Tonal morphemes in Eton

Affixes, clitics and (pseudo)words: the preservation of morphological structure after segmental attrition
1. Introduction
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• Tone rules refer to different morphological boundaries: - affix, =clitic, #word
• Irrespective of whether morphotonemes are structurally linked or not
• Consequently, tonal morphemes can be analysed as affixes, clitics or words
• The resulting analysis of the tonal morphology is strictly concatenative.
2. Eton tonology & morphology

- Two tone levels: high (á) and low (â), in an equipollent opposition
- Five possible surface patterns on a syllable: high (á), low (â), rising (ã), falling (â) and downstepped high (á)
- Complex tones are best analysed as combinations of level tones
2. Eton tonology & morphology

- Tone rules: illustrations (1)

(1) a.  

\[ d-\text{ùmá} \] ‘nest’ (class 5),  
\[ mè-\text{ndím} \] ‘water’ (cl.6),  
\[ á \] locative preposition

b.  

\[ á dûmá \] ‘in the nest’  
\[ á mè^{4}ndím \] ‘in the water’
## 2. Eton tonology & morphology

- Tone rules: illustrations (2)

<table>
<thead>
<tr>
<th>(2) á 3SG</th>
<th>bòmlò ‘hit’</th>
<th>tádì ‘start’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hodiernal past perfective</td>
<td>àbômlò</td>
<td>àtáfì</td>
</tr>
<tr>
<td></td>
<td>àbômló múŋá</td>
<td>àtáfì ú tìáŋ</td>
</tr>
<tr>
<td>Subjunctive</td>
<td>á⁴bômlò</td>
<td>á⁴tádí</td>
</tr>
<tr>
<td>Consecutive</td>
<td>àbòmló</td>
<td>àtáfì</td>
</tr>
<tr>
<td>Present</td>
<td>àtò bòmlò</td>
<td>àtò ⁴tádí</td>
</tr>
</tbody>
</table>
2. Eton tonology & morphology

• Tone rules: illustrations (3)

(3) a. àmá ‘dĩ ‘She ate (it).’ (this morning)
   b. ìŋgámâ cág ‘She crushed it’ (some time ago)
   c. àté mǎ til ‘She stops writing.’
   d. bé’mágá ‘ból‘They left it.’ (yesterday)
   e. àŋgábé màgà tī ‘She stopped writing.’ (some time
      ago)
2. Eton tonology & morphology

Two types of analysis are possible:

a) Non-concatenative tonal operations in which underlying tones are replaced by other tones in a given context

b) A model involving floating tones and tone rules that describe the way they attach to the available segmental material

Tonal analyses of the other Beti-Bulu-Fang languages are of the first type.
2. Eton tonology & morphology

e.g. Essono’s analysis of the Ewondo verb form \( m\ddot{a}l\ddot{a}d \) ‘I sewed (it)’ (Essono 2000:512)

an underlying form: |mé-làd-àgà| (1SG-sew-PST)
two tonological operations called “hypertonemes”:

\`
D replace the low tone of a verb stem by a high tone in the Hodiernal past perfective (and some other TAM-forms)
``

\`
A replace the high tone of the 1SG subject prefix by a low tone in the Hodiernal past perfective (and a high number of other TAM forms)
``
2. Eton tonology & morphology

Additional remarks (by Essono):
- this analysis does not work for structurally high verb stems (which surface with a high tone, rather than the predicted falling tone)
- nor for verbs that are followed by a complement (which always surface with a high tone)

Extra problem:
- The analysis does not work for di- or trisyllabic stems either
2. Eton tonology & morphology

Alternative analysis for *mëlâd* ‘I sewed (it)’:
Underlying representation:
Phrase final verb form: |mè-[H]-lâd| (1SG-PST-sew)
Non phrase final form: |mè-[H]-lâd-[H]| (1SG-PST-sew-NF)

Limited number of general, exceptionless tone rules.

