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Bantu Tone Overview

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1. Tonal contrasts

Most of the ca. 500 Bantu languages have at least a binary tonal contrast realized as surface H(igh) vs. L(ow). The relatively few exceptions include a discontinuous band of languages starting in Mozambique with Sena [N44] and Nyungwe [N43], up around Lake Nyasa to Tumbuka [N21] and Nyakyusa [M31], and further East into Tanzania to Pogolo [G51], Ndamba [G52], Kutu [G37], Kami [G36], Zaramo [G33], Kwere [G32], and finally the best known case, Swahili (G42).¹ However, beyond the expected H and L tones lies an extraordinary range of variation in tonal alternations and surface contrasts, which can include downstepped ⁴H, contour tones, and in more rare cases, level (L^o) vs. falling L, superhigh ⁴H, and M(id) tones. In the following sections I first discuss the nature of the basic binary tonal contrast, whether equipollent or privative (§2), then turn to cases of multiple tone heights (§3). This followed by overviews of the lexical tonology of verbs (§4) and nouns (§5) followed by phrasal tonology (§6) and a brief conclusion concerning future studies (§7).

2. Equipollent vs. privative tone

It is clear that the Proto-Bantu (PB) contrast was limited to two tones. However, even the most basic H vs. L system is subject to interpretation: Greenberg (1948), Meeussen (1967, 1969[1980]) and Coupez (1983) reconstruct *H vs. *L, while Stevick (1969) suggests a single-valued privative *H vs. Ø. In most current Bantu languages the phonologically “marked” tone is synchronically /H/, so the main question is whether the underlying contrast is one of /H/ vs. /L/, where both values are phonologically activated, as in Bakweri [A22] (Marlo & Odden 2014) and Kikuyu (Clements 1984), or /H/ vs. Ø, where only H is phonologically activated, as in Digo [E73] (Kisseberth 1984) and Zigula [G31] (Kenstowicz & Kisseberth 1990). In addition, there are languages such as Luba [L31] (Coupez 1954) and Ruwund [L33] (Nash 1992-4) which have inverted the inherited system and have a /L/ (from Proto-Bantu *H) vs. Ø privative system, where L is the activated tone and H (or non-L) a default pitch. While each argument has to be carefully scrutinized, the most straightforward evidence for a /H, L/ system comes from the presence of contour tones on a single tone-bearing unit (TBU), e.g. LH, HL and LHL in Kukuya [B77a]: *mù-sǎ* ‘weaving knot’, *kì-kâ* ‘to pick’, *ndé bǎ* ‘he falls’ (Paulian 1975:130-1). Since these contours also contrast with level tones on a short vowel, both H and L are needed. In languages which have contours only on long vowels, it is possible to analyze these with a privative H tone linked to one of the moras, the other mora receiving a L pitch by default.

¹ Thanks to to Gérard Philippon for providing input on this and other parts of this chapter and to two reviewers who made helpful suggestions that I have generally adopted.

Surface HL and LH contours thus result in this way in Yao [P21]: /di-kúuga/ → *dì-kúùgà* ‘group of people’, /di-wíwí/ → *dì-wíwì* ‘chicken’ (Ngunga 1997:168).²

A second argument for /H, L/ comes from their necessity as floating tones, i.e. tones which do not have a TBU of their own. In Eton [A71] deverbal nominalization is marked by a H tonal suffix, e.g. /à-jàb-´/ → *à-jǎb* ‘length, height’ (cf. *jàb* ‘be long’), while the agentive suffix is marked by a L tone suffix after non-high vowels, e.g. /Ñ-vé-`/ → *mè-vê* ‘giver, donor’ (cf. *vé* ‘give’) (Van de Velde 2008:104, 106). In these examples the resulting contour tones further justify a /H, L/ analysis, whether these derive from tonal morphemes (e.g. the -H and -L suffixes in Eton), by coalescence of H and L vowels, or by tone spreading, as in Basaá [A43] /pám-àk/ → *pámâk* ‘exit, arrive (intensive)’ (Lemb & Degastines 1973:42).

