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The tone system of Bena-Yungur

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1. Introduction

Bena-Yungur (ISO 639-3 *yun*) is a language from the Bena-Mboi group traditionally classified as a subgroup of Adamawa, in which it occupies an isolated position according to Kleinewillinghöfer (to appear). We have not yet attempted to determine its genealogical classification, but we have noted so many clear cognates with Benue-Congo languages that an affiliation to that family will be our working hypothesis. The speakers refer to their languages as *é: bənā* ‘the Bena language’. The name *Yungur* is originally an exonym, but today it is regularly used by the Bena themselves. Since speakers of the Lala varieties of the Bena-Mboi group identify themselves as Bena as well, Kleinewillinghöfer (1993) proposes to use Bena-Yungur as the name of the language, a convention we will follow.

This paper is based on original data from field work we carried out in Nigeria. We gathered initial data with about ten speakers in the village of Dumne during a pilot study in Adamawa State. Due to the insecurity in the region, we subsequently invited native speaker consultants to come and work with us in Kwara State for periods in 2013, 2014 and 2015. Our main consultants are Sabeta Bukta and Bitrus Andrew, two male mother tongue speakers from Dumne in their early thirties who use Bena-Yungur on a daily basis. Their variety of Bena-Yungur is the Pra (*pǎrá*) dialect of Dumne, also our reference dialect. We recorded many texts, including dialogues, which are partly transcribed and translated. However, the data used in this paper are almost entirely elicited. Also, although we have started working on Bena-Yungur several years ago, our work has been frequently interrupted and is not yet very much advanced. Since the tone system in African languages with lots of tonal morphology is often among the last things that are fully understood, the analysis presented in this paper might have to be refined in the future. However, enough aspects of Bena-Yungur tone are already understood to warrant a publication, especially since so little is known about the languages of the Bena-Mboi group or the other languages of the area referentially classified as Adamawa.

We begin by presenting a concise grammatical overview of Bena-Yungur in Section 2. Section 3 concentrates on the tone rules of the language, viz. tone spread (3.1), tone absorption (3.2) and floating tone attachment (3.3). The joint application of these tone rules is briefly illustrated in Section 3.4. Section 4 is concerned with the distribution of tones over syllables and lexemes. Sections 4.1 and 4.2 comment on the

exceptional nature of contour tones on monosyllabic lexemes (4.1) and the marginal occurrence of the three-tone contour HLH on these lexemes as a result of tone spread (4.2). The analysis of the distribution of tones in lexemes allows for an internal reconstruction of the current three level Bena-Yungur tone system as a formerly two level system (Section 4.3). The major factor behind the increase of the number of tone levels in Bena-Yungur is the effect of stem-initial voiced stops as tone depressor consonants. Section 5, finally, provides a description of the morphological operations in Bena-Yungur that consist exclusively of tone changes. Nouns may acquire tone schemes different from their lexical tone patterns in certain syntactic positions (5.1) and a number of morphological processes applied to nouns and verbs assign tone schemes that override lexical tones (5.2).¹

2. Grammatical overview

In our current analysis Bena-Yungur has twenty six consonant phonemes: /b, p, d, t, tʃ, g, k, gb, kp, ʔ, ʙ, d, f, z, s, ʃ, h, m, n, ɲ, ɳ, l, v, r, y, w/. So far, we found the labial-dental flap /v/ in one ideophone only, viz. *pàv'àd'* '(appear) suddenly'. We analyse geminates and pre-nasalised stops as successions of two phonemes. Bena-Yungur distinguishes six phonological vowel qualities /i, e, a, ə, o, u/. All can be phonologically nasal, with the possible exception of /ə/. Vowel length is contrastive throughout the vowel system. This brings the vowel inventory to twenty two phonemes. Utterance-initially, vowels are often pre-glottalised and voiced stops partially or fully devoiced, with the exception of /gb/, but including implosives. Optional initial devoicing is especially common with fricatives.

Both open and closed syllables are possible. In their citation form, most words end in an open syllable. In lexical words that consist of one open syllable, the vowel is always long. In function words, such as personal pronominals, the vowel is normally short but can be pronounced long in very slow careful speech. Final closed syllables are more common in minor word classes, such as adverbs. The difference in laryngeal settings is neutralized in coda stops, which normally lack audible release.² In utterance-final position, glottalisation is regular with stops and also occurs with

¹ We use the term *tone pattern* to refer to a tone or succession of tones that is part of the lexical representation of a linguistic form and the term *tone scheme* for a tone or succession of tones that is imposed on a linguistic form by the application of a morphological operation.

² By default, we use implosive stop symbols for coda stops of the labial and coronal places of articulation, where the neutralization is between voiced, voiceless and implosive stops, and the voiceless stop symbol for coda stops of the velar place of articulation, where the neutralization is between voiced and voiceless stops. However, if depending on the construction a given stop can occur both in the syllable-final position and in the context before a vowel, we consistently use the stop symbol corresponding to the laryngeal setting found in the context before a vowel.

continuants, nasals, [l] and vowels. Utterance-internally, word final vowels are often reduced and in some constructions deleted. When the final vowel is deleted, the result is a word-final closed syllable. Vowel-initial syllables are rare. They are found mostly in function words and borrowings. Consonant clusters are possible across word boundaries and within words, either across syllable boundaries or in syllable onsets, but there are no pre-pausal or phrase-internal word-final consonant clusters in Bena-Yungur. Consonant clusters in syllable onsets are of two types. The first one involves a sequence of a homorganic nasal and a voiced stop. The second one involves a sequence of a stop and /w/, /l/ or /r/. In careful speech, and for some types of clusters also at a normal speech rate, some of the clusters of the second type are broken up by a schwa transforming a monosyllabic sequence into a bisyllabic one, as in *ṭwá* (careful) ~ *twá* (casual) ‘guinea fowl’ with an optional schwa vs. *twá:twá(:)* ‘wide’ where no such option exists. We note such an optional schwa as *ə*. The two cluster types can combine, provided that the first consonant is a homorganic nasal, as in *mḅə́ṛá(:)* ‘water’.

