1 Introduction and background

1.1 Goals and outline

1.1.1 Goals:

• Introduce Totela's remarkably regular system of high-tone anticipation (leftward spread and delinking of the original H tone)
• Situate the system typologically
• Explore why the system is cross-linguistically rare compared to perseverative (rightward) spreading, and how it may have developed

1.1.2 Outline of talk:

• Introduction to Totela and its tone system (1.2)
• Tone shift typology, and explanations for the rarity of anticipatory systems (1.3)
• H-tone anticipation in Totela (2.1)
• Possible origins (speculative) (2.2 and 2.3)

1.1.3 Conventions

• Practical orthography modified from Lozi orthography. Non-prenasalized $b$ is $\beta$; glides are written as $y$ and $w$
• H (á) and falling (HL: à) tones are marked. Input H tones are underlined in section 2 and beyond
1.2 Tone in Totela: the basics

1.2.1 Totela

- Bantu
- Guthrie classification number K.41 [Maho 2009]
- Spoken in Zambia’s Western Province and parts of the Caprivi Strip in Namibia

- Part of the “Bantu Botatwe” group, which also includes Tonga, Ila, Subiya, Shanjo, Fwe, and other closely-related languages [de Luna 2008 Bostoen 2009]
- Highly endangered (children rarely learn it)

1.2.2 Totela tone

- **Output (non-intonational) tones**: H, 1H, L, HL (falling)
  
  (a) H tones do not occur on utterance-final syllables (except intonational H%)
  
  (b) Several H tones may appear in a word (with downdrift)

  (1) máyiwiye ‘bird (sp.)’

  (c) Output H-H (or H-HL) sequence realized with downstep: H-1H

  - Occurs within words with long vowels/prenasalized stops

  (2) a. aká-dáála ‘old man’

  b. mú-lómbwe ‘saddle-bill stork’

  c. bá-sántombeléka ‘lizards (sp.)’ cf. sántombeléka ‘lizard’
– And across words

(3) a. *kukasiká¹kúmbali nomunzi
   ku-ka-sik-á¹kú-mbalı nomun-zı
   INF-DIST-arrive-FV CL17(LOC)-side COM.CL3-village
   ‘then they arrived by the village’

b. *nabó¹mòmu dii! dii! dii!
   nabó¹mòmu dii! dii! dii!
   COM.2PL.DEM CL18(LOC).DEM whirr! whirr! whirr!
   ‘and in there he’s going whirr! whirr! whirr!’

c. *ínsumá¹yángu
   ín-simá¹yángu
   CL9-nshima CL9.1.SG.POSS
   ‘my mealie-pap’

(d) HL falling tone occurs only on long vowels, including vowels before pre-
nasalized stops (with some positional constraints)

(4) a. omwáami ‘chief’
    b. mpéngu ‘sable, roan’ [mpě:ngu]
    c. láála! ‘sleep!’ (imp.)
    d. yénd-a! ‘walk!’ (imp.) [okuye:nda]

• TBU is the mora (as evidenced by long-voweled verb roots)

• **Privative or binary?** Two-tone systems may be analyzed having a priva-
tive (e.g. H vs. 0) or a binary (H vs. L) opposition (as discussed in [Hyman
2001])

(a) Evidence for a privative system: only H appears to be phonologically active
   i. *H-H: OCP prohibition against H-H sequences, which either result
      in downstep or delinking of the second H
      – No such distribution requirements for L tones
   ii. Grammatical assignment of Hs in certain tenses
   iii. H-tone shifting and deleting

(b) Evidence for a binary system

   i. Presence of (HL) contour tones (in restricted environments)
   ii. Presence of downstep, possibly evidencing floating (L) tones

• **High-tone anticipation (HTA):** Input H tones surface one syllable to the
  left (shift/spread + delinking) – a remarkably regular system, with some
  grammatical complications and co-occurrence constraints. (See section 2.)

