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# Beng phonology

Section 4

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# Beng phonology

## Section 4

Denis Paperno

### 4.1. Phonological inventory

- 1 Beng has a typical triangular vocalic system of seven oral and five nasal vowels.

Table 2.1. Vocalic phonemes

		oral				nasal	
		front	back			front	back
high		i	u	high	ĩ	ũ	
mid	upper-mid	e	o	mid	ẽ	õ	
	lower-mid	ɛ	ɔ	low	ã		
low		a					

- 2 MINIMAL PAIRS. Height: *yé* ‘mouth’ – *yí* ‘water’, *béñ* ‘horn’ – *béñ* ‘black monkey’, *bēñ* ‘fruit’ – *bāñ* ‘rope’, *bā* ‘earth’ – *bō* ‘to leave’ – *bō* ‘to remove’, *fō* ‘to multiply’ – *fū* ‘to take by surprise’, *mĩ* ‘to drink’ – *mẽ* ‘to beat’ – *mã* ‘to hear’, *dã* ‘to cough’ – *dõ* ‘to know’ – *dũ* ‘to enter’.
- 3 Backness: *bli* ‘place’ – *blū* ‘sorcery’, *blē* ‘to eat’ – *blō* ‘to clear’, *bēñ* ‘Beng’ – *bōñ* ‘lizard type’, (ñó) ñò **dĩ** wē é ‘(I) am not **near** them’ – ñò **dũ** wē é ‘they did not **enter** there’, *drẽ* ‘work’ – *drõ* ‘cough’.
- 4 Nasalization: *čí* ‘to vomit’ – *cī* ‘skin’, *sẽ* ‘pain’ – *sē* ‘all’, *klẽ* ‘land’ – *klé* ‘bag’, *bāñ* ‘scarification’ – *bāñ* ‘rope’, *dõ* ‘to know’ – *dō* ‘to cease’ – *dō* ‘one’, *bũ* ‘carry’ – *bū* ‘ten’.

- 5 In addition to oral and nasal vowels there is a syllabic nasal  $\eta$ , realized as [ŋ] before a pause, a vowel, or a w. In other cases /ŋ/ undergoes place assimilation to the following consonant (but it is realized as dental [n] before a palatal consonant), compare: [m̄ pōú] ‘my field’, [n̄ dǎ] ‘my pot’, [n̄ jàbò] ‘my water tank’, [ŋ kàfè] ‘my coffee’, [ŋm̄ kpā] ‘my locust tree fruit’.
- 6 Vowel +  $\eta$  combinations can be considered diphthongoids (combinations of two segments capable of bearing tone into one mora). Other diphthongs of Beng consist of /i/, /j/, /u/ or /ɤ/ followed by a different vowel of matching nasality: /ia/, /ua/, /ịa/, /ụa/, /iɛ/, /uɛ/, /ịɛ/, /ụɛ/, /ie/, /ue/, /io/, /uo/, /uɔ/, /ịɔ/, /ui/. In diphthongs, /i/ and /u/ tend not to combine with each other: combinations /iu/, /ịu/, /ui/ are unattested, /ui/ occurs in one word only. Vowel /ɔ/ is only marginally attested in diphthongs: /iɔ/, /ịɔ/, and /uɔ/ are unattested in underived forms, and /uɔ/ is found only in three words: *pùḍ* ‘soft’ (by assimilation from \*/pùḍ/?), *Sùḍ* ‘female name’ and *Tùḍ* ‘male name’. Combinations [uɔ] and [ụɔ], however, do arise in complex forms as a result of /l/ deletion and accompanying vowel quality assimilation (see 4.2.2): [plùḍ] < /plù lè/ ‘the stomach’, [nūḍlól] < /nūlèlól/ ‘coming’ (progressive). Examples of words with diphthongs: *blùá* ‘to tire’, *fià* ‘better’, *klúá* ‘to steal’, *gbíá* ‘smoke’, *fḍíiḍ* ‘sacrificial package’, *gúḗ* ‘friend’, *ŋḍḗ* ‘fetish’, *kḍḗ* ‘hunt’, *sìè* ‘personality’, *súé* ‘to uproot’, *píomíón* ‘pointed’, *súó* ‘house’, *pùḍ* ‘soft, mobile’, *sûi* ‘always’.