Bound segmental morphology is mostly suffixing. The noun class system of Bena-Yungur is analysed in Van de Velde & Idiatov (2017), where a distinction is made between morphological classes (defined as sets of nouns that have the same class/number markers), noun classes (defined as sets of nouns that trigger the same agreement pattern) and genders (defined as singular-plural pairings of noun classes). Defined this way, Bena-Yungur has three noun classes, eight genders and about thirty morphological classes. Figure 1 provides an overview of the gender system. Noun classes are represented by the form of demonstratives.

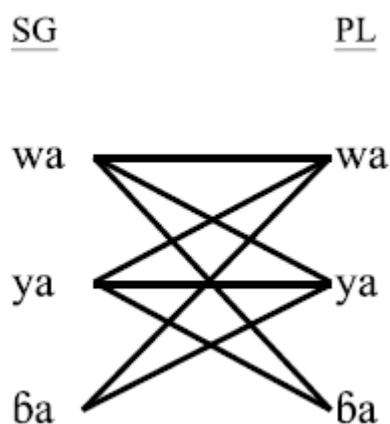


Figure 1. The Bena-Yungur gender system

Modifiers follow the element they modify. Demonstratives, indefinite determiners, possessive pronouns, adjectives and participles agree with their head noun in noun class and number. Basic clause structure is SVO, although in some TAM constructions first and second person pronominal objects are preposed to the verb. Negative polarity

is marked by a clause-final negation marker *ré?* in combination with some negative morphology earlier in the clause. Basic TAM categories, including Perfective, Habitual, Progressive and Future, are marked syncretically on the verb and the subject pronominal. Pronominal agreement targets agree in animacy with their controller, where animacy basically reflects the ability of self-locomotion of the referent. Inanimate pronominal targets are mostly realized as absence of a pronominal. Non-selective interrogative pronominals make a distinction between human *yānā* ‘who?’ and non-human *mbī* ‘what?’. A clusivity distinction is made in 1PL between inclusive and exclusive pronominals, both as subjects and non-subjects. Dedicated singular and plural logophoric forms exist for animate subject and possessive pronominals.

3. Tone rules

Bena-Yungur distinguishes three surface tone levels: L(ow), M(id) and H(igh) that can combine to form all logically possible contour tones: HM, HL, LH, LM, MH and ML. There is no phonological downstep. Bena-Yungur has two tone rules that apply to linked tones: tone spread (Section 3.1) and tone absorption (Section 3.2). Floating tones normally dock to the right and any floating tone that has not docked by the end of the derivation is deleted (Section 3.3).

3.1. Tone spread

Every tone can (and normally does) spread one position to the right across word boundaries, provided the tone occupying this position to the right is followed by a pause or by an identical tone (1). Moreover, a L does not spread onto a following M (2) and a M does not spread onto a following L (3).

- (1) a. síbmá # bù: → síbmé bù: ‘ten herbalists’
 b. ŋmgbété # fētē → ŋmgbété fētē ‘two trees’
 c. dōbtà # kúrún → dōbtè kūrún ‘four bushes’
 d. bōltā # kúrún → bōlté kūrún ‘four pumpkins’
- (2) dōbtà # fētē → dōbtè fētē, *dōbtè fētē ‘two bushes’
- (3) bàltā # bù: → bàlté bù:, *bàlté bù: ‘ten hills’

In fact, H differs from M and L in that H can (and normally does) spread one position to the right across word boundaries irrespective of the context on the right side of the tone that follows this H, as illustrated in (4). Neither M nor L can spread on the following H when this H is followed by either M or L, as illustrated in (5) for the blocking of M tone spread and in (6) for the blocking of L tone spread.

- (4) a. ló:ró # bàlō → ló:ré bàlō ‘filtered beer to which no water has been added’ (lit.: ‘slimy drink of beer’)
 b. été # wē:râ → ét wē:râ ‘honest man’ (lit. ‘man of truth’)
- (5) a. nā: # mbókā^H → nā: mbókā ‘this is something.’
 b. nā: # ráđđâ → nā: ráđđâ ‘this is a catfish.’
- (6) a. dà: # mbókā^H → dà: mbókā ‘touch something!’
 b. dà: # ráđđâ → dà: ráđđâ ‘touch a catfish!’

When tone spreads onto an utterance-final monosyllabic word that already had a complex tone, the result is a more complex tone (7). However, for the reasons discussed in Section 4.2, the only possible combination of three tones on such an utterance-final monosyllabic word is HLH. Thus, M and L do not spread onto a contour tone, which follows from the restrictions on tone spread described above. Also, when H spreads onto a MH contour, the last H tone becomes floating, as in (21).

