Stem-Initial Prominence in Mungbam

Jesse Lovegren
University at Buffalo

1. Introduction

Mungbam [mij] is an endangered and underdocumented Bantoid (Yemne-Kimbi) language of the Northwest province of Cameroon with approximately 2000 speakers divided between five dialects (Munken, Ngun, Biya, Abar and Missong) (Good et al., in press). The goal of this presentation is to draw attention to prominence asymmetries in Mungbam words which indicate that the first syllable of noun and verb stems is the most prominent, and can be analyzed as bearing an abstract accent, even though no overt phonetic correlates of accent have been positively identified. Abstract (i.e. phonetically covert) prominence on stem-initial syllables is well-attested in African languages, especially in the languages of Nigeria and Cameroon (cf. Downing 2004: 104, §6.6; Hyman 2010: §4), though data from more languages is needed as understanding of this phenomenon develops. The current presentation should then be considered as an effort to provide detailed data relevant to this phenomenon from a new language, rather than to offer any theoretically innovative interpretation.

An expected implication of treating prominence asymmetries as exponents of abstract accent is that the accented position is a metrical head within some well-defined foot structure. While it seems probable that there is evidence for foot structure in Mungbam, the present discussion will be limited to showing how several types of evidence converge on indicating the stem-initial position as the most prominent within words. After outlining the possible word shapes for Mungbam noun and verbs (section 2), I will show how consonant (section 3), vowel (section 4) and tone contrasts (section 5) are to a large extent positionally restricted, with the full range of options only being available for stem-initial syllables. Data presented were collected in Cameroon by the author in 2010. Data from different dialects will be freely mixed, with the understanding that the same general patterns are valid across dialects, despite minor differences.

2. Word shapes

Nouns and verbs in Mungbam have similar phonological shapes when certain key differences in their morphological behaviors are factored out, and only the stem itself is considered. As for nouns, (almost) all must bear a noun class prefix.1 Although for some nouns there exists some variability with respect to the choice of prefix, there is no context where the noun class prefix is optional. Other than the noun class prefix, nouns do not contain any affixal morphology. As for verbs, they most frequently appear as bare stems, though a verb may be reduplicated to indicate verum focus, with the reduplicant preceding

* The original title of this presentation, “Mungbam vowels in their typological context,” has been altered to better reflect the content actually covered during the oral presentation. This work was made possible by generous support from NSF grant BSC-0853981 and the University at Buffalo College of Arts and Sciences Humanities Institute. Thanks to my qualifying paper committee members Jeff Good, Karin Michelson and David Fertig for feedback on various aspects of this work. Thanks to Larry Hyman, Laura Downing, Michael Cahill and Dave Odden for feedback and discussion during the questions period. Special thanks to my Cameroonian consultants and guide: Ngong George Bwei Kum, Ngong Belta, Esther Nungo, Kizita Simpe, Bong Christian, Mbelebo William, Pawbeh Kelvin, Kang Protus, Kang Egidius, Kang Gerald, Kang Nesla, Nchang Adeline, Ladj Mispa, Asoa Julius, Sangbo Glory, and Abanga Christian.

1 A very small number of nouns in class 1 have a ø prefix, and are monosyllabic, e.g., Munken nám ‘husband’. Otherwise, class 1 nouns with ø prefix have a stem-initial nasal+obstruent sequence, and the nasal is syllabic, e.g., Munken ø-m. bóŋ ‘1-cow’
the base. Although reduplicant syllables bear some superficial similarities to noun class prefixes, they should probably not be treated as prefixal, since they are capable of distinguishing inflectional categories for some verbs (see section 5). Derived nouns may be formed from verbs by addition of the class 5 prefix i- to the verb stem. Aside from these differences, nouns and verbs may be considered to have the same phonological shape.

A stem may have either one or two syllables. The attested stem-initial syllable shapes are CV, CVC and CCVC, with only the glides /w/ and /j/ permitted as the second consonant of an onset cluster (also /h/ in Missong, Ngun and Abar), and with only the nasal consonants /m/, /n/, and /ŋ/ permitted in coda position. Stem-initial nasal+obstruent sequences are frequent, but in every case the nasal syllabifies with the prefix rather than the stem-initial syllable. Table 1 gives examples of the four different possible shapes of stem-initial syllables for Munken. In the Abar and Missong dialects, vowels in monosyllabic stems may contrast for length, though this contrast has a low functional load.