In order to formulate the necessary tone rules we need to recognize the importance of stem-initial prominence and of morphological boundaries and we must be aware of the fact that morphological boundaries are relevant where there is no segmental material as well.
3.1. Tone rules: stem-initial prominence

- **Phonotactic**
The occurrence of half of the consonant phonemes is restricted to C1 position (the onset of prominent syllables)

- **Phonetic**
  prominent syllables have an audibly longer onset consonant than non-prominent syllables

- **Phonological**
  C1 is not subject to the lenition of /b, d, g/ that applies to non-C1 consonants in intervocalic position
3.1. Stem-initial prominence

- Tonological

Prominent syllables can carry two structural tones, non-prominent syllables only one:

(4) ə́ # d̀-úmá → ə́ d̀úmá ‘in the nest’
  á # mè-ndí’m → á mè́ndí’m ‘in the water’

(5) ə́-bò̀mlo-H̄ → ə̀bòmlo ‘and he hits’

(6) ə̀-kè-H̄ → ə̀kè ‘and he goes’
3.1. Stem-initial prominence

Note:
Due to high tone spread (tonal assimilation), a non-prominent syllable can have a falling surface tone:
(7) \[\text{\texttt{ndɔ̃gə}} \rightarrow \text{\texttt{ndɔ̃gə}}/ \rightarrow [\text{\texttt{ndɔ̃wə̃}}] \text{‘mango’}\]

There are some mismatches between prosodic and morphological stems, e.g. \[\text{\texttt{d-ùmá}}\] ‘nest’ in (1b) and
(8) \[\text{\texttt{ã mòtwâ}} \rightarrow \text{\texttt{ã mòtwâ}} \text{‘in the car’}\]
3.2. Tone rules: morphological boundaries

Tone rules refer to morphological boundaries in their context specification.

There is a rule of high tone copy before any morphological boundary:

(9) \( c\acute{v} \rightarrow c\acute{v}^H \)

\( c\acute{v} = \rightarrow c\acute{v}^H = \)

\( c\acute{v}\# \rightarrow c\acute{v}^H\# \)

The resulting floating high tone attaches to the following syllable.
3.2. Morphological boundaries

The result of high tone attachment depends on the morphological boundary the floating high tone has to cross, if the target syllable is non prominent:

(10) \( c\acute{v}-c\grave{v} -\rightarrow c\acute{v}-c\acute{v} \) (tone spread)
    \( c\acute{v} = c\grave{v} -\rightarrow c\acute{v} = c\acute{v} \) (no tone spread)
    \( c\acute{v} \neq c\grave{v} -\rightarrow c\acute{v} \neq c\acute{v}\text{L} \)
3.2. Morphological boundaries

(11) cv-cv- → cv-cv- (high tone spread)

a. /íbísíjâ bî/

|í-bì-síñà # bí|

AU-8-cat VIII.DEM

‘these cats’

b. /íbílwâlì b’/

|í-bì-lòfì # bí|

AU-8-duck VIII. DEM

‘these ducks’
3.2. Morphological boundaries

(12) \( cv = c`v \rightarrow cv = cv^{-} \) (no high tone spread)

a. /bjǎ bिजा/  
|\( bj-ả \) # \( bi = i-sîŋà \) |
8-claw VIII.CON-7-cat
‘the claws of a cat’

b. /mèvùl mिलवाली/  
|\( mè-vùl \) # \( mó = i-lòlì \) |
6-feather VI. CON = 7-duck
‘the feathers of a duck’
3.2. Morphological boundaries

(13) cv # cv- → cv # cvL-

a. /á meʔŋ/  
   |á # mè-ŋ|  
   LOC 6-hole  
   ‘in the holes’

b. /á meʔŋ/  
   |á # mè-ŋ|  
   LOC 6-clan  
   ‘in the clans’
4. Tonal morphemes

The three morphemes that trigger high tone spread in the previous examples (11-13) all have tonal allomorphs. That is, for all these morphemes there are contexts in which they lost their segmental substance and kept their high tone only.