- (7) *hó:rá # dǒ:* → *hó:ré dǒ:* ‘the liver of the duiker’

When tone spreads onto a syllable with an optional schwa (see Section 2), the result of the tone spread is somewhat different from other contexts. The only situation where tone spread may affect the tone of an optional schwa is when the optional schwa is in the word-initial syllable. With the exception of the word *ɲmgbǝrǎ̃(:)* ‘elegant sand racer, *Psammophis elegans*’, the tone of the optional schwa ǝ in this position is identical to the tone of the following syllable, as in *gǝrà:gǝn* ‘glutton’, or if it is a complex tone, the initial part of the latter, as in *mbǝrǎ̃(:)* ‘water’. The tone spreading across word boundaries from the left replaces the tone of the optional schwa ǝ and spreads to the next syllable if its tone (or the initial part of its contour) is identical to the tone of the optional schwa, as in *mbǝrǎ̃(:)* ‘water’ (8a) and *gǝrà:gǝn* ‘glutton’ (8b). However, in the case of *ɲmgbǝrǎ̃(:)* ‘elegant sand racer, *Psammophis elegans*’ where the tone of the optional schwa is L and the tone of the following syllable is M, such further spread is blocked (8c). Apparently, in (8c) the H spreading on the L of the optional schwa first creates a HL contour, whose L part is then exceptionally absorbed by the following M because the syllable with an optional schwa cannot host two tones. The tone absorption is exceptional here because elsewhere the absorption of L in a HL contour by a following M is only possible across word boundaries (see Section 3.2).

- (8) a. $\acute{e}t\acute{e} \# mb\bar{a}r\tilde{a}(:)$ → $\acute{e}t mb\grave{a}r\tilde{a}(:)^H$ ‘white person, European’ (lit.:
‘person of water’, meaning
‘person from overseas’)
b. $t\acute{o} : \# g\grave{e}r\grave{a}:g\grave{e}n$ → $t\acute{o} : g\grave{a}r\grave{a}:g\grave{e}n$ ‘take the glutton!’
c. $t\acute{o} : \# \eta mgb\grave{e}r\tilde{a}(:)$ → $t\acute{o} : \eta mgb\grave{a}r\tilde{a}(:)$ ‘take the elegant sand racer!’

The formulation “can (and normally does) spread” in the description of the tone spread rule is intended to reflect the fact that while the application of tone spread one position to the right across word boundaries is extremely productive, in principle tone spread remains optional and a tone may spread further than one position to the right. This is illustrated in (9) with the example of the genitive construction ‘the eye of a bean’, where $n\acute{u}:$ ‘eye’ is the head and $d\grave{a}s\grave{e}$ ‘bean’ is the genitive modifier. The normal realization of this phrase by our main consultants irrespective of the speech rate is (9b) where the H tone of $n\acute{u}:$ spreads one position to the right across the word boundary (with the subsequent absorption of the L part of the HL contour created by H tone spread, cf. Section 3.2). However, in principle the H tone may also fail to spread as in (9a) or spread two positions to the right, instead of one, as in (9c).

- (9) a. $n\acute{u} : \# d\grave{a}s\grave{e}$ → $n\acute{u} : d\grave{a}s\grave{e}$ ‘the eye of a bean’
b. $n\acute{u} : \# d\grave{a}s\grave{e}$ → $n\acute{u} : d\acute{a}s\grave{e}$ ‘the eye of a bean’
c. $n\acute{u} : \# d\grave{a}s\grave{e}$ → $n\acute{u} : d\acute{a}s\hat{e}$ ‘the eye of a bean’

The variability in the application and the range of tone spread may be subject to contextual, individual and dialectal differences the extent of which is difficult to ascertain without a big corpus study. Yet, we do have some indications that tone spread is likely to be less prominent in the Guto dialect as compared to our reference dialect Pra. For instance, the word *gìràṅgó* ‘crocodile’ in Pra corresponds to *gìráṅgó* in Guto. This example also provides evidence in support of our hypothesis that the tendency for the tone of the second syllable in disyllabic words to be identical to the tone of the first syllable must be due to the application of rules of tone spreading (cf. Section 4.3).

3.2. Tone absorption

The second tone rule is the rule of tone absorption. This rule simplifies complex tones that are followed by a tone that is identical to their final part, e.g. HL#L → H#L in (10).

- (10) $k\acute{a}ls\hat{a} \# b\grave{a}mb\grave{a}m$ → $k\acute{a}ls\acute{e} b\grave{a}mb\grave{a}m$ ‘fat monkeys (sp.)’

Unlike tone spread, tone absorption also productively applies within words. This explains the difference in outcome of tone spread in (1a, 11), on the one hand, and (1b-d, 12a), on the other. Thus, a spreading tone sometimes forms a contour with the tone

it encounters at its right (1a, 11) and sometimes replaces it (1b-d, 12a). Replacement can easily be analysed as the outcome of the successive application of spreading and tone absorption, as spelled out in (12b).

(11) tó: # gò: → tó: gô: ‘take a chicken!’

(12) a. tó: # gò:sà → tó: gó:sà ‘take chickens!’

b. tó: # gò:sà → tó: gô:sà → tó: gó:sà ‘take chickens!’

L and M tones often behave as if they were identical in the application of the tone absorption rule too, so that a HL contour tone followed by a M can be reduced to H, as illustrated in (13).

