1. Outline

(1) Downstep (\(= \;^{'H}\)) can arise from a variety of sources (Leben 2018).

(2) In Dagaare (Gur/Mabia, NW Ghana, Kennedy 1966, Bendor-Samuel 1971, Hall 1977, Naden 1989, Bodomo 1997), downstep has two sources:
   (a) Floating L underlingly specified on a root or a suffix
       (see, e.g., Pulleyblank 1986: 34 for Tiv)
   (b) The last H at the edge of a phonological word is downstepped
       (see, e.g., Childs 1995: 48 for Kisi)

(3) Morphemes are underlingly H, L, or toneless (Anttila and Bodomo 2000). On the surface there is a three-way contrast after a H tone:

\[
\begin{array}{ccc}
\text{bíí-rí} & \text{H-H} & \text{‘child-PL’} \\
\text{zú-rí} & \text{H-\textsuperscript{'}H} & \text{‘head-PL’} \\
\text{wóg-rí} & \text{H-L} & \text{‘tall-PL’} \\
\end{array}
\]

(4) Constraint on the realization of downstep:
   (a) Only one downstep per phonological word is allowed.
   (b) If more downsteps would arise, the morphologically inner downstep
        blocks the morphologically outer downstep.

(5) We derive these generalizations from phonology-morphology interleaving
    (Kiparsky 1982, 2000; Mohanan 1986; Pulleyblank 1986).
2. Stem-level tone

(6) Stem-level processes (see Kenstowicz et al. 1988 for parallels in Moore):

<table>
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<tr>
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<th>Process</th>
<th>Conditions</th>
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<td>Meeussen’s Rule</td>
<td>H H → H L</td>
<td>SG/PL, IMPF, nominalizer</td>
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<td>Leftward H Spreading</td>
<td>∅ H → H H</td>
<td>nouns, adjectives</td>
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<td>Rightward H Alignment</td>
<td>∅ H → L H</td>
<td>verbs (L = default tone)</td>
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<td>Downstep from floating L</td>
<td>H L H → H 'H</td>
<td>--</td>
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</table>

(7) \text{wir-}i \rightarrow \text{wir-}í \quad \text{‘horse-sg’} \quad --

(8) yi -ri \rightarrow \text{yí-}rì \quad \text{‘house-sg’} \quad Meeussen’s Rule

(9) pɔg-ɔ \rightarrow pɔ́g-ɔ́ \quad \text{‘woman-sg’} \quad \text{Leftward H Spreading}

(10) Nouns and verbs are systematically different: Leftward H Spreading applies in nouns, but not in verbs where we have Rightward H alignment:

\text{tuu-ro} \rightarrow \text{túú-}ró \quad \text{‘follow-ER’} \quad \text{Leftward H Spreading (noun)}

\text{tuu-ro} \rightarrow \text{tùú-}ró \quad \text{‘follow-IMPF’} \quad \text{Rightward H Alignment, Default L Insertion (verb)}
(11) Downstep can originate from either the root or the suffix:

\[
\begin{align*}
\text{zu-ri} & \rightarrow \text{zu-'ri} & \text{‘head-PL’} & \text{Downstep,} \\
\text{HL H} & \quad \text{H L H} & \text{Floating L from the root} & \text{Cf. } \text{zù ‘head.SG’}
\end{align*}
\]

\[
\begin{align*}
\text{saa-ma} & \rightarrow \text{sáá-má} & \text{‘stranger-PL’} & \text{Downstep,} \\
\text{H L H} & \quad \text{H L H} & \text{Floating L from the suffix} & \text{Cf. } \text{sáá-nà ‘stranger-SG’}
\end{align*}
\]

(12) Note the absence of downstep after \text{sáá- ‘stranger’} in compounds:

\[
\begin{align*}
\text{à sáá- wóg- kpóngi nà} & \quad (\ast \text{sáá-}’\text{wóg-}) \\
\text{DEF stranger tall big DEM} & \\
\text{‘that tall big stranger’}
\end{align*}
\]

3. Word-level tone

(13) The last H at the right edge of a phonological word is downstepped.

(This rule seems to admit some variability.)

\[
\emptyset \rightarrow (\text{L}/ _{\text{H}})_{\text{Word}} \quad \text{Gussenhoven 2004: 110-113}
\]

(14) \text{yí-rí} \quad \text{‘house-sg’} \quad \text{yí-fiáá} \quad \text{‘house-bad’}

(15) \text{yi-fa-a} \rightarrow \text{yí-‘fiáá}_{\text{Word}} \quad \text{‘house-bad-sg’}

\[
\begin{align*}
\text{H H} & \quad \text{H (L) H}
\end{align*}
\]

(16) This downstep cannot come from /yi/ or /fa/ because

(a) /yi/ is H since we get \text{yí-rí} (Meeussen, H-H \rightarrow H L), not \ast \text{yí-‘ri}

(b) /fa/ ‘bad’ is underlyingly toneless as is evident from compounds:

\[
\begin{align*}
\text{à [bibil- fá- wóg]}_{\text{Word}} \text{nà} & \\
\text{DEF child bad tall.SG DEM} & \\
\text{‘that bad tall child’}
\end{align*}
\]
(17) Only a H tone at the right edge of the phonological word is downstepped:

\[
\text{à [bibil wóg kpóng fí-fí]_{Word} nà}
\]

DEF kid tall big young-PL DEM

‘those tall big young kids’

(18) The factitive/focus marker lá is downstepped after a H-final verb:

\[
\text{ʊ̀dáá [bùrí lá]_{Word} à mírì}
\]

3P.SG PAST.2.DAYS soak.PERF FACT DEF rope

‘S/he soaked the rope two or more days ago’

\[
\text{à dá ñà à nàn̄g dóg-rɔ̀ [é lá]_{Word} nóʃ}
\]

DEF pito REL 3P.SG REL brew-IMPF be FACT sweet

‘The pito he is brewing is sweet’

(19) Constraint:

(a) Multiple downsteps within a word are banned:

\[
* [H'H'H]_{Word}
\]

(b) Downstep on the left blocks downstep on the right.