<table>
<thead>
<tr>
<th>CV</th>
<th>CCV</th>
<th>CVN</th>
<th>CCVN</th>
</tr>
</thead>
<tbody>
<tr>
<td>í-gí</td>
<td>‘4a-candle sap’</td>
<td>i-fw5 ‘5-measure’</td>
<td>í-jám ‘4a-name’</td>
</tr>
<tr>
<td>ů-nê</td>
<td>‘1-person’</td>
<td>í-kjá ‘5-build foundation’</td>
<td>á-kâŋ ‘12-pan’</td>
</tr>
<tr>
<td>ø-ŋ.ği</td>
<td>‘1-species’</td>
<td>ů-kvè ‘1-female friend’</td>
<td>i-tcán ‘5-arm’</td>
</tr>
<tr>
<td>bû-tû</td>
<td>‘14-day’</td>
<td>ů-bjû ‘1-farm’</td>
<td>i-säŋ ‘4a-power’</td>
</tr>
<tr>
<td>ů-m5</td>
<td>‘3-neck’</td>
<td></td>
<td>Ź-jí ‘6a-water’</td>
</tr>
</tbody>
</table>

Table 1: Possible shapes of the stem-initial syllable in Munken. Here and in subsequent examples, the prefix-stem boundary is marked by a hyphen. Also tone marking is as follows: à = L, á = M, á = H, ā = S(uperhigh), ō = HL, â = ML, à = LM. Prefixes are numbered according to their putative proto-Bantu sources.

As for non-initial stem syllables, their only licit shape is CV. The first type of prominence asymmetry between stem-initial and noninitial stem-syllables, then, concerns the range of possible syllable shapes. Stem-initial syllables may have complex onsets, and may have nasal codas, while noninitial stem syllables may have neither of these.

3. Consonant contrasts

While Mungbam may be said to have an inventory of 22 consonant phonemes, it would be necessary to give the caveat that 22 consonants are contrasted only in stem-initial position, while noninitial stem syllables may contrast only eight different consonants. The possible consonants in each of these positions are listed in table 2.

<table>
<thead>
<tr>
<th>C1 = 22</th>
<th>C2 = 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td>b</td>
</tr>
<tr>
<td>k</td>
<td>f</td>
</tr>
<tr>
<td>kp</td>
<td>s</td>
</tr>
<tr>
<td>b</td>
<td>m</td>
</tr>
<tr>
<td>d</td>
<td>n</td>
</tr>
<tr>
<td>g</td>
<td>l</td>
</tr>
<tr>
<td>gb</td>
<td>ŋ</td>
</tr>
</tbody>
</table>

Table 2: Number of contrasting consonants, by position in the stem († = restricted to consonant clusters).

For the consonants in stem-initial position, some restrictions on distribution should be mentioned. The onsets /s/, /st/, and /dz/ are not attested before the high front vowel /i/. The velar stop consonants /k/ and /g/ have no distributional restrictions in the Munken dialect, but in all other dialects they may not appear before /i/ or the glide /j/. The labial velar consonants /kp/ and /gb/ do not appear before the high vowels /i/ and /u/. Finally, the labiovelar glide /ŋ/ is only observed as part of a consonant cluster, as in Abar ŋpáŋ ‘travel!’. The only consonant which appears only in noninitial stem syllables is /h/.
clear explanation for this disparity is not at the moment available, but it should be helpful to note that in Munken, stems with either /f/ or /s/ in noninitial stem syllables position may be alternately pronounced with /h/. The same alternation can be found by comparing cognates across dialects. Biya /f/ and /s/, for example, frequently (but not always) correspond with Ngun /h/, e.g., Biya i-ŋafɔ ~ Ngun i-ŋahə ‘to be sick’; Biya kɔ-bəsɔ ‘side’ ~ Ngun kɔ-bəhə ‘side’.

Table 3: Possible onset consonants in stem-initial syllables, Ngun.

Examples of words with all of the possible stem-initial onset consonants are given in table 3, while examples of the possible noninitial stem consonants can be found in table 5 in the following section. The number of consonant contrasts in prefixes is even more strictly limited, given that noun class prefixes are chosen from a closed set, and many prefixes have no onset consonant. The consonants /h/, /bl/, /kl/, and either /l/ (Munken and Abar) or /l/ (Biya, Ngun, Missong) are attested in noun class prefixes. Differences in the number of contrasting consonants are the second type of prominence asymmetry between stem-initial syllables and noninitial stem-syllables. In this case the stem-initial syllables are also prominent with respect to prefix syllables, given the fixed set of prefix forms.