(13) kwá:nô # yā → kwá:né yā ‘this plate’

Note that a HL contour must be separated from the following M by a word boundary for the tone absorption to be applied. This is illustrated in (14), where the L part of the lexical HL contour is not absorbed by the following M within the same word, and in (15), where the HL contour is created by the application of tone spread and its L part is not absorbed by the following M within the same word either. The only exception to the requirement that a HL contour must be separated from the following M by a word boundary for the tone absorption to be applied is represented by the case where the HL contour would be created by the application of tone spread on a syllable with an optional schwa, which cannot host two tones (see Section 3.1 and example 8c).

(14) kwîllā ‘fish (sp.)’

(15) été # bèbtā → ét bêbtā ‘disrespectful person’ (lit.: ‘person of disrespect’)

3.3. Floating tone attachment

In Bena-Yungur, tones of all three levels can float, viz. ^H, ^M and ^L. No sequences of floating tones exist. When a morphological process results in the creation of a sequence of two floating tones, the second of these two tones is deleted, as in (32b) in Section 5.1 where the deletion of the final vowel of *bwálô* ‘cooking’ leaves a sequence of a floating ^H and a floating ^L but then the latter floating tone is also deleted. We have so far found no morphemes that consist only of a floating tone. Floating tones are usually lexically specified, as in $\bar{\epsilon}n^H$ ‘with’, $\acute{\epsilon}^M$ ‘on, at’ and $\acute{\epsilon}y^L$ ‘3SG.AN.be’, but may sometimes result from the application of tone rules, as in (21). With the exception of the word $\acute{\epsilon}tw\acute{\epsilon}ŋ^{(H)}$ ‘grasshopper (sp.)’, whose floating ^H is optional, floating tones are found only in the lexical specifications of function morphemes. In a limited number of function morphemes, H tone is variably specified in the lexicon as linked or floating. So far we found such variation with two prepositions, viz. ‘with’, varying between $\bar{\epsilon}n^H$ and $\acute{\epsilon}n$, and ‘in’, varying between $d\acute{\epsilon}(:)^H$ and $d\acute{\epsilon}$. As is apparent from the examples of

morphemes with floating tones in this section, a floating tone is always the last tone in the lexical specification of a morpheme. The linked tone preceding a floating tone is always different from the latter. Furthermore, floating ^L tones are found only after H. Floating ^M tones can be found after both L and H. Floating ^H tones are usually found after M and in a few cases after L.

The rules governing the docking of floating tones are largely similar to the rules of tone spread (Section 3.1) and tone absorption (Section 3.2). Thus, any floating tone is absorbed by a following identical linked tone. Furthermore, a floating ^M is absorbed by a following linked L and a floating ^L is similarly absorbed by a following linked M. All floating tones first try to dock to the right. If they cannot dock to the right, floating ^H and ^M are deleted, while a floating ^L may also dock to the left if the preceding syllable is H. Otherwise it is deleted. Furthermore, neither a floating ^M nor a floating ^L can dock to the right if the following tone is a linked H itself followed by either linked M or L or floating ^M or ^L.

Example (16) illustrates three possible realizations of the floating ^L tone of *áy^L* ‘3SG.AN.be’. The floating ^L is absorbed by the following linked L in (16a) and the following linked M in (16b). In (16c), the floating ^L can dock to the right because it is followed by a linked H tone which is not itself followed by L or M. The H tone of the resulting LH contour is then regularly absorbed by the following H. In (16d), the floating ^L docks to the left to the preceding H syllable since it cannot dock to the right because it is followed by a linked H tone which is itself followed by M.

- (16) a. *áy^L # bəm* → *áy bəm* ‘(s)he is large’
 b. *áy^L # tʃēbʃēb* → *áy tʃēbʃēb* ‘(s)he is black’
 c. *áy^L # ɓwálán* → *áy ɓwálán* ‘(s)he is tall’
 d. *áy^L # lósǎ* → *ây lósǎ* ‘(S)he is like that’

Example (17) illustrates two possible realisations of the floating ^M tone of the plural marker *ám^M*, which is related to the short form *ám* of the plural *ámǎ* ‘children’ (compare the singular form *áwé* ‘child’). Thus, the floating ^M is absorbed by the following linked L in (17a), docks to the right creating a MH contour whose H part is subsequently absorbed by the following H in (17b), and is deleted in (17c) because it cannot dock either to the right or to the left.

- (17) a. *ám^M # bwà(:)* → *ám bwà(:)* ‘dogs’
 b. *ám^M # túbâ* → *ám tūbâ* ‘hares (sp.)’
 c. *ám^M # tó:nā* → *ám tó:nā* ‘girls’

This plural word has another lexically conditioned allomorph *ám^L* with a floating ^L. It is not always possible to say which allomorph is used, as is the case in (17a), where both the allomorph with a floating ^M and the allomorph with a floating ^L would have

the same realization. However, in (17b, c) and (18), the two allomorphs can be distinguished. Thus, compare (17c), where the floating ^M followed by H.M is deleted, and (18), where the floating ^L equally followed by H.M docks to the left, since it cannot dock to the right, just as the floating ^L in (16d).