Table 2.2. Consonantal system

		labial	dental	palatal	velar	labiovelar
stops	vd	b	d	j	g	gb
	vs	p	t	c	k	kp
fricatives	vd	v	z			
	vs	f	s			
nasals		m	n	ɲ	ŋ	ŋm
liquids and glides			l/r	y	(h)	w

- 7 The consonantal system distinguishes five places of articulation: labial, dental, palatal, velar and labiovelar. Labiovelar consonants are produced with double stop articulation, with air blockage created by lips, on the one hand, and tongue and soft palate, on the other hand.
- 8 Lateral [l] and vibrant [r] represent the same phoneme. In the speech of most speakers, they are distributed as follows:
- [r] after dental and palatal consonants;
  - [l] otherwise.
- [l] and [r] are written as *r* and *l* in Beng orthography according to the said distribution.

- 9 In fast, relaxed pronunciation the allophones [l]/[r] are not in complementary distribution. In fact both the [l] and the [r] variants are attested after any consonant, but only [l] is pronounced in the syllable onset position.
- 10 Consonant *h* is attested only in interjections: *hàá* ‘huh?’, *hàí* ‘oh!’, *hḡḡ* ‘take this!’, *hō* ‘wow!’, *hōhōhōhō* ‘ayayay!’, *hḡḡ* ‘take this!’. Only the first of those can be part of complex utterances, e.g. *à dē hḡḡ* ‘play it (e.g. drum), huh?’, *í mlḡ bāmā dō yè gblē hḡḡ* ‘I saw a huge snake yesterday, huh!’. Although Paesler (1992) and Murphy (1995) characterize /h/ as a voiceless fricative, it can in fact be pronounced both voiced and voiceless, usually without significant acoustic noise.

#### 4.1.1. Tones

- 11 Beng has three tone levels, including low (marked L or with the grave diacritic: *̀*), mid (marked M or with the macron sign: *̄*), and high (H or the acute sign: *́*).
- 12 There are minimal triples distinguished just by tone levels, e.g. *báj* ‘trap’ – *bāj* ‘rope’ – *bàj* ‘shoulder’; *pḡj* ‘mortar’ – *pḡj* ‘tale’ – *pḡj* ‘debt’. In accordance with their names, realization of the tones is manifested primarily in the pitch of the syllable. Pitch, however, also shows some contextual effects, including those of phrasal position. For instance, vocal cords do not immediately achieve the desirable vibration rate at the onset of an utterance, so level tones can be realized after a pause as raising to the corresponding level. The reverse effect of falling pitch can sometimes be observed before a pause, but is often obfuscated by a glottal stop optionally epenthesized before a pause. Consonantal context also plays a role in tone realization, so that pitch lowers automatically on voiced obstruents. In addition, transitions between tones tend to be smooth. Transitional effects particularly affect the low tone, which is normally realized after a non-low tone as a falling contour from the level of the preceding syllable to the low level:

(2a) /klí lè/ ⇒ [klǐlḡ]   
           king DEF   
           ‘the king’

(2b) /à dē lè/ ⇒ [ǎdḡlḡ]   
           3SG father DEF   
           ‘his father’

- 13 The tendency for the low tone (L, *̀*) to be realized in falling pitch is also observed in sequences of several low tone units. In this case all the low (L, *̀*) tonemes except the last one are pronounced as low-mid tone, and the last L syllable is produced with pitch falling from the low to the ultra-low level, compare example (3):

(3) /À zrḡ è/ ⇒ [ǎzrḡḡ]   
           3SG corn this.is   
           ‘This is his corn’.

- 14 A sequence of phonologically low tones after a high or mid tone is realized as very smoothly lowering pitch from the level of the preceding syllable. One could treat this

effect as a phonological rule  $\acute{v}\acute{v}\acute{v} \Rightarrow \acute{v}\acute{v}\acute{v}$ ,  $\bar{v}\bar{v}\bar{v} \Rightarrow \bar{v}\bar{v}\bar{v}$ , for example: /gōṅ bìlè/  $\Rightarrow$  [gōm bìlè] ‘this man’, /ṅ gòlù dō c̣/  $\Rightarrow$  [ṅ gólù dō c̣] ‘I carved out a walking stick’.

