

UPSTEP IN A BANTU TONE LANGUAGE

Gilbert PUECH

Résumé

Le présent article démontre l'existence, dans une langue bantoue de l'ouest, d'un ton haut relevé dont l'apparition est conditionnée par des facteurs sémantiques. Les rapports entre ce ton haut relevé, qui se manifeste au niveau syntagmatique, d'une part, et les tons lexicaux, d'autre part, sont examinés en détail. Huit diagrammes sont fournis pour illustrer les mélodies concernées.

1. LEXICAL TONES

Li-Duma and li-Wanji are two dialects of a western Bantu language spoken around Lastoursville in Gabon¹ (B50 area in Guthrie's classification). Etymological stem-tones are underlyingly preserved intact and may surface as such in some constructions. The following li-Duma nominal forms illustrate the four possible combinations of H and L² on italicized canonical bisyllabic stems:

- | | | |
|-------|---------------------------------|------------------------------------|
| 1 (a) | mè ^ˈ móní lîbà:là nà | mù ^ˈ ká ^ˈ dí |
| (b) | | mù l'úmì |
| (c) | | mù f'ùdú |
| (d) | | mùβèγà ³ |

In most contexts, however, underlying tones are not directly realised, being

1. The data on li-Duma was collected by the author in 1990 as part of the project Atlas Linguistique du Gabon, funded by LACITO-CNRS. I am grateful to Médard Mouélé, currently preparing a doctoral dissertation on li-Wanji, his mother tongue, for providing me with relevant examples in that dialect.

2. H (High) and L (Low) are respectively marked by an acute accent and a grave accent; a down-pointing arrow marks a Downstep. An upstepped High tone is indicated by a double acute accent.

3. Respectively, "I saw a boy with a wife, a husband, a young man, a slave".

displaced or transformed by different rules. Since the intricacies of the tonal systems of li-Duma and li-Wanji need not concern us here, suffice it to say that they include two basic processes: High tone copying and Downstep.

In li-Duma a High tone is simply copied onto the next mora, word internally or across a word boundary, when the following stem includes a radical and/or final High:

- 2 (a) m̀̀kádí ná m̀̀b̀̀:ngó⁴
 (b) m̀̀lú mí ná m̀̀b̀̀:ngó
 (c) m̀̀fùdú ná m̀̀b̀̀:ngó

If the stem on the right is LL(L), the H is copied up to and including the radical vowel:

- 3 (a) m̀̀fùdú ná múβéγà⁵
 (b) ná músásàngù

Any underlying High tone undergoes the copying rule, whether it is associated with a verbal or nominal form or an associative marker:

- 4 bàβèγà bá múfùdú⁶

When the vowel onto which the H is copied is itself associated with a L, this L tone is delinked and attached to the next mora, thus entailing a Downstep on a subsequent H tone:

- 5 (a) bàβèγà bá múkádí⁷
 (b) bá múl'úmì

4. Respectively, "a wife, a husband, a young man, a pygmy".

5. Respectively, "a young man and a slave, a sparrow".

6. "The young man's slaves"

7. Respectively, "the wife's, husband's slaves".

Consecutive Downsteps may take place:

- 6 bàdólé bá múkádí lól'ól'⁸

2. PRESENTATIVE FORMS

In the presentative construction, an underlying floating H tone precedes the introduced nominal stem. This H is mapped onto the prefixal vowel; if the stem is L, it is extended to the radical mora

- 7 múfùdú (it is a young man)
 8 múβéγà (it is a slave)

This mapping process generates a Downstep, as might be expected, by displacement of the prefixal L, if the radical is associated with a H tone:

- 9 múkárí (it is a wife)
 10 múl'úmì (it is a husband)

From examination of the figures presented below (see fig. 1-4), it is clear that the pitch level of the prefixal vowel for the li-Wanji examples may vary to such an extent that it is legitimate to record the distinction by introducing a doubled acute accent to represent the comparatively higher pitch:

- 11 (a) múb̀̀:ngó
 (b) múb̀̀:ngó
 12 (a) múβéγà
 (b) múβéγà

Notice that in (12) the pitch level is maintained over both the prefixal and the radical vowels. The variation between examples (a) and (b) is correlated with a

8. "The wife's money to-day".

difference of meaning to which we shall return later. Let us first examine other contexts in which an upstepped High may occur (examples in li-Wanji):

- 13 (a) yù mè bómà múk'á:sû (↑)⁹
 (a') múk'á:sû
- (b) múk'á r í (HH)
 (b') múk'á r í
- (c) múβéγà (LL)
 (c') múβēγà
- (d) múbð:ηgó (LH)
 (d') múbðηgó
- 14 (a) yù mé t ómá múk'á:sû¹⁰
 (a') múk'á:sû

There is the same choice after the final vowel of a L verb as after that of a H verb.

Notice that the upstepped High may be mapped on to a stem vowel as well; this is the case with class 9/10 stems for which the segmental prefix (a nasal consonant) has been dropped:

- 15 (a) yù mé t ómá f úmú
 (b) yù mé t ómá f úmú¹¹

An upstepped H tone may only contrast with a H tone, as in examples (13) to (15); it is ruled out in constructions which require a L on the prefix as in (16):

9. Respectively, "The one I am killing is a *woman*, a *wife*, a *slave*, a *pygmy*". The verb radical *-bom-* is underlyingly Low.

10. "The one I am sending is a *woman*". The verb radical *-tom-* is underlyingly High.

11. "The one I am sending is the *owner*".

- 16 mè: bòmà mùk'á:sû
 *mè: bòmà múk'á:sû

Two (or possibly more) upstepped H tones may occur in the same sentence but they are normally separated by an intonational break:

- 17 yù mè món í múk'á r í // út'óγúná múbð:ηgó¹²

3. SEMANTIC CORRELATES

The use of the insistence form appears to be correlated with the mental representation of an idealized prototype:

- 18 (a) yù mè món í n z ókù
 (b) n z ókù

What is at stake in (18) is not a question of determinacy. The meaning in both cases is that "I saw an elephant" which I could meet and recognize again; but the one I saw in (18b) corresponds to my idea of what an elephant really is. If I am prejudiced against elephants, which devastate plantations for example, the insistence form will convey a pejorative meaning and indicate that the elephant I saw had all the attributes which make an elephant a nuisance. The insistence form in itself, however, conveys no intrinsic positive or negative value although such a value may accompany it, due to contextual or pragmatic factors. The insistence form may also have an indirect determination effect:

- 19 (a) yù mè món í múk'á r í
 (b) múk'á r í

In (19b) I refer to my most cherished wife (hence the determination), implying that she corresponds to my ideal wife.

12. "The one I saw was a *wife* insulting a *pygmy*".

4. PHONETIC EVIDENCE

In Figures 1 to 4, the pitch melody and the corresponding wave form of (a) non insistent, and (b) insistent forms are shown for single occurrences of li-Wanji words in the presentative construction. The following values are an estimation of the pitch at the center of the target vowel:

| | | | | | | |
|--------|-----|-----------|-----|-----|-----|----|
| Fig. 1 | (a) | múk'á r í | 175 | 114 | 110 | Hz |
| | (b) | múk'á r í | 250 | 108 | 106 | |
| Fig. 2 | (a) | múl'úmì | 182 | 125 | 112 | |
| | (b) | múl'úmì | 255 | 112 | 102 | |
| Fig. 3 | (a) | múbð:ŋgó | 170 | 100 | 120 | |
| | (b) | múbð:ŋgó | 250 | 94 | 108 | |
| Fig. 4 | (a) | múβéγà | 145 | 145 | 85 | |
| | (b) | múβéγà | 192 | 185 | 94 | |

Table 1 : Pitch values

Similar measurements made on non-insistent vs insistent forms embedded in constructions as in examples (15) to (19) yield comparable results. Clearly, an upstepped H tone is higher than a regular H tone while other tone values are not much affected.