(18) âm^L # kálā → âm kálā ‘bellies’

3.4. Illustration: tones tend to be realised one position to the right of their lexical attachment site

The application of tone rules may result in output tones that are very different from the structural tones in the input, as illustrated in (19). Here the floating H of the 3SG.PFV pronominal \bar{a}^H docks to the right on the L tone of the perfective form of the verb *bà:* ‘scoop’ and the two tones first form a HL contour. The L tone of the perfective form of the verb *bà:* ‘scoop’ spreads on the following H of the 1SG pronominal *nə́* and the two tones first form a LH contour. The H tone of the 1SG pronominal *nə́* itself spreads on the following L of *bà:rā* ‘lie’ and the two tones first form a HL contour. The L part of the first HL contour on the verb is absorbed by the following L part of the LH contour on the 1SG pronominal, while the H part of the latter LH contour is itself absorbed by the following HL contour of ‘lie’. That is, the original input tone pattern M^H L H L.M comes out as M H L HL.M.

(19) \bar{a} bá: nə́ bà:rā
 | \bar{a}^H bà: nə́ bà:rā|
 3SG.PFV scoop\PFV 1SG lie
 ‘He lied to me.’ (lit.: ‘He scooped me a lie’)³

4. Tone patterns

With the exception of syllables formed by an optional schwa \bar{a} (cf. Sections 2, 3.1 and 3.2), every syllable can host two tones, irrespective of its weight or position. At the same time, as discussed in Section 4.1, there is only a handful of monosyllabic words with a lexical two-tone contour pattern. In a very limited number of cases, the application of tone rules can lead to three surface tones being realised on one syllable. As discussed in Section 4.2, the only possible three tone contour is HLH on a heavy syllable before pause. Finally, in Section 4.3 we analyse the distribution of tones in lexemes, which allows us to formulate some hypotheses on the internal reconstruction of the tone system of Bena-Yungur.

³ In the examples, |the second line| presents structural forms of the respective morphemes.

4.1. Two tones on monosyllabic words

Monosyllabic words very rarely have complex tones. The six exceptional words we found are listed in (20).

- (20) a. dǒ: ‘duiker’
 b. gǎ: ‘sun; God’, ‘day’
 c. gbǎ: ‘be big; very much’
 d. lǎ: ‘like this’
 e. wǎ: ‘tree (sp.)’
 f. wê:d̂ ~ wêd̂ ‘grasshopper (sp.)’

A closer look at the (presumed) lexical frequencies and positional preferences of these six lexemes suggests that the rules of tone spread and absorption are responsible for the rarity of their lexical tone pattern. One of our main consultants distinguishes between *gǎ:* ‘sun; God’ and *gà:^H* ‘day’, where the latter form has a more regular surface tone pattern. We believe that regularisation of the tone pattern of this word in the meaning ‘day’ is due to frequency effects. One reason for this is that the meanings ‘sun’ and ‘God’ are more often expressed by other words, viz. *ó:* and *líwrá* respectively. The fact that this word is used more frequently in the meaning ‘day’ accounts for the divergent development of the word in this meaning, as compared to the meanings ‘sun’ and ‘God’. In addition to the relative frequency of this word in the meaning ‘day’, its absolute frequency in speech in this meaning is also likely to be relevant. It can account for the fact that the tone pattern has been regularized in *gà:^H* ‘day’ but not in *dǒ:* ‘duiker’, *wǎ:* ‘tree (sp.)’ and *wê:d̂ ~ wêd̂* ‘grasshopper (sp.)’, which must be rather infrequent in speech. Finally, the difference between *gà:^H* ‘day’ and the remaining two exceptional words listed in (20), viz. *gbǎ:* ‘be big; very much’ and *lǎ:* ‘like this’, which must be at least as frequent as ‘day’, is likely to be accounted for by differences in their frequency of occurrence in two kinds of environments, viz. before an utterance-final pause vs. phrase-internally. Due to their predicative and adverbial function, the latter two words must be more common before an utterance-final pause, while there is no such expectation for the word ‘day’. In fact, it is likely to be more common phrase-internally. Following the application of tone rules (see Section 3), in an utterance-internal position a monosyllabic word with the lexical LH tone pattern is most often realized as L, while before an utterance-final pause the LH contour is preserved. That is, while *gbǎ:* and *lǎ:* usually occur in the environment where their LH contour is preserved, *gǎ:* in the meaning ‘day’ frequently surfaces as simply L, which readily accounts for the reanalysis of its lexical tone as L^H.

4.2. Three tones on one syllable: HLH contour

In some rare cases the application of tone rules can lead to three surface tones being realised on one heavy syllable before a pause (see Section 3). Only one combination of three tones is possible on a single syllable, viz. HLH. This is due to several reasons. Most importantly, M and L do not spread onto a contour tone, which already drastically reduces the number of possible three tone contours. Moreover, when H spreads on a two-tone contour and one of its two tones is M, the last tone becomes floating, as in (21) where H spreads on a MH contour and the final H delinks, resulting in a HM contour followed by a floating H.

(21) *été* # *mb̄rã̄(:)* → *ét mb̄rã̄(:)^H* ‘white person, European’ (lit.: ‘person of water’, meaning ‘person from overseas’)

In other words, the only words that may be realised with three tones on one syllable before a pause due to the application of tone rules are the four monosyllabic words with a LH tone pattern cited in (20), viz. *dõ:* ‘duiker’, *gã:* ‘sun; God’ (for some speakers also in the meaning ‘day’), *gbã:* ‘be big; very much’ and *lã:* ‘like this’.