4. Vowel constrasts

The dialects of Mungbam allow 8-10 different vowels to contrast in stems. One of the main points of difference between the dialects is whether a three-way distinction is made for front and back non-point vowels. While Ngun contains a maximal system with nine peripheral vowels, Abar, Missong and Biya have the three-way distinction in either front or back vowels, but not both. Munken does not make the three-way distinction in either front or back vowels, but its vowels are not symmetric with respect to height. A second point of difference is the presence of phonetic diphthongs, or vowels with a dynamic F1 × F2 target, in Biya and Missong. While Biya /ea/ generally corresponds with /E/ in Munken and Ngun, Missong /ʊə/, curiously, corresponds with the sequences /-aN/ in the other dialects, e.g., Missong nɔa ~ Biya nâm ‘husband’; Missong tɔa ~ Biya tən ‘jump!’. Finally, all dialects except Missong contain one vowel which is restricted to closed syllables. These vowels are enclosed in parentheses in table 4, which outlines the stem-vowel inventories of each of the five dialects.

Table 4: Mungbam vowels. Parentheses indicate vowels which in stem-initial position are restricted to closed syllables. (†= vowel appears in only very few words)
Although there is no prohibition against any particular vowel appearing in non-initial stem syllables, there is nevertheless a very strong co-occurrence restriction between $V_1$, $C_2$ and $V_2$ (for a stem with shape $C_1V_1(C_2V_2)$). For disyllabic stems, $V_2 = V_1$ if $C_1 = ʰl$, otherwise $V_2 = ʰa$. This restriction effectively prevents any vowel contrasts from being made in non-initial stem vowels. The co-occurrence restriction is illustrated for Ngun nouns in Table 5, below. Aside from noting the total number of vowels which can contrast, something can be said about the phonetic features which are contrastive. An acoustic study has shown that the pairs of Abar vowels /el/~hl/, and /el/~l/ do not differ significantly in terms of F1 for some speakers, suggesting that the feature [ATR] is necessary to describe the system of vowel contrasts (Lovegren, 2011). A similar result was reached for the pair of Missong vowels /el/~h/ (Lovegren, submitted). In Abar and Missong, the feature [ATR] is contrastive only in stem-initial position: as noted, vowels are not contrastive in non-initial stem syllables. Prefix syllables are limited to the vowels /l/, /ul/, /al/, and /al/, none of which are contrasted only by [ATR].

When vowel distribution patterns are considered, stem-initial syllables are once again considerably more prominent than both noninitial stem syllables and prefix syllables. This is especially so when one considers that once co-occurrence restrictions are factored in, noninitial stem-syllables effectively fail to bear any vowel quality contrast.

<table>
<thead>
<tr>
<th>MONOSYLLABIC STEM</th>
<th>DISyllabic STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>f-dì '5-candle sap' kà-sù '12-soap'</td>
<td>ɲ-ɡùło '1-planting seed'</td>
</tr>
<tr>
<td>f-dè '5-bean' ásò 'my brother'</td>
<td>f-i-nàŋ '19-needle'</td>
</tr>
<tr>
<td>f-dì '5-beard' i-kpò '5-thyroid'</td>
<td>kà-tsèfà '12-chameleon'</td>
</tr>
<tr>
<td>i-sfn '5-tree type' ú-sá '1-lawsuit'</td>
<td>à-kwàlò '1-frog'</td>
</tr>
<tr>
<td>i-sàŋ '5-power' ú-bà '3-palm frond'</td>
<td>kà-ŋkpìmó '12-runt'</td>
</tr>
</tbody>
</table>

Table 5: Contrasting vowels in Ngun nouns.

5. Tone contrasts

Munken contrasts four pitch levels in surface forms. However, it is not possible to provide evidence from minimal sets showing that all of the attested surface tones are in fact underlyingly present. There are two reasons for the lack of minimal tonal sets. The first is that verbs, which tend to be monosyllabic, do not instantiate every possible surface tone. The second is that nouns, which are, with a handful of exceptions, disyllabic or trisyllabic, only exhibit the full range of surface tones on stem-initial syllables. As will be shown, prefix and noninitial syllable tones are mostly dependent on the stem-initial tone. Although it is in principle possible to analyze the language with three or even two underlying tone levels, I am currently considering the data to be indeterminate with respect to suggesting a clear set of underlying tonal primitives.