In order to propose a phonological analysis based on phonetic evidence, we must determine what other cues may play a role. First, it may be noticed that in B50 Bantu (and more generally in West Bantu languages), the radical vowel (i.e. the first vowel of the stem) is stressed. The seven vowel system (a, ε, o, e, o, i, u) obtains for this position only, and in some languages of the group, although not in li-Duma or li-Wanji, the final vowel is reduced or even dropped in connected speech and in isolation. Relative length is also a relevant cue to stress placement. In Figure 2 (a), compare for example prefixal [u] in the initial syllable and radical [u]

in the stem *-lumi* : the latter is longer by approximately one half (106 vs 70 ms). The question is now whether the extra-high pitch of insistent forms is correlated with other prominence marks. We measured the length of homologous syllables in the realisations shown in Figures 1 to 4. Results are reported in Table 2.

| | | | | | | | |
|-------|-----|---------------|-----|-----|-----|------|----|
| Fig.1 | (a) | mu.k.a.r i | 131 | 344 | 188 | 663 | ms |
| | (b) | | 231 | 375 | 294 | 900 | |
| | | | +76 | +09 | +33 | +35 | % |
| Fig.2 | (a) | mu.l u.m i | 138 | 250 | 250 | 638 | ms |
| | (b) | | 194 | 250 | 280 | 724 | |
| | | | +40 | +0 | +12 | +14 | % |
| Fig.3 | (a) | mu.b o :.ŋg o | 125 | 375 | 331 | 831 | ms |
| | (b) | | 225 | 419 | 412 | 1056 | |
| | | | +80 | +12 | +25 | +27 | % |
| Fig.4 | (a) | mu.β.e.γ a | 188 | 250 | 250 | 688 | ms |
| | (b) | | 294 | 250 | 288 | 832 | |
| | | | +56 | +0 | +15 | +21 | % |

Table 2: Syllable length

We notice an overall increase in the total duration of insistent forms, primarily on the initial syllable and secondarily on the final one, whereas the radical stressed syllable is less affected. It is thus apparent that the elevation of pitch on the initial syllable is correlated to segmental emphasis. Concerning LL stems, we shall finally note an interesting difference between li-Wanji, where an upstepped High extends over both prefixal and radical vowels, and li-Duma, where only the radical vowel may bear an upstepped High:

(20) yù mè móní múβéγà (li-Duma)

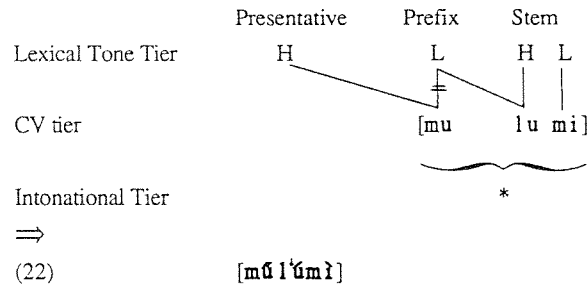
(21) yù mè móní mǔβéγà (li-Wanji)

5. PHONOLOGICAL MODEL

In the spirit of autosegmental phonology (see Goldsmith 1990), we shall, on a Lexical Tone tier, posit two segments (L and H) licensed for tone-bearing units (i.e. vowels). The formation of a downstepped High is accounted for by the reassociation of a L to a right-adjacent H. At the prosodic level, words are organised in intonation units; within such a unit a word may be marked for insistence. An asterisk, constituting a segment licensed for words on the intonational tier, is used as the emphasis marker and is taken into account in the postlexical component of the phonology. An upstepped High surfaces when two conditions are met:

- Attachment, at the lexical level, of a H on the initial vowel of a word;
- Association of this word with an asterisk at the postlexical level.