We found only two words where a HLH contour is lexical, viz. *dënděn* ‘numerous, many’ and *gèmgǔm* ‘mature person who died without being married and without having children’. It is obvious that the HLH contour on the second syllable of the two words results from H tone spread from the first syllable and that the current L.HLH tone pattern comes from an earlier *LH.LH pattern. Note that the relation between the two tone patterns is diachronic and not synchronic in terms of the application of tone rules. Although the two words look like reduplications, they are both fully lexicalized. Thus, for *dënděn* no related base form is found. As for *gèmgǔm*, although there is a related simple form *gèm* ‘useless’, its tone is L and not LH and the semantic relation between ‘useless’ and ‘mature person who died without being married and without having children’ is idiosyncratic.

In open syllables and in closed syllables whose coda is not a nasal,⁴ the final H part of the HLH contour is often realized lowered so that in this context we can either say that the distinction between H and M is neutralized or that H is lowered to M. However, we prefer to analyse the final tone of this three tone contour as H for two reasons. First, lexically this final tone should be H and it still behaves as such in the phonology as soon as it is followed by anything else than a pause. Second, if an open syllable with the three-tone contour becomes closed by a nasal coda, such as the perfective assertive clitic =*n*, as in (22), its final part is normally realized on the regular H level.

⁴ This generalization is most likely to hold true for all kinds of sonorants. However, for the moment nasals are the only type of sonorants that we found in coda position in syllables with a HLH contour.

- (22) d̀əŋ bī lã: = n
 |d̀əŋg̀ə (m)bī^H lã: = n|
 stop\PFV actually like.this = PFV.ASS
 ‘Enough of this!’ (‘Stop arguing!’) (lit.: ‘it has actually stopped like this!’)

4.3. *The distribution of tones in lexemes and the internal reconstruction of the tone system*

In this section we will look at the distribution of tones in lexemes, which shows very interesting patterns that allow us to formulate some hypotheses on the internal reconstruction of the tone system of Bena-Yungur. The two properties that are most relevant in this respect are the strong correlation between the laryngeal settings of stem-initial consonants with the tone of stem-initial syllables and the similarities between L and M in Bena-Yungur phonology.

As shown in Table 2, the number of H monosyllabic nouns and verbs more or less equals the sum of L and M words.⁵

	Nouns	Verbs
H	25	25
M	10	15
L	15	12

Table 2. Tone patterns of monosyllabic nouns and verbs

Moreover, there is a very strong correlation between the laryngeal settings of stem initial consonants and the first tone of stems, such that voiced stops (i.e. *b*, *d*, *g* and *gb*) are almost exclusively followed by a low tone and voiceless stops almost exclusively by a M or a H tone. Exceptions to the rule that initial voiced stops are followed by a low tone are very rare. Some are obviously recent borrowings and others are names for animals, which tend to have exceptional shapes. An exhaustive list of the exceptions found so far is provided in (23).

- (23) b́ərk̄əmr̄ā ‘mangoose’
 ǵóndà ~ gwándà ‘pawpaw’
 ǵó:dê ‘to thank’ (from Hausa *ǵó:dê* ‘to thank’)
 gwé:và ‘guava’

⁵ The data used for this section is a subset of 1161 double checked entries from our lexical database.

Counterexamples involving initial voiceless stops followed by a L tone are slightly more numerous. They also tend to be borrowings or names for biological species and are listed in (24).

(24)	kà:ká	‘grandmother’ (term of address)
	pà:	‘father’
	kùltà	‘lizard (sp.)’
	pùkkō	‘savannah monitor lizard’
	kādīn	‘grasshopper (sp.)’
	tèndò	‘ant (sp.)’
	tòrî	‘gerbil’
	tàbsā	‘plant (sp.), <i>Senna obtusifolia</i> ’
	pàv`àḏ	‘(appear) suddenly’ (ideophone)
	tàsàw	‘measure, container used to measure things’
	tàbā	‘tobacco, cigarette’
	twà:tá	‘fart’

Most other phonemes and NC clusters (*mb*, *n*, *nd*, *ŋg*, *ŋmgb*, *r*, *l*, *f*, *h*, *b* and *d*) largely pattern with the voiceless stop consonants. For *m* there is no clear pattern. Perhaps many borrowings start in *m*. The case of *r* is not very clear either, but it seems to be typically followed by M or H tones as well. The voiceless fricative *s* shows no clear preference for a following tone, which is due to recent neutralisation of the opposition between *s* and *z* in the Pra dialect of Bena-Yungur. Comparison with the Guto dialect spoken to the south of Pra shows that all nouns with an initial *z* in that dialect have a L tone in Pra, as illustrated in (25).

(25)	Guto dialect	Pra dialect	
	zì:sà	sì:sà	‘honey’
	zìyò	sìyò	‘bee’
	zà:ŋgà	sà:ŋgà	‘tree (sp.)’
	zǎ̀	sǎ̀	‘snake’
	zǎ̀:	sǎ̀:	‘gently’
	zǎ̀:rà	sǎ̀:rà	‘pole’
	zǎ̀kè	sǎ̀kè	‘make’

Words that start in *s* in the Guto dialect are mostly M or H in Pra. Exceptions can be attributed to the hypothesis that devoicing of *z* is currently spreading through the Guto lexicon.