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¹It should be noted that both of these pieces of evidence depend on one’s choice of how to represent
tone “underlyingly” ([Hyman 2001]).

1.3 A brief typological look at tone spreading and shifting

1.3.1. Parameters of tone spreading (taken from Hyman 2007:8-10):

(a) Domain (stem, word, phrase, etc.)
(b) Directionality (left → right, right → left)
(c) Extent (bounded, unbounded)
(d) Attractors (e.g. accent, domain edge)
(e) Inhibitors (e.g. depressor consonants)
(f) Target delinking (partial vs. complete tone spreading)
(g) Trigger delinking (spreading vs. shifting)
(h) Iterative vs. non-iterative

1.3.2. Rightward spreading and shifting (both bounded and unbounded) very common across Bantu

(5) Bounded H shifting in Jita (JE.25)(no shift to FV) [Downing 1990 in Hyman 2007]

- o-ku-ɓgn-a ‘to get/see’
- o-ku-ɓgn-ér-a ‘to get for’
- o-ku-ɓgn-ér-an-a ‘to get for each other’

1.3.3. Claim: right-to-left spread/shift is more “natural” than left-to-right spread/shift

• “Spreading is an assimilatory process of the progressive or perseverative type, rather than the regressive or anticipatory type. That is, the earlier tone appears to last too long, rather than the later tone starting too early” (Hyman & Schuh 1974:88)

• “Late realization of tonal targets has been demonstrated both for languages in which tones are lexical... and for those in which they are intonational...” (Kingston 2003:86)

1.3.4. A number of studies provide motivation for this claim:

• Phonetic motivations: \( f_0 \) lag (Myers 2003:71-72):

> “There is a widespread pattern according to which the \( f_0 \) peak realizing a high tone occurs regularly at the beginning of the syllable following the high-toned one... [The overwhelming prevalence of perseverative rather than anticipatory spread] can be seen as the phonological reflex of the widespread long lag of the \( f_0 \) peak into the syllable following the high-toned one. Language learners exposed to such a pattern would hear \( f_0 \) rising through one syllable and falling through the next, and it would be natural for them to interpret this pattern in terms of a high tone associated with both syllables. This would be a case of hypocorrective sound change in the sense of Ohala (1993).”

\[
\begin{array}{c}
\text{H} \text{L} \\
\text{H} \text{L} \\
\text{H} \text{L}
\end{array}
\rightarrow
\begin{array}{c}
\text{H} \text{L} \\
\text{H} \text{L} \\
\text{H} \text{L}
\end{array}
\rightarrow
\begin{array}{c}
\text{H} \text{L} \\
\text{H} \text{L} \\
\text{H} \text{L}
\end{array}
\]

“...it is easy to see why the ‘forward-spreading’ option should be more natural than the ‘backward-spreading’ one. Forward spreading requires adding one association line while deleting none, as shown in the second configuration ...”

1.3.5. Counter-examples

- “As I have shown by numerous examples from Bantu, Hyman’s claim is not correct since tonal anticipation (by spreading, absorption, shifting, and displacement) does in fact occur as a natural process in many languages” (Schadeberg 1977:202)

Some examples (see also Schadeberg 1977 and Hyman 2007):

- (a) Haya (Hyman 2007): Final tones attracted to penult; pre-pausal lowering: \(\emptyset\)-H% \(\rightarrow\) H-H% (\(\rightarrow\) H-L // )
- (b) Kinyarwanda (Kimenyi 1976; Kimenyi 2002, among others): (variable) bounded H-tone anticipatory spreading
- (c) Belgrade Serbian (Inkelas & Zec 1988 in Hyman 2007:21): pretonic HTA
- (d) Luganda (Hyman & Katamba 1993): HTA to toneless syllables from H% boundary tone or H from a following word
- (e) Lingala (Guthrie in Schadeberg 1977): toneless post-radical “extensions” take the tone of the final vowel
- (f) Tonga (Meeussen 1963; Carter 1971; Goldsmith 1984): surface Hs occur between input Hs (in the simplest case)

\[\text{Contra this claim, Myers (2003) argues, based on phonetic study, that “the high tone is not phonologically associated with the preceding vowel, and that tone anticipation is a gradient effect of anticipatory coarticulation”}\]
1.3.6. Response (Hyman 2007)