An underlying representation as below is thus converted into (22), with bold characters indicating segmental emphasis:



REFERENCES

GOLDSMITH, J. (1990), "Auto-segmental and Metrical Phonology", Oxford : Blackwell.
 GUTHRIE, M. (1967-1971), "Comparative Bantu. An Introduction to the Comparative Linguistics and Prehistory of the Bantu Languages", Farnborough : Gregg International Publ.

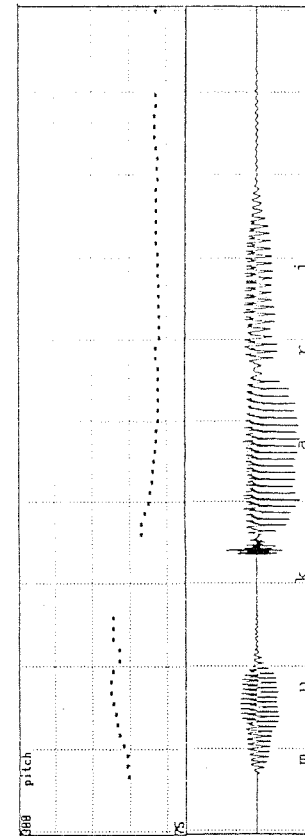


Figure 1-a. Waveform grid scale: 100 ms

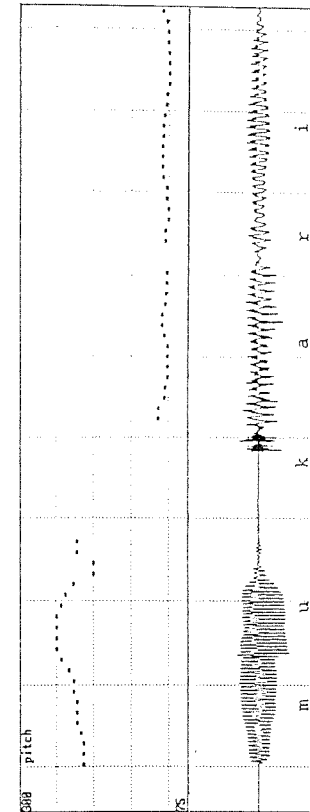