Tonal contrasts are employed in different ways for nouns and verbs. In nouns, tonal contrasts are predominantly lexical: nouns may have one of 10–15 (depending on the dialect) different sequences of prefix and stem tones, all of which may be assigned to a noun with either monosyllabic or disyllabic stem. In verbs, tonal contrasts are both lexical and morphological: all verbs belong to one of three lexical tone classes, and a given verb will have one of five different tonal melodies when inflected.

The tone sequences appearing on nouns are also unevenly distributed with respect to their frequencies. For example, in a 284-word list of Munken nouns, six of the twelve possible tonal patterns appeared on ~85% of the nouns, while the other six patterns represented ~15% of the nouns, with two tone patterns found on only two nouns each. It is therefore useful to divide the possible tone sequences into 'major' and 'minor' sequences, based on their relative type frequencies.

Table 6 (below) gives examples for each of the eleven possible tone patterns found on Missong nouns, with a division being made between major and minor sequences. What can be inferred from Table 6 is that the prefix tones are in some sense mostly predictable from the stem-initial tones, and the noninitial stem tones are completely predictable from the stem-initial tones. This is not to say that there is an overall phonological rule which can be applied to any of the nine possible stem-initial tones to determine the prefix tone, but instead to say that the prefix tone can be inferred when the stem-initial tone is known, simply because most stem-initial tones appear in only one of the tonal sequences. Furthermore,
Table 6: Possible tonal sequences on Missong nouns

if the four minor sequences are ignored, then a stem-initial tone can be uniquely associated with a prefix tone in every case. As for non-initial stem tones (few are shown in table 6; but see table 5), they are in every case either a copy of a level stem-initial tone, or a copy of the second component of a contour stem-initial tone. In other words, noninitial stem syllables are completely dependent on the stem-initial syllables for their tone; they may therefore be said to be toneless. It can also be seen that contours are generally restricted to stem-initial position, with prefix tones being restricted to one of three level tones.2

Table 7: Inflectional paradigm for verbs (Munken)

The three lexical tone classes of verbs are illustrated for Munken in table 7. Tone on tensed verbs is sensitive to a distinction between remote past and all other tenses. Reduplicated verbs have a separate set of tone melodies from non-reduplicated verbs. As with nouns, tonal melodies may be assigned to verb stems regardless of whether they are mono- or disyllabic. The tone on a non-initial stem syllable is predictable from the stem-initial syllable tone, and it can therefore be asserted that tone does not contrast in non-initial stem syllables. One interesting difference between noun and verbs is illustrated by the tones on reduplicant syllables for verbs. While the segmental shape of a reduplicant syllable is predictable from the segmental shape of the verb stem, the tone on the reduplicant syllable is responsible for bearing the contrast between the remote past and non-remote past forms of a verb in the ‘A’ class in a verum-focused clause. That reduplicant tones can by themselves support a distinction between two

2 Prefix tones are slightly less restricted in the Munken dialect, where five tones, including an LM contour, are permitted.

3 My consultants vary with respect to this form. Some pronounce jussive forms of class A verbs with a M-toned version, which may therefore be said to be toneless. It can also be seen that contours are generally restricted to stem-initial position, with prefix tones being restricted to one of three level tones.2
morphological category suggests that they are in at least one way more prominent than noun prefixes. Yet the segmental makeup of reduplicants is completely predictable from the form of the verb stem. The only contrastive property of the reduplicants is their tone. An eventual assessment of the phonological status of reduplicants in Mungbam will need to take these observations into account.

Like syllable shape, consonant contrasts and vowel contrasts, tonal contrasts point to the stem-initial syllable as the most prominent position in verbs and nouns. Noninitial stem-syllables cannot contrast for tone, and prefix syllables have only limited possibilities for contrast. Contour tones are also mostly limited to stem-initial syllables.