The distributional facts cited so far could be accounted for by a three step historical scenario, schematised in Figure 2, that starts with a two tone system in which tones are distributed more or less randomly over lexemes, i.e. irrespective of the quality of the stem-initial consonant. In step two, the distinction between L and H is neutralised after stem-initial voiced obstruents, which act as depressor consonants that change all H tones into L. Finally, the subsequent lowering of tones after stem-initial voiced obstruents gave rise to tonogenesis, splitting L tones into low and extra low, respectively M and L in the current tone system. The straightforward relation between consonants and tones was later blurred by the application of tone rules (see Section 3), devoicing of stem-initial voiced obstruents and the erosion of segmental material leading to the emergence of floating tones.

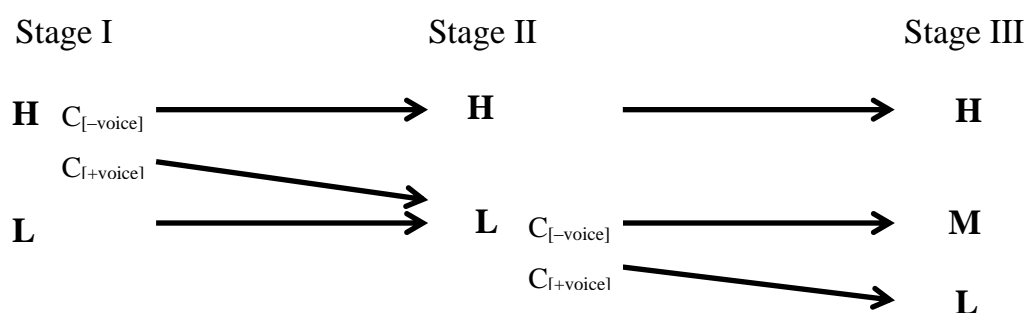


Figure 2. A scenario for the evolution of tones in stem-initial syllables in Bena-Yungur

The second step of this historical scenario, viz. the split of an earlier L into M and L, is further corroborated by the fact that in many ways current M and L are treated as similar in Bena-Yungur phonology. For instance, as discussed in Section 3.1, L and M are treated as identical for the purpose of the rule of tone spread. First, L and M do not spread onto each other. Second, L and M do not spread on the following H if the latter is immediately followed by either L or M. In certain contexts, L is also treated as identical to the following M for the purposes of the rule of tone absorption. Thus, as described in Section 3.2, when a HL contour happens to be followed by M across a word boundary, L is absorbed by M.

In disyllabic words, the tone of the second syllable tends to be identical to that of the first, which must be due to the application of rules of tone spreading (cf. Section 3.1). Interestingly, in disyllabic verbs, it is the L pattern that is almost as frequent as H and M combined, as is shown in Table 3. In Tables 3 and 4 the rows show the tone of the first syllable and the columns that of the second syllable.

		σ_2			
		H	HL	M	L
σ_1	H	43	4	—	—
	M	—	—	36	—
	L	1	—	—	75

Table 3. Tone patterns of disyllabic verbs (imperative forms)

Disyllabic nouns also tend to have identical tones on the first and the second syllable, with the notable exception of L.M nouns, as shown in Table 4.

		σ_2								
		H	HL	HM	M	ML	MH	L	LH	LM
σ_1	H	145	20	—	—	—	—	4	—	—
	M	9	5	1	121	1	3	—	—	—
	L	17	7	5	62	1	—	112	4	—
	HL	—	—	—	2	—	—	—	—	—

Table 4. Tone patterns of disyllabic nouns

Although the general pattern for disyllabic nouns in Table 4 is similar to that for disyllabic verbs in Table 3, there is clearly much more noise in Table 4. The difference is primarily due to the fact that a large majority of disyllabic nouns are not monomorphemic. The second syllable is often a morphological class/number marker (see Section 2). Another important factor must be a higher rate of borrowings among nouns, as borrowings are more likely to have irregular tone patterns. Finally, it is relevant that the CVCCV shape is much more common among disyllabic nouns than disyllabic verbs, which are normally CVCV. This is relevant because CVCCV words are likely to derive from earlier *CVCVCV, whereby the original three tones had to be accommodated on two syllables.

5. Tonal morphosyntax

Tone plays a crucial role in the expression of morphosyntactic categories in Bena-Yungur in three ways. First, morphemes can partly consist of floating tones (see Section 3.3). Second, lexical forms can have different tones depending on their syntactic position. Thus, nouns may acquire tone schemes different from their lexical tone patterns when used as dependents in the genitive construction, as complements of

some prepositions and as complements of nominalised verb forms (Section 5.1). Third, a tone scheme can override the lexical tone pattern of the base due to the application of a morphological operation. For instance, verbs may be assigned different tone schemes overriding their lexical tones in the positive perfective construction (Section 5.2) or the dependent tone scheme of a noun can be changed to derive a different noun (Section 5.1).

5.1. Tonal syntax: dependent tone schemes of nouns

Bena-Yungur nouns are morphotonologically interesting in that they have a higher number of tone schemes as dependents in genitive constructions than in other contexts. We will call the tone scheme of nouns in that position their *dependent tone scheme* (DTS). Nouns that are entirely H in isolation are split into two dependent tone schemes. The DTS of one class remains H (26), which we refer to as dependent tone scheme A (DTS_A). That of the other class becomes M (27-28), which we refer to as dependent tone scheme B (DTS_B). Note that rules of tone spread and tone absorption apply in the examples.