Figure 1-b. Waveform grid scale: 100 ms

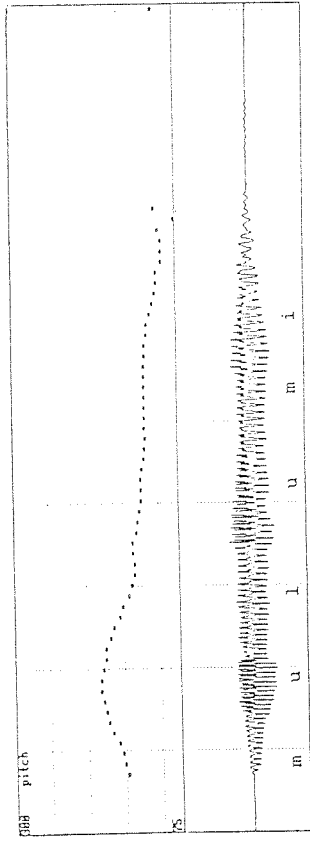


Figure 2-a. Waveform grid scale: 100 ms

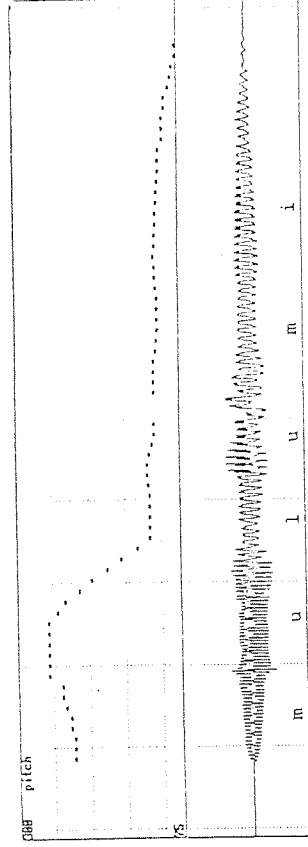


Figure 2-b. Waveform grid scale: 100 ms

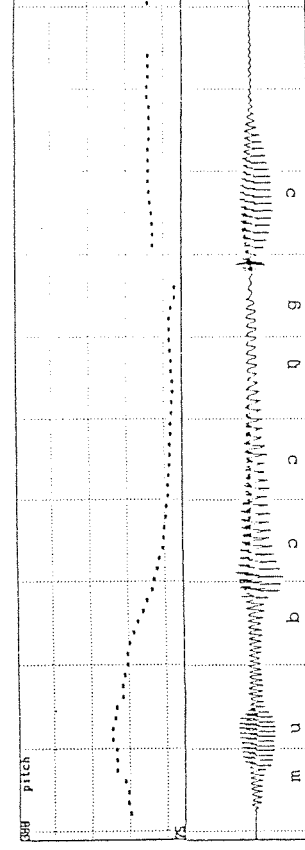


Figure 3-a. Waveform grid scale: 100 ms

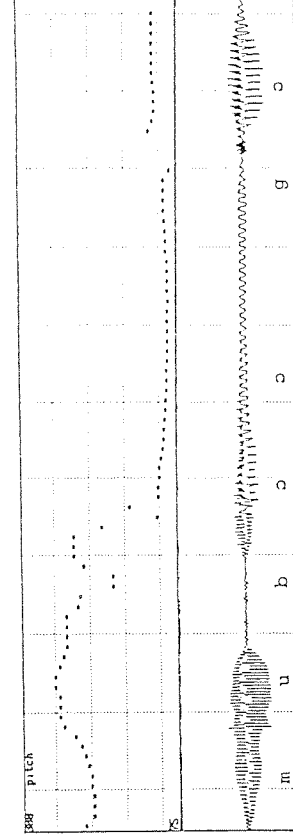


Figure 3-b. Waveform grid scale: 100 ms

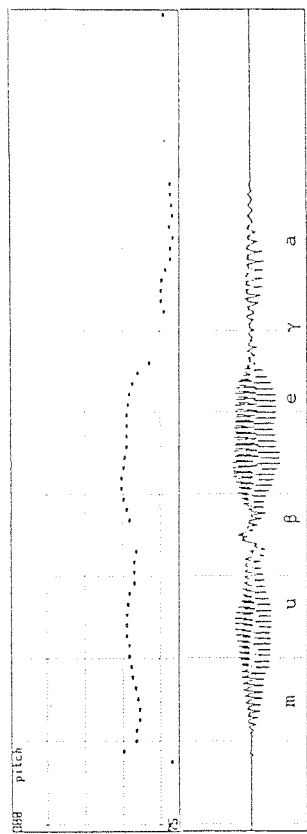


Figure 4-a. Waveform grid scale: 100 ms

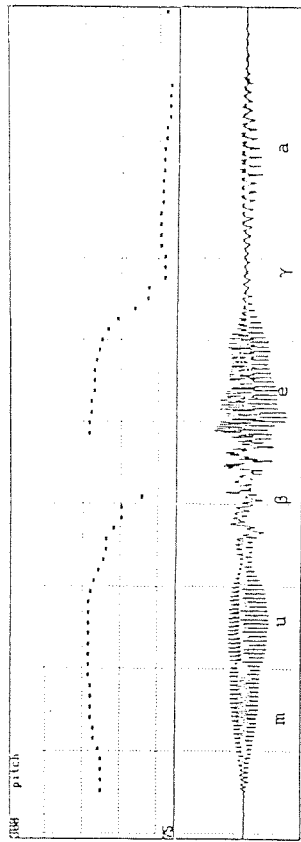


Figure 4-b. Waveform grid scale: 100 ms