Interestingly, these tonal allomorphs behave exactly as the copied high tone from their segmental counterparts when they attach to a following syllable. Thus, even in the absence of segmental material, morphological structure is preserved.
4. Tonal morphemes

(14) a. /ɛfʒəŋ dī/
   \[\begin{align*}
   \text{H-} & \text{ɛfʒəŋ} \quad \# \quad \text{dī} \\
   \text{AU-5-hole} & \quad \text{V.DEM} \\
   \text{‘this hole’}
   \end{align*}\]

b. /ɛfʒəŋ dī/
   \[\begin{align*}
   \text{H-} & \text{ɛfʒəŋ} \quad \# \quad \text{dī} \\
   \text{AU-5-clan} & \quad \text{V.DEM} \\
   \text{‘this clan’}
   \end{align*}\]
4. Tonal morphemes

(15) a. /bjǎ bísíŋâ/
   \[|bj-ǎ \quad \# \quad H = bi-síŋâ|\]
   8-claw     VIII.CON-8-cat
   ‘the claws of the cats’

b. /məvùl bîlwàlì/
   \[|mè-vùl \quad \# \quad H = bi-làlì|\]
   6-feather   VI.CON = 7-duck
   ‘the feathers of the ducks’
4. Tonal morphemes

(16) a. /ɛfʒɔŋ/

| H  # ɛ-fʒɔŋ |
LOC   5-clan
‘in the clan’

b. /ɛ¹fʒɔŋ/

| H  # ɛ-fʒɔŋ |
LOC   5-hole
‘in the hole’
4. Tonal morphemes

- The connective proclitic of class 3:

(17) àlèd míntèm

|à-lèd | H = mìn-tèm |
3-hard  III.CON = 3-branches

‘hard branches’ (bad ex. on handout)

- Link tone, a “pseudo word” (see Idiatov 2005):

(18) /mòtó twàgdò mó'ndîm/

|mò- | L-té # L-tògdò # H # mò-ndîm |
1SG-PR  INF-boil  LT  6-water

‘I’m boiling water.’
5. Illustration

(3) a. àmá ‘dî ‘She ate (it).’ (this morning)
   b. Ḣngámâ cág ‘She crushed it’ (some time ago)
   c. àté mă til ‘She stops writing.’
   d. bé‘mágá ‘ból ‘They left it.’ (yesterday)
   e. àŋgábé màgà tl ‘She stopped writing.’ (some time ago)
5. Illustration

àté mà ìl ‘She stops writing.’
|à-Lté  L-mà  H  L-til|
1SG-PR INF-TMN LT INF-write

|L-té| ? < à-télâ (PR-stand)
L-mà < à-mànà (3-terminate)
H ?? < ëú (III.CON)
L-til < à-til (3-...)
5. Illustration

a. àmá 'dí ‘She ate (it).’ (this morning)

|à-H-mà-H | L-dí|  
I-PST-TMN-NF INF-eat

H (PST) < á (PST)
H (NF) < ?

b. bé‘mágá ‘bóli ‘They left it.’ (yesterday)

|bó-H-mà-gà-H | L-bóli|  
II-PST-TMN-YP-NF INF-leave
8. Conclusions

- Typological relevance: tonal morphemes can have the same degrees of morphological bonding as segmental morphemes.
- Possible relevance for the Bantu (A70) languages and other languages of the region: word forms can be segmented into separate morphemes, no idiosyncratic rules of tone replacement are needed. The resulting description is not only simpler, it also provides insight into the origin of complex tone patterns.
References


Model of description

I use a classic morphonological model, with three levels of representation:

<table>
<thead>
<tr>
<th>morphonological level</th>
<th>(morphophonemes, morphological boundaries)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>representation rules</td>
</tr>
<tr>
<td></td>
<td>/phonological level/ (phonemes, prominence (accent), pause)</td>
</tr>
<tr>
<td></td>
<td>realisation rules</td>
</tr>
<tr>
<td></td>
<td>[phonetic level] (sounds)</td>
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