- (26) a. sífé ‘herbalist’
 b. d̄à:r̄è sífé wā ‘the skin of the herbalist’⁶
- (27) a. b̄óná ‘Bena’
 b. é: b̄ónā ‘the Bena language’
- (28) a. ná: ‘cow’
 b. bwà:r̄è nā: ‘cow dung’

Nouns that are entirely L in isolation and that are not monosyllabic are likewise split into two tone classes. Again, the DTS of one class is identical to the tone scheme in isolation, i.e. L (29), which we refer to as DTS_A. The other class has a DTS with a final HL contour (30), which we refer to as DTS_B.

- (29) a. dùṅgà ‘iroko tree’
 b. l̄iṅgē dùṅgà ‘the top of the iroko tree’
- (30) a. d̄òbrà ‘bush’
 b. t̄ò:r̄ē d̄òbrâ ‘the road of the bush’

We have so far identified two other syntactic contexts in which the DTS of nouns is used, viz. in complements of the prepositions *d̄ā^H* ‘in’ and *ā^M* ‘on, at’, as in (31b-c)

⁶ The final element *wā* here is a demonstrative which agrees in gender with the head noun ‘skin’. In genitive constructions, the use of a demonstrative agreeing in gender with the possessed noun seems to be generally obligatory when the possessor is human.

with a DTS_B noun *bùtò* ‘ground’, and in complements of nominalised verb forms, as in (32b) where a DTS_B noun *búrá* ‘porridge’ is a complement of the nominalisation *ḃwálô* ‘cooking’, which in this environment takes the short form *ḃwál* with the final vowel deleted. Both constructions are likely to have their origin in genitive constructions. However, since the relevant prepositions are not used as nouns elsewhere, only the construction with nominalised verb forms can be analysed as a genitive construction synchronically.

- (31) a. *bùtò* ‘ground’
 b. *à bùtô* ‘on the ground’
 c. *ḃā bûtô* ‘in the ground’
- (32) a. *ḃwál búrá* ‘cook porridge!’
 b. *ḃwál búrá* ‘cooking (of) porridge, to cook porridge’

The dependent tone schemes of nouns are purely lexically determined, i.e. not by the type of genitive relation, and are unpredictable. We therefore specify the genitive tone scheme of every L or H noun in our lexical database. As is illustrated by nouns whose citation forms have a different tone pattern in the singular and the plural, such as H.H *ándá* ‘place’ versus H.HL *ánsá* ‘places’, tone patterns are a property of words, not of stems. This is also true for dependent tone schemes, as illustrated by the word for ‘arrow’ *ḃwá:*, which has DTS_A (33a), and its plural *ḃwá:mé*, which has DTS_B (33b).

- (33) a. *ḃā ḃwá:* ‘in the arrow’ (DTS_A)
 b. *ḃā ḃwá:mē* ‘in the arrows’ (DTS_B)

For a number of nouns, our consultants sometimes accepted both dependent tone schemes as free variants. Such examples should probably be analysed as cases of analogical levelling, viz. original DTS_B → more regular DTS_A. DTS_A is more regular both in the sense that it is much more frequent and in the sense that it can be construed as the default option: the dependent tone scheme of a noun is the same as its lexical tone pattern.

We also found two pairs of nouns which are identical except for their DTS and their meaning (34). Examples illustrating the difference between the members of each pair are provided in (35-37). Obviously, the difference in DTS cannot be analysed as regularisation here. We treat the members of these pairs as homonyms in our lexical database.

- | | | | |
|------|-------|---------------------|------------------|
| (34) | | DTS _B | DTS _A |
| a. | bùtò | ‘ground, soil’ (35) | ‘land’ (36) |
| b. | líwrá | ‘sky, heaven’ (37a) | ‘God’ (37b) |

(35) 6ān yám 6ā: á bùtô

|6ān^H yāmā 6á: à^M bùtô|

3PL.IPFV fight 3PL on ground[DTS_B]

‘They are fighting on the ground.’ (lit.: ‘They fight them(selves) on the ground’)

(36) 6ān yám 6ā: á bùtò

|6ān^H yāmā 6á: à^M bùtò|

3PL.IPFV fight 3PL on land[DTS_A]

‘They are fighting for the land.’ (lit.: ‘They fight them(selves) on the land’)

(37) a. dā líwrá ‘in the sky, in heaven’ (DTS_B)

b. dā líwrá ‘in God’ (DTS_A)

Note that the list in (34) is probably not exhaustive, as is suggested by two facts. First, the nouns in the two pairs in (34) are clearly related and they are related in a similar way. The noun with DTS_B has a concrete spatial semantics while the noun with DTS_A looks like a metonymical extension with a more abstract meaning, viz. some abstract object associated with the space denoted by the formally identical noun with DTS_A. Therefore, we can say that DTS change, viz. the change DTS_B → DTS_A, can be used as a derivational tool. Second, the two pairs in (34) are not just frozen relics, as the change DTS_B → DTS_A appears to be available to the speakers as a morphological process. Thus, one of our main consultants volunteered the derivation by the change DTS_B → DTS_A in (38), when asked which of the two DTS options is correct for the noun *káptá* in the genitive construction as the dependent of the word *été* ‘person’, viz. (39a) with DTS_B or (39b) with DTS_A. The *Káptá* clan does not exist, but it would be a possible clan name, since Bena clans are often associated with particular villages and the names of clans are sometimes identical to names of villages.

PL plural
SG singular

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