(20) Opacity: Stem-level downstep blocks word-level downstep:

(a) ðá [bùrí lá]_{Word} à mírì

3P.SG PAST soak.PERF FACT DEF rope

‘He soaked the rope’

\[
\text{bùrí lá}_{Word}
\]

H (L) H

(b) ñá [bú'rí lá]_{Word} à kʊ̰̀ɔ̰́

3P.SG PAST fetch.PERF FACT DEF water

‘He fetched the water’

\[
\text{bú'rí lá}_{Word}
\]

H L H H

(21) Opacity: Downstep on an object pronoun blocks downstep on lá:

\[
\text{ʊ̀[[bùrí má]_{Word} lá]_{Word}}
\]

3P.SG soak.PERF me FACT

‘He soaked me’
4. Postlexical tone

(22) No postlexical dowstep: H#H sequences across words are pronounced level.
\[ \text{à dóo póo} \quad \text{‘the man’s woman’} \]
\[ \text{L H H} \]

(23) Postlexical processes make both stem-level and word-level processes opaque (Kiparsky 2000).

(24) Future prefix particles have a trailing H:
\[ \text{(a) nàá ‘EMPH.FUT’ (b) nà ‘FUT’ (c) kòng ‘NEG.FUT’} \]
\[ \text{L H (b) L (H) (c) L (H)} \]

(25) The toneless /buri/ ‘soak’ is L after bá ‘NEG’, but H after kòng ‘NEG.FUT’:
\[ \text{(a) ùà dà nàŋ bá bùrì à mírí} \]
\[ \text{3P.SG PAST ADV NEG soak.PERF DEF rope} \]
\[ \text{‘He had not (yet) soaked the rope’} \]
\[ \text{(b) ùà dà nàŋ kòng bùrì à mírí} \]
\[ \text{3P.SG PAST ADV NEG.FUT soak.PERF DEF rope} \]
\[ \text{‘He will not (yet) have soaked the rope’} \]

(26) The toneless /gaa/ ‘go’ is L after nàá ‘EMPH.FUT’, but H nà ‘FUT’:
\[ \text{(a) ù nàá gàá lá} \quad \text{(b) ù nà gáá lá} \]
\[ \text{3P.SG EMPH.FUT go FACT 3P.SG FUT go FACT} \]
\[ \text{‘he will willingly go’  ‘he will go’} \]
(27) **Opacity**: No word-final downstep on lá because the H H]\textsubscript{Word} was created postlexically (postlexical phonology counterfeeds word level phonology):

\[
\begin{array}{c}
\text{ý nà gáá lá}_{\text{Word}} \\
\text{L L H H}
\end{array}
\]

\[\text{NOT } *\text{gáá 'l lá}_{\text{Word}}\]

(28) A toneless verb followed by a H suffix:

\[
\begin{array}{c}
díg-re 'chase-IMPF' \\
\text{H}
\end{array}
\]

(29) **Opacity**: H from nà (LH) ’FUT’ creates a H-H sequence across a stem-suffix boundary, but Meeussen’s Rule (H-H \(\rightarrow\) H-L) does not apply (postlexical phonology counterfeeds stem level phonology).

\[
\begin{array}{c}
\text{à bíé nà [díg-re 'l lá}_{\text{Word}} súó'ŋ-áá \\
\text{L H L H H H H L H}
\end{array}
\]

\[\text{NOT } *\text{díg-re lá}_{\text{Word}}\]

‘the child will be chasing the rabbit’

(30) The downstep in díg-re 'l á is correctly predicted: the stem-level -ré triggers word-level downstep (stem-level phonology feeds word-level phonology).

(31) **Opacity**: No downstep on lá ‘FACT’ after a focused subject, presumably because lá is cliticized at the phrasal level (postlexical phonology counterfeeds word-level phonology).

\[
\begin{array}{c}
\text{únó lá là wà} \\
3\text{P.SG.EMPH FACT REP come}
\end{array}
\]

‘It is he who has come again’
5. Summary

(32) Dagaare downstep has two sources:
(a) **Morphemes**: Floating L on roots/suffixes
(b) **Prosody**: The right edge of a phonological word

(33) Evidence for level ordering:
(a) At the **stem** level H-H dissimilates (H-H $\rightarrow$ H-L).
(b) At the **word** level H-H survives with downstep (H H $\rightarrow$ H 'H).
(c) At the **postlexical** level H-H survives intact.

(34) Evidence for cyclicity:
(a) Only one downstep per phonological word is allowed.
(b) If more would arise, inner downstep blocks outer downstep.

Acknowledgements

We thank Will Leben for discussion and encouragement and Vivienne Fong and Larry Hyman for various kinds of input. All errors are ours.

References