- 15 However, a phonetic sequence of [H H L] (</H L L/) or [M M L] (</M L L/) of this nature does not cause downstep (see below) in the following syllable, so the [H H L] and [M M L] derived by tone spread behave differently from the underlying /H H L/ and /M M L/.
- 16 In addition to level tones, Beng possesses four countour tones: HL ( $\hat{v}$ ), ML ( $\hat{v}\frac{1}{2}$ ), LH ( $\check{v}$ ), MH ( $\ddot{v}$ ). The last one is very rare and occurs only in several units, historically bisyllabic but synchronically light (monomoraic), of the form ClV (< \*CVLV): *blä* ‘to settle’, *yrä* ‘to stay’, *zrä* ‘to lose’, *glë* ‘difficult’, *zrë* ‘road’, *blö* ‘to drain, to press’, *zrö* ‘to wash’, *búmlö* ‘immediately’. Besides, a contour tone can appear as a result of vowel contraction, cf. stative pronominal series: 3SG òó > ò, 2SG m̃jó > m̃j; ‘this’ *nāá* > *nā*.
- 17 The falling tone HL ( $\hat{v}\frac{1}{2}$ ) is phonetically characterized by pitch lowering from the high level; despite the notation, this lowering usually does not reach the low pitch level phonetically. This is one phonetic feature distinguishing the realization of HL from the realization of L after H, which is also realized with pitch fall:

(4) /klí zò/  $\Rightarrow$  [kli̯zòʔ]

king net

‘king’s net’

(5) /klí zô/  $\Rightarrow$  [kli̯zôʔ]

king mat

‘king’s mat’

- 18 We consider contour tones as phonologically decomposable into a sequence of two level tones. This interpretation simplifies the description of both tonal sandhi and morphologically conditioned tonal alternations, see below.

### 4.1.2. Syllable structure

- 19 Beng’s main prosodic unit is the syllable, which sometimes corresponds historically to a disyllabic foot of other South Mande languages as a result of a syncope CVLV>CLV. The maximum syllable structure is /ClUVṽ/, where C stands for any consonant except /l/, l is the consonant /l/, U is any high vowel, V – is any non-high vowel, and ṽ is a syllable-final nasal. Any of those components can be absent, as long as the syllable has one tone bearing element, i.e. at least one vowel, or consists of a syllabic nasal. A syllable usually carries one tonal unit, which the orthography (and the transcription system accepted here) marks on all potentially tone-bearing units. Thus [túà] ‘to stay’ consists of one syllable with a falling tone, and [āṅ] ‘us’ consists of one syllable with a mid tone.

### 4.1.3. Segmental sandhi

- 20 After /ṅ/, the syllable-initial /l/ becomes [n]. The resulting long [nn] can then shorten to [n]. This process is regular word-internally, in suffixes -lɛ and -lí, and optional at word boundaries. Nasalization does not spread to vowels after the [n] resulting from such progressive nasal assimilation, contra the tendency for syllable-internal nasal harmony. Examples: /ṅ lá/  $\Rightarrow$  [n ná] ‘my medicine’, /ṅṅ-lɛ/  $\Rightarrow$  [ṅnɛ] ‘propping up’, |

gĕĭ-łĕ| = [gĕnĕ] ‘beauty’ (the last two examples involve the nominalizing suffix -łĕ), /ĭ  
łĕ bĕĭ/ = [ń nĕ bĕĭ] ‘I am Beng’.

- 21 The glide /w/ is optionally deleted at morpheme boundaries, especially in function words, e.g. /klĕĭ wó wĕ/ = [klĕĭ ó ĕ] ‘in the forest’ (‘forest IN there’). Dropping /w/ is regular after /ĭ/, less regular after vowels.
- 22 After a morpheme boundary, all vowels except high-mid /e/ and /o/ undergo progressive nasal assimilation following /ĭ/ or a nasal vowel, cf. *bā ĕ* ‘this is earth’ vs. /bāĭ ĕ/ = [bāĭĕ] ‘this is a cord’, /mlā ĕ/ = [mlāĕ] ‘this is a drum’. The nasal assimilation does not occur in the “nasal consonant+oral vowel” combinations that result from the abovementioned processes of /w/ deletion and /l/ nasalization.
- 23 Two adjacent vowels of the same quality optionally fuse into one. The tones of both underlying segments get realized on the resulting short vowel. Examples: *dàáló* = *dǎló* ‘seeding’ (progressive), *wlááló* = *wǎló* ‘laughing’ (progressive), *bàá* = *bǎ* ‘snake venom’, *ĭāā* = *ĭǎ* ‘this’, *bā à* = *bǎ* ‘the earth’ (with the definite article).