Although there are exceptions, /H, L/ systems are generally found in the Northwest (NW) Bantu zones which have undergone syllable erosion, while /H, Ø/ (and occasional /L, Ø/) are found further East and South, where PB word structure is more intact. However, there are potential complications, since phonological L tones may enter an underlying /H, Ø/ system by rule. In Ganda [JE15], for example, the underlying contrast is /H, Ø/, but a L tone must be introduced in the lexical (word-level) phonology. This produces an intermediate ternary H, L, Ø contrast (Hyman & Katamba 2010:70). As an example, /ku-lí-a/ ‘to eat’ first becomes *ku-lí-à* by L tone insertion, since all words with a /H/ must have a phonological H to L fall. *ku-lí-à* subsequently becomes *ku-ly-áà* (by gliding + compensatory lengthening), then *ku-ly-â* by final vowel (FV) shortening (cf. *ku-ly-áà* = *kô* ‘to eat a little’, where the class 17 enclitic /= *kó/* preserves the length). As a final step the class 15 infinitive prefix /ku-/ receives a default L: *kù-ly-â*. Another source of word-level L in Ganda is from Meeussen’s Rule (cf. §4 below), whereby all but the first of a sequence of /H/’s become L: /te-bá-kól-á/ ‘they don’t work’ → *tè-bá-kòl-à* (variant *tè-bá-kòl-á* via assignment of a final optional H% boundary tone). While such word-level Ls are quite common in Ganda, the major need for a L in Haya [JE22] is found at the clause level, where a penultimate H is realized with a HL falling tone: /ku-bón-a/ → *kù-bôn-à* ‘to see’ (Hyman & Byarushengo 1984:86). The HL contour contrasts with penultimate H: /a-bón-á/ → *à-bón-à* ‘s/he sees’. While both Ganda and Haya assign the remaining L tones by a general default rule, Myers (1998) argues that Ø TBUs in Chichewa [N31] remain underspecified in phonetic implementation.

Whether the contrast is privative or equipollent, the TBU is usually the mora (a vowel or syllabic nasal) in languages that have maintained the PB vowel length contrast, although there are exceptions, e.g. Lamogi [JE16] (Hyman 2014:165), where the syllable is the TBU (Hyman 2014:165). In languages which have lost the contrast, each TBU is both a syllable and a mora (and pre-consonantal nasals are typically non-syllabic).

3. Multiple tone heights

As indicated, most Bantu languages have an underlying two-height system, whether privative or equipollent. In addition, many have only H and L in their outputs, e.g. Nande [JD42] (Hyman & Valinande 1985; Mutaka 1994) and Nkore [JE13] (Poletto 1998a). Others add

² In this chapter (´) marks H tone and either (˘) or no accent marks L tone. Where a vowel lacks an accent it receives its tone either by rule (e.g. a H may spread onto it) or by receiving default L. In general I transcribe the grave accent in Proto-Bantu (PB) forms and in daughter languages where L has been shown to be phonologically active, e.g. in a /H, L/ or /L, Ø/ system. PB forms are from either Meeussen (1969) or Bastin et al (2002). Examples that are cited without attribution are from my personal notes.

additional contrasts to their H or L tone. A raised “super-high” tone is found in languages both in the East and West, e.g. Chaga [E62] (McHugh 1990), Punu [B43] (Puèch 1980), and Yaka [H31], the last case interpreted as “a High that surfaces on an accented vowel” (Kidima 1990:196). In Kamba [E55] there is not only a contrast between a H and a super-high, but between two L tones: a “low level” and an “extra-low level, sometimes falling”, e.g. *ɲɡaa* ‘burnt sugar-cane’ (low level) vs. *nzàà* ‘hunger’ (falling) (Ford 1976, Odden & Roberts-Kohno 1999). In a number of Eastern Bantu languages a final H tone becomes a HL falling tone, ultimately a lowered fall which, although often hard to hear, contrasts with L (or Ø). Although Kähler-Meyer (1962:257-8) interprets this as a difference in accentual intensity in Pare-Asu [G22], e.g. *mì:-tì* ‘trees’ vs. *mì:-sì* ‘pestles’, it is clear that the root /-tí/ ‘tree’ is underlyingly /H/ (cf. *mì-tí mĩ-ɲɡì* ‘many trees’; < PB *-tĩ). A similar realization of the contrast occurs in Rimi [F32], Bemba [M42] and elsewhere in Eastern Bantu, where lowering of prepausal Hs can also result in complete merger of the underlying contrast.