- HTA occurs primarily in languages with reduced, privative (H vs. O) systems rather than those with more than one “underlying”/input tone.
- “...where tone spreading is anticipatory, more than the natural phonetic tendencies must have been implicated” (Hyman 2007:19)
- Some implicating factors (Hyman 2007:29):
  (a) Attraction to a strong position (e.g. Haya)
  (b) Attraction to a weak position (e.g. Belgrade Serbian, Luganda, Lingala)
  (c) Pressure from the right edge (e.g. Haya)
→ “HTA is always initiated by right-edge factors in Bantu” (Hyman 2007:22)

1.3.7. Summary: Rightward spreading is far more common than HTA, and HTA is apparently subject to more constraints than is rightward spreading. Rightward spreading is phonetically “natural”, while tonal anticipation requires further explanation.

2 HTA in Totela

2.1 Basic patterns

2.1.1. H tones surface one syllable to the left of input Hs (underlined).

(6) a. Infinitive forms:

<table>
<thead>
<tr>
<th>Ø root</th>
<th>H root</th>
</tr>
</thead>
<tbody>
<tr>
<td>oku-lwa ‘to fight’</td>
<td>oku-twɑ ‘to pound’</td>
</tr>
<tr>
<td>oku-saka ‘to want’</td>
<td>oku-ḥa ‘to pull’</td>
</tr>
<tr>
<td>oku-ziika ‘to bury’</td>
<td>oku-biika ‘to hide’</td>
</tr>
<tr>
<td>oku-ukuta ‘to shake’</td>
<td>oku-yeymbela ‘to herd’</td>
</tr>
</tbody>
</table>

b. Infinitives with (Ø) object markers:

<table>
<thead>
<tr>
<th>Ø root</th>
<th>H root</th>
</tr>
</thead>
<tbody>
<tr>
<td>oku-mu-ziika ‘to bury him’</td>
<td>oku-mu-biika ‘to hide him’</td>
</tr>
<tr>
<td>oku-mu-ukusa ‘to shake him’</td>
<td>oku-mu-hupula ‘to think of him’</td>
</tr>
</tbody>
</table>


- The second of two concatenated H tones will lower (except when downstep is conditioned) as in example (7), where H-toned 3pl object marker (OM) -ba is followed by a H root, e.g. -hupula ‘think, remember’.

(7) Infinitives with (H) object markers:

<table>
<thead>
<tr>
<th>Ø root</th>
<th>H root</th>
</tr>
</thead>
<tbody>
<tr>
<td>oku-ḥa-ziika ‘to bury them’</td>
<td>oku-ḥa-biika ‘to hide them’</td>
</tr>
<tr>
<td>oku-ḥa-ukusa ‘to shake them’</td>
<td>oku-ḥa-hupula ‘to think of them’</td>
</tr>
</tbody>
</table>
(8) okú-ba-hupula ‘to think of them’

\[
\begin{array}{cccc}
\text{o} & \text{ku} & \text{ba} & \text{hu} \\
\text{H} & \text{H} & \text{H} \\
\end{array}
\]

\[
\begin{array}{cccc}
\text{MR} & \text{o} & \text{ku} & \text{ba} & \text{hu} & \text{pu} & \text{la} \\
\text{H} & \text{H} & \text{H} \\
\end{array}
\]

\[
\begin{array}{cccc}
\text{Post-shift output} & \text{o} & \text{kú} & \text{ba} & \text{hu} & \text{pu} & \text{la} \\
\text{H} \\
\end{array}
\]