#### 4.1.4. Tonal sandhi

- 24 In Beng orthography, as well as in the transcription system accepted here, tone is marked on all segments that have the potential to bear tone, i.e. on all vowels and syllable-final /ĭ/. Phonologically however the tone bearing units are not segments but morae, which contain a short vowel, a diphthong of the form “high vowel+a different short vowel” (ie, ua etc.) or “vowel+ĭ”. Of course, tone is realized phonetically on all the voiced segments of a mora. Tone alternations, discussed below, show that those segment combinations indeed function as single tone bearing units.

$\check{\vee} \Rightarrow \vee | \_ \{\check{\vee}; \check{\vee}\} (\_ \_ L)$

- 25 Rising tone (LH) becomes low [l] before the following tonal values: H, M, MH, ML, HL. The contexts can be generalized as “before a non-low”, assuming that low tone (L) constitutes part of the rising contour LH. Examples: *dǔ* ‘knife’ - /dǔ LH dō M/ = [dù L dō M] ‘one knife’; *óó wlá wǎ* ‘he will destroy the house’ - /ó wlá wǎ LH nā M/ = [ó wlá wà L nā M] ‘he has destroyed the house’, *mānūĭ ĩ ĩ ó ĩ flūá* ‘I will get bored of rice’ - /mānūĭ ĩ ĩ flūá LH nā M/ = [mānūĭ ó ĩ flūá L nā M] ‘I have got bored of rice’. The last example shows that the rising tone on a mora with two vocalic segments undergoes the change just like in a mora with one vocalic segment, as is the case in the examples above.

$\hat{\vee} \Rightarrow \vee, \vee \Rightarrow \bar{\vee} | \_ \{\hat{\vee}; \hat{\vee}\} (\_ \_ L)$

- 26 Falling tones lose the descending part before a low tone element (i.e. before L and LH tones). Thanks to the assumption that contour tones can be decomposed into level units, this rule generalizes four distinct cases (HL and ML before L and LH). Examples: *zô* ‘mat’ - /zô HL ĕ L/ = [zó H ĕ L] ‘this is a mat’, *sĭ* ‘oil palm’ - /sĭ ML ĕ L/ = [sĭ M ĕ L] ‘this is an oil palm’.

- 27 Beng has downstep. Non-low level tones H and M are realized lower than usual after a falling tonal sequence /vĕ/, /vĕ/, /vĕ/, or /vĕ/:

(6) /ĭ-ó      nū-ǎló/       $\Rightarrow$  [ŋõ    nū-ǎló̃]  
 1SG-ST+    come-PROG  
 ‘I am coming’.

- 28 As noted already by Paesler (ms.), the cases of downstep triggered by the underlying falling tone of the preceding syllable are phonetically opaque, in the sense that the lowering of pitch on the syllable with underlying falling tone is small, undistinguishable from the phonetically automatic transition to the lower (downstepped) pitch level, e.g. /zô lô/ HL H  $\Rightarrow$  [zô 'lô] H<sup>1</sup>H 'over the mat'.
- 29 Sequences of two vowels that are not diphthongs are bimoraic, whether the two vowels have identical (e.g. bàá 'snake venom', pîi 'wee') or different quality (dôí 'first'). Tone combinations on them are not subject to sandhi rules for contour tones.
- 30 The verb gûà̀ 'to remain' is bimoraic (even though /ûà̀/ can be a diphthong in other words), so /û/ and /à/ in it behave as separate tone bearing units. For example, gûà̀ does not lose the low tone before another low tone element.

## 4.2. Morphonology

#### 4.2.1. $\eta_C$ simplification

- 31 Combinations of the phoneme /ŋ/ with the following syllable-initial non-fricative consonant sometimes simplify into a nasal consonant homorganic with the second underlying consonant. This rule is regular word-internally with nasals, /l/ and /w/, while with stops and /y/ its application has to be specified lexically. Examples of the change within a compound: *lɛnrɛ̃* ‘bride’ < *lɛŋ* ‘woman’ + *drɛ̃* ‘new’, *bàŋlũ* ‘shoulder joint’ < *bàŋ* ‘shoulder’ + *ŋlũ* ‘head’; example within a reduplicated form: *plāmlāŋ* ‘two each’ < /*plāŋ plāŋ*/ (reduplication of *plāŋ* ‘two’).
- 32 All examples of *ŋ*C simplification on word boundaries include combinations with a personal pronoun and could be interpreted as indications of pronoun cliticization – however, even in this context the rule is still irregular, applying only to some frequent object pronoun+verb or possessive pronoun+noun combinations. Some examples include: *nā* ‘my mother, Mommy’ (form of address) < *ŋ* ‘1SG’ + *dā* ‘mother’; *nē* ‘my father, Daddy’ (form of address) < *ŋ* ‘1SG’ + *dē* ‘father’, *ŋmā* ‘give me’ < *ŋ* ‘1SG’ + *gbā* ‘to give’, cf. combinations that do not undergo any phonological rules: *mĩ gbā* ‘give you’, *à gbā* ‘give him’; compare also the form *ḡnā* ‘let’s go’ < *ḡŋ* ‘1PL’ and *tá* ‘to go’ (with a unique but phonologically sensible tonal change from *ḡŋ* ML *tá* H to *ḡnā* MLH).