6. Discussion and Conclusion

6.1. Quantification of prominence asymmetries

One way of characterizing positional prominence is in terms of information density: more prominent positions are expected to have a higher entropy (measured in bits/syllable) than less prominent positions. Frequency data not being immediately available, an approximate measure of information density can be made by considering the number of possible, phonotactically licit syllables in each position, given a simplified stem template $C_1V_1(N).C_2V_2$. In a noun, a stem-initial syllable can contrast up to 22 different onset consonants, 8–10 different vowels, 8–9 tones, and may have 4 different codas ($\theta$, n, m, η), for a total of 5632–7920 different phonotactically licit syllables. For verbs, where there are only three lexical tone contrasts, the figure is 2112–2640. Noun class prefixes (see Good et al. (in press) for details) have approximately ten different segmental shapes in each dialect, and may bear one of three tones, for a total of 30 possible prefix forms. Reduplicant syllables of verbs have their segmental composition determined by the verb’s stem-initial syllable and have three different possible tones in Munken. As for non-initial stem syllables in both verbs and nouns, they do not bear contrasts for tone or vowel quality, but may only vary with respect to their consonant, of which there are eight possibilities. Calculations are summarized in table 8. When differences in the numbers of possible consonant, vowel and tone contrasts are taken into account, the stem-initial position can be shown to be significantly more prominent than any other position within the word in terms of information density.

<table>
<thead>
<tr>
<th>PREFIX/REDUPLICANT</th>
<th>STEM-INITIAL</th>
<th>STEM NON-INITIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOUNS</td>
<td>~30</td>
<td>~6000</td>
</tr>
<tr>
<td>VERBS</td>
<td>3</td>
<td>~2500</td>
</tr>
</tbody>
</table>

Table 8: Approximate number of possible syllables, by position. Approximate values reflect dialectal differences.

6.2. On the status of accent without phonetic exponence

The evidence presented here for stem-initial prominence in Mungbam has consisted solely of data concerning contrast distribution asymmetries. Notably absent is any claim that prominent syllables are longer, louder, or have a higher pitch. While there are tones which are in all dialects restricted to stem-initial position (viz. falling tones), pitch cannot be tied to prominence in the sense that H tones are more marked than L tones.

That prominence asymmetries which are not paired with overt phonetic cues should be considered sufficient grounds for diagnosing a metrical head is not unusual in the study of African languages. As Downing (2004:104-5) notes,

> Even though African languages with contrast distribution asymmetries do not have the usual stress-accent motivating the asymmetries, it is plausible to propose that, universally, these kinds of distributional restrictions are to be accounted for in terms of accent, as they create prominence asymmetries akin to stress accent.

Phonological systems with prosodically determined distributional restrictions and stem-initial prominence are common in languages of Eastern Nigeria and Western Cameroon, as well as in some Northwest
Bantu languages. Some examples of these languages are given in table 9, which lists the number of possible vowel and consonant contrasts by position for CVCV stems. In all cases, the number of vowel contrasts, and, where data are available, the number of consonant contrasts, is restricted by position, with the full set of possible contrasts available only in stem-initial position. The disparity may be greater for consonants than for verbs, as in Ibibio and Kukuya, or it may be most severe for vowels, as in Mankon and Ejagham, two of the four Cameroonian languages given in table 9. Mungbam falls into this category, since, like Ejagham and Mankon, it does not permit vowels to contrast at all in noninitial stem syllables. In these languages, where a case for word accent can be made on the basis of distributional asymmetries alone, accent may have no overt phonetic cues, or its phonetics may be limited, as in Sali and Kukuya, to a subjectively assessed “accent d’intensité” (q.v. Richards 1991: 388; Paulian 1975: 31, respectively).

6.3. Conclusion

In Mungbam, several independent subsytems of the phonology all indicate stem-initial position as the most prominent in the word, when potential for contrast is used as a metric for relative prominence. This relative prominence does not, however, appear to be associated with any phonetic cues. Mungbam and the languages mentioned in the previous paragraph underscore the importance of “…separat[ing] the notion accent (a formal property of syllables without any link to specific cues) and accentual cue(s)” (van der Hulst 2006: 655), since the notion of accent is needed in these languages to make far-ranging generalizations about their phonologies, despite the lack of the types of phonetic cues normally associated with word-accentual systems. When the prominence asymmetries are recognized as involving accent, the way is opened up for other types of prosodic analyses: Akinlabi & Urua (2002); Harris (2004), for example, postulate a trochaic foot in Ibibio, explaining prominence effects by the fact that positions at the edge of a foot should be more prominent. Accent may also help us to better understand diachronic processes, when it is considered that unaccented syllables are more prone to phonological erosion than accented syllables. This is a possible hypothesis for explaining the partial loss of segmental noun class prefixes in two other Yemne-Kimbi languages, Ajumbu and Mundabli, and the complete loss of noninitial stem syllables in Mundabli, the majority of whose words are monosyllabic (Good et al. in press: §§3.3–3.4).

References

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