- MR applies (iteratively) left to right within the macrostem (root + object marker) as in (9)

(9) mu-ká-ba-bábalal-e ‘go take care of them’ (2pl hortative) – grammatical H on 2nd root mora

\[
\begin{array}{ccccccc}
\text{mu} & \text{ka} & \text{ba} & \text{ba} & \text{ba} & \text{le} & \text{le} \\
\text{H} & \text{H} & \text{H} & \text{H} \\
\end{array}
\]

\[
\begin{array}{ccccccc}
\text{MR} & \text{mu} & \text{ka} & \text{ba} & \text{ba} & \text{ba} & \text{le} & \text{le} \\
\text{H} & \text{H} & \text{H} & \text{H} \\
\end{array}
\]

\[
\begin{array}{ccccccc}
\text{Post-shift output} & \text{mu} & \text{ká} & \text{ba} & \text{ba} & \text{ba} & \text{le} & \text{le} \\
\text{H} & \text{H} \\
\end{array}
\]

(10) Pitch trace:
2.1.3. Shift evident from Proto-Bantu (PB) reconstructed forms:

(11) Reflexes of *PB nouns (H in first stem syllable surfaces on prefix):

<table>
<thead>
<tr>
<th>*PB tone</th>
<th>*PB form</th>
<th>Totela reflex</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-H</td>
<td>*kádá</td>
<td>nánkala (MR)</td>
<td>‘crab’</td>
</tr>
<tr>
<td>H-L</td>
<td>*kúpá</td>
<td>echi-fywa</td>
<td>‘bone’</td>
</tr>
<tr>
<td>L-H</td>
<td>*gódí</td>
<td>olu-wózí</td>
<td>‘string’</td>
</tr>
<tr>
<td>L-L</td>
<td>*jógu</td>
<td>in-zohu</td>
<td>‘elephant’</td>
</tr>
</tbody>
</table>

2.1.4. HTA across words, as well:

- Input H tone on vocalic noun augments (pre-prefixes)
- Also on locative prefixes a-, ku-, mu-
- Initial H surfaces on final vowel of previous word:

(13) oku-ya ‘to go’ + ku-mu-lônga ‘to river (cl.3)’ → okuyá ku-mu-lônga ‘to go to the river’

- Vowel coalescence results in HL contour:

(14) okú-bôna ‘to see’ + omu-nzi ‘village (cl.3)’ → okuí-bô:mu-nzi ‘to see the village’

- Surface H on penult (i.e. input H final) blocks HTA to final (Meeussen’s Rule again)

(15) ta-ndi-sáki ‘I don’t like’ + aba-ntu ‘people (cl.2)’ →
  ta-ndi-sákí aba-ntu ‘I don’t like people’
  (cf. ndi-la-sákí aba-ntu ‘I like people’)

8
• In all but a few (grammatically-conditioned?) cases, a H-H–initial second word results in downstep

\[ \text{omission} \]

(16)  a. əku-ya ‘to go’ + kũ-Sǐmũnyewu ‘to Beetle’ →
       əku-yá kũ-Sǐmũnyewu ‘to go to Beetle’;
       b. cf. əku-yá kũ-bá-Sĩmũnyewu ‘to go to Mr. Beetle’

2.1.5. HTA and grammatical tone: There are three main tone patterns associated with Totela Tense/Aspect/Mood:

(a) No grammatical tone: Surface forms reflect (anticipated) input tones, subject to Meeussen’s Rule

\[ \text{omission} \]

(17)  a. nda-ka-mũ-bõna ‘I saw him (yesterday or before)’ (H root, Ø OM)
       b. nda-ká-bá-bõna ‘I saw them (yesterday or before)’ (H root, H OM)

(b) Grammatical H on 2nd root mora

\[ \text{omission} \]