#### 4.2.2. Deletion of /l/

- 33 Before /ɛ/, phoneme /l/ optionally drops in two kinds of morphological contexts:
- In the article *lè*, including its usage within the contrastive topic marker *pō lè*.
  - In the progressive verb form ending in *-léló* (but not in the deverbal noun in *-lè*!).
- 34 The deletion of /l/ is accompanied by the assimilation of the vowel /ɛ/ after the /l/ to the preceding vowel in rounding, labialization, and nasalization. Examples: *bā lè* = [bā à] ‘the earth’, *drē lè* = [drē ẽ] ‘the work’, *zū lè* = [zū ò] ‘the breast’, *m̃l̃léló* = [m̃ẽl̃lóló] ‘drinking’ (progressive), *p̃l̃léló* = [p̃èl̃lóló] ‘saying’ (progressive), *b̃ā̃l̃léló* = [b̃ā̃l̃lóló] ‘provoking’ (progressive), *bl̃l̃léló* = [bl̃ùólóló] ‘getting blurry’ (progressive), *b̃ū̃l̃léló* = [b̃ū̃ólóló] ‘educating’ (progressive).

### 4.2.3. High tone in the low tone form of verbs

- 35 Beng has a tonal rule that applies in a specific morphosyntactic context and cannot be reduced to regular tonal sandhi. This rule applies to the low tone form of verbs that immediately follow a subject pronoun with a high or rising tone – or, in other words, that end in a high tone element. In those cases, if the first mora of the verb bears the grammatical low tone, it changes its tone to high or falling tone:

L ⇒ HL in verbs after a H or LH pronoun and before a suffix.

L ⇒ HL in verbs after a H or LH pronoun and before a pause.

L ⇒ H in verbs after a H or LH pronoun otherwise.

Examples:

(7a) |Ó            nù|            ⇒    ó   nù  
          3SG:PST+   come:L  
          ‘He came’. (before a pause)

(7b) |Wǎ            nù            é|            ⇒ /wǎ nú é/ ⇒ [wà nú é]  
          3SG:PST-   come:L   NEG  
          ‘He didn’t come’. (No pause; regular sandhi LH>H in the pronoun)

(7c) |Ó                            nù                            n̄|                            ⇒    Ó   nù   n̄.  
          3SG:PST+                            come:L                            here  
          ‘He came here’. (no pause)

(8) |Ó                            m̄.lá|                            ⇒ /ó m̄.lá/[ōlm̄lā]  
          3SG:PST+                            fall:L  
          ‘He fell down’ (where -lá is a verbal suffixoid).

By ‘suffixoid’ I mean here the part of verbal stem that does not change its tone in the low tone form of the verb (see 6.4). Although historically such tonally inert parts of verb stems are indeed suffixes, there are no synchronic reasons to separate them into a separate morpheme.

- 36 Note that the L>H, HL change in verbs is not related to regular sandhi. Most similar are examples of the regular rule of high tone spread over low tone sequences, HLL⇒HHL, which can be triggered, among other things, by high tone pronouns followed by low tone nouns and verbs. However, the HLL⇒HHL change is restricted to its structural description; unlike the low tone form of the verb, lexical low tone won’t undergo any change before a non-low tone, cf. (9) vs. (10):

(9) |Ó            ml̄    wà|            ⇒    ó   ml̄   wà  
          3SG:PST+   drum   break:L  
          ‘He broke a drum’.

(10) Ó            ml̄    dō    wà  
          3SG:PST+   drum   one   break:L  
          ‘He broke a drum’.



- 37 Compare (10) with  $\acute{o} \acute{n}\acute{u} \acute{n}\tilde{a}$ , example (7), where the underlying HLM tone sequence is identical but the L>H change does happen.
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