{L}$  triggers a downstep that can result in three tonal changes depending on the tonal sequence:  
**A.** It lowers the tone of a following syllable in the sequences  $/H\downarrow\#H/$ ,  $/L\downarrow\#H/$  and  $/L\downarrow\#L/$  (=Lowering). In figure (1), the floating L tone final in  $/nj\grave{o}y\acute{o}n\acute{a}\textcircled{\text{\'}}/$  and  $/m\grave{o}r\grave{e}m\grave{i}\textcircled{\text{\'}}/$  triggers a downstep that lowers the H-toned copula  $/n\acute{e}/$  (i), and the pitch of the L tone of  $/n\grave{a}/$  ‘and’ (ii).

Figure 1. Female speaker (SH)



(i) Downstep of an H tone:  $/H\downarrow H/$

(ii) Downstep of an L tone:  $/L\downarrow L/$

**B.**  $\textcircled{L}$  can trigger raising before the lowering applies (=Raising-Lowering) as  $[H\downarrow L]$  is banned in Kikuyu. In the tonal sequence  $/H\downarrow\#L(L...)H/$ , the downstep attaches to the final H tone and the intervening L tone(s) will be raised to H. The output is  $[H\#H(H...)H]$  as shown in (1)

- $/y\grave{o}r\acute{e}r\acute{a}\quad k\grave{a}m\grave{a}u\textcircled{\text{\'}}\quad m\grave{o}k\grave{a}n\acute{d}\acute{a}\quad m\grave{o}\grave{e}y\acute{a}/$       Underlying tones       $*/H\downarrow\#LLH/$   
 $[y\grave{o}r\acute{e}r\acute{a}\quad k\grave{a}m\grave{a}u\quad m\acute{o}k\acute{a}\downarrow n\acute{d}\acute{a}\quad m\grave{o}\grave{e}y\acute{a}]$       Surface tones       $[H\#HH\downarrow H]$   
IMP:buy    Kamau    3.rope    3.good  
‘Buy Kamau a good rope’ (Clements 1984, Speaker SH)

**C.** If no underlying H tone follows an  $/H\downarrow/$ , all the L tones will be raised and there is no trace of the downstep other than the raising itself;  $/H\downarrow\#L(L...)H/ \rightarrow [H\#H(H...)]$  (=TotalRaising). Important to note is that *Raising-Lowering* and *TotalRaising* only occur with downstep and therefore differ from the bounded High Tone Spreading rule which is also attested in Kikuyu.

**Domain.** Kikuyu has SVO order and modifiers follow the head. The application of downstep is sensitive to constituency. In the vP, downstep appears between the first and the second complement in a ditransitive sentence (see (1) above) and between a postverbal complement

and adverb (2). In (2), ① is final in both the verb /ndò:niré ` / and the complement /mòrèmì `/. No downstep appears between the verb and complement (2a-b) or between the noun and the adjective /mòritò/ (2b). Instead, ① shifts and triggers a downstep that appears before the adverb /rò:ǰíně/. As the tonal sequence is /L<sup>↓</sup>L/, *Lowering* applies to the first syllable /rò:/.

2. [TP [T V<sub>1</sub> [vP t<sub>1</sub> [vP t<sub>1</sub> [DP NP] ]<sup>↓</sup> [AdvP]]]]] [TP [T V<sub>1</sub> [vP t<sub>1</sub> [vP t<sub>1</sub> [DP NP [AP A]] ]<sup>↓</sup> [AdvP]]]]]
- a) nd-ò:n-iré mòrèmì <sup>↓</sup>rò:ǰíně b) nd-ò:n-iré mòrèmì mòritò <sup>↓</sup>rò:ǰíně
- 1.SM-see-RC.PST 1.farmer 11.morning 1.SM-see-RC.PST 1.farmer 1.ugly 11.morning
- 'I saw the farmer this morning.' 'I saw the ugly farmer this morning.' (Speaker SH)

No such ①-*shift* occurs between a subject noun and a verb. In (3) downstep is triggered from the ① in /mòrèmì ` / that has the effect *Lowering* on the subject marker /à/ of the verb.

3. [TP [DP NP] ]<sup>↓</sup> [T V<sub>1</sub> [vP t<sub>1</sub> [vP t<sub>1</sub> [DP NP] ]]]]
- mòrèmì <sup>↓</sup>à-tém-iré mòtě /mòrèmì ` /à-tém-iré ` /mòtě/
- 1.farmer 1.SM-cut-PST 3.tree
- 'The farmer cut a tree.' (Clements 1984, Speaker SH)

**Analysis.** The elicited data of the Kikuyu speaker (SH) show the same distribution of downstep as described in Clements & Ford (1981) and confirms that the downstep is sensitive to syntax. Following the general assumptions of the syntax-phonology mapping, where a p-phrase relates to a syntactic phrase (XP) (Nespor & Vogel 1986, Selkirk 1986, Truckenbrodt 1995, 1999), I propose that downstep appears at the right edge of a p-phrase. When an L tone follows an /H<sup>↓</sup>/, the downstep is realized further to the right causing *Raising-Lowering* or *TotalRaising* because of the constraint \*H<sup>↓</sup>L. In all other tone sequences (/H<sup>↓</sup>H/, /L<sup>↓</sup>H/ and /L<sup>↓</sup>L/), the downstep appears at the p-phrase edge triggering *Lowering*. I suggest the following OT ranking for Kikuyu p-phrases: \*H<sup>↓</sup>L » ALIGN-XP, R » WRAP-XP. ALIGN-XP, R accounts for the right edge after the subject NP before the VP as shown in (3). In a sentence with two objects or an object and an adverb, ALIGN-XP, R demands a right edge after the first object NP and a downstep appears there (1), (2a-b). There is no boundary between a head and a complement (2a-b), (3) so no downstep appears. Linearly, modifiers in the DP follow the head in Kikuyu but it is the lexical NP within the DP that triggers the prosodic boundary. WRAP-XP is satisfied with following phrasing: ((X XP<sub>1</sub>) XP<sub>2</sub>) where the whole VP is wrapped.

Cross-linguistically, downstep is a rule that commonly applies *within* a domain (Yip 2002) and Kikuyu downstep behaves more like a boundary tone. Indeed, as Odden & Roberts-Kohno (1999) point out, it is similar to the super-low (SL) boundary tone in the neighbouring language Kikamba [E55] that marks the right edge of X<sup>max</sup>. According to Clements & Ford (1979), downstep in Kikuyu diachronically relates to the SL tone of Kikamba. Because of the tone shift in Kikuyu, the SL tone has moved one syllable to the right resulting in an ① that triggers downstep. This edge-marking property can therefore be accounted for diachronically.

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