(18)  a. ta ndi-sákí ‘I don’t want (to)’ (Ø root)
       b. ta ndi-hõh ‘I don’t pull’ (H root)
       c. mũ-ka-mũ-bábalele ‘go take care of him (elsewhere)’ (H root, Ø OM)
       d. mũ-ká-bá-bábalele ‘go take care of them (elsewhere)’ (H root, H OM)

(c) Grammatical H on final vowel with optional H plateauing

\[ \text{omission} \]

(19)  a. mũ-gátáwüle ‘cut up’ (2pl. hortative) (Ø root)
       b. mũ-bábáléle ‘take care (of X)’ (2pl. hortative) (H root)

2.2 Comparison with Tonga

2.2.1. Tonga is a close relative of Totela in Zambia, and the HTA systems are quite similar, with some key differences (Tonga data from Meeussen 1963):

<table>
<thead>
<tr>
<th>Tonga</th>
<th>Totela</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the general case, H tones occur between two input Hs (plateauing)</td>
<td>In general, H tones occur on the syllable preceding an input H</td>
</tr>
<tr>
<td>balámúbona</td>
<td>balámúbona ‘they see him’</td>
</tr>
<tr>
<td>Distinction between H and toneless subject markers in some tenses</td>
<td>No distinction between subject marker tones</td>
</tr>
<tr>
<td>tulabalanga (Ø)</td>
<td>tulábgsaka</td>
</tr>
<tr>
<td>balabalanga (H)</td>
<td>balábgsaka</td>
</tr>
</tbody>
</table>
2.2. Tonga has been described (e.g. by [Hyman 2007:28]) as a case of reanalysis from a H-Ø system to a L-Ø system, where Ls are “preceded by unbounded Hs”. Totela does not appear to be amenable to such an analysis:

- Although there is some plateauing, as in [19], it is optional
- L tones do not exhibit the same interactions (MR, downstep conditioning) as H tones; it seems that H tones are the active ones
- L tones optionally raise before H tones

2.2.3. How to get from Tonga to Totela?

- Tendency for late H target realization reinterpreted as single H before L? (i.e. rightward shifting of anticipation?)
- Regularization of the simplest cases?

2.2.4. How to get from Totela to Tonga?

- Reanalysis of optional plateauing as obligatory? (How then to explain the subject marker contrast?)

2.3. Totela HTA and tone-shift typology

2.3.1. Summary of properties of Totela HTA (from properties listed in [Hyman 2007:8-10]):

(20) HTA in Totela:
Domain: phrase
Directionality: left → right
Extent: bounded (1 syllable/mora)
Attractors: ??
Inhibitors: ??
Target delinking: yes
Trigger delinking: yes (shifting)
Iterative: no

2.3.2. Recall the three implicating factors for HTA ([Hyman 2007:22]):

(a) Attraction to a strong position (no strong evidence in Totela)
(b) Attraction to a weak position (no strong evidence in Totela)
(c) Pressure from the right edge (maybe)
2.3.3. Right-edge pressure?

- Phrase-final intonation
- In a (declarative-type) utterance with Hs and Ls, all Ls following the final H tend to be super-low:

\[
(21) \quad \text{ijilo ba-ka-ndi-waan-a na-ndi-tobèl-a abantu ‘yesterday they found me seeking some people’}
\]

\[
(\text{L-L-L L-L-L-L-L L-L-L-H L-L-L)}
\]

- This is only the case at the end of a phrase
- -H\% intonational suffix for lists, pauses with the intent of continuing, some questions
- → Pressure to move H tones from the right edge for maximum intonational clarity, with a domino effect resulting in (more-or-less) across-the-board HTA?

3 Conclusion

- Totela has an unusually regular and pervasive system of HTA
- Anticipation may have roots in pressure from the right edge, but such effects are not synchronically salient
- The question remains of why such systems are so rare (or at least rarely attested) – is it due to the need for a privative system? Or are the critical cases yet undescribed?
- Further examination and comparison of Totela and Tonga (and similar systems) may shed some light on the development of HTA

\[\text{[1]}\]

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