By far the most common phenomenon affecting tone height is the occurrence of downstep, which can produce a contrast between H-H and H-^lH sequences, e.g. Shambala [G23] /nyóka/ → *nyóká* ‘snake’ vs. /ɲɡótó/ → *ɲɡó^ltó* ‘sheep’ (Odden 1982:179). In a /H/ vs. Ø language this can result from the simple juxtaposition of two H tones on successive TBUs, as in the Shambala case. Much more common are cases where the H tones come to be together by application of a tone rule, e.g. H tone doubling in Copperbelt Bemba [M42]: /bá-ka-lás-a/ → *bá-ká-^llás-á* ‘they will hit’ (Bickmore & Kula 2013:115). In languages analyzed with /H, L/, downstep is triggered by a L wedged between Hs, e.g. Basaá [A43] /à + Pí ` + jé/ → *à bí^l jé* ‘he ate (general past)’ (Hyman 2003:281). Sequences of ^lHs are possible even in languages where downsteps are relatively rare, e.g. Soga [JE16] *á-tá-á* = ^l*múú* = ^l*kúú* = ^l*cí* *bùlì lúnàkú* ‘what does s/he put a little of in every day?’ (Hyman 2017a).

Few Bantu languages have a bona fide, contrastive M(id) tone. While the Kombe dialect of Tuki [A601] has the more common H vs. ^lH contrast (Hyman & Biloa 1992), Bacenga has L, M, and H: *cùnū* ‘cloth’, *kānā* ‘crabe’, *kūmbú* ‘feather’ (Hyman 1980). However, Musada (1995) notes for the similar Tutsingo dialect that a deeper analysis may show these Ms to be derived by rule (perhaps necessitating grammatical information). In other cases Ms are limited and clearly derived. Thus, in Imithupi Makhuwa [P31] a /H-Ø/ undergoes a general rule of H tone doubling, producing H-H, which then becomes M-H unless the first H is itself preceded by a H tone: /í-wiri/ ‘worn-out hoe’ → *í-wíri* → *ī-wíri* → prepausal *ī-wîri* with penultimate lengthening (Kisseberth 2003:554). Other languages lower one or more Hs to M before pause, e.g. Kombe [A33B] *ì-káyì* ‘leaf’ vs. *ì-káyì ndjîrà* ‘that’s a leaf’ (Elimelech 1976:117), Kukuya [B77a] *kì-kērēgē* ‘insect’ vs. *kì-kérégé* *kì* ‘this insect’ (Paulian 1975:128). Since there can be only one pitch drop before pause, it is not possible to tell if these are M vs. ^lH tones. They may best be analyzed by positing a final L% boundary tone.

4. Phonological tone rules

Although almost all Bantu languages have only a binary contrast in inputs, with many of the tones traceable to PB, there can be significant discrepancies between underlying and surface tones. This is because most systems have introduced phonological rules of several types. The most general phonological processes are triggered by historical *H tones: These may spread or shift perseveratively or anticipatorily, or may be deleted. (There also are rules of H tone

insertion.) Similar processes concerning *L are more limited, as *L often functions as unactivated (∅) in many Bantu languages.

By far the most common tonal process is perseverative tone spreading. This can affect a single TBU (as seen above in Copperbelt Bemba and Imittupi Makhuwa) or several, potentially spreading up to another H or the end of the relevant domain, e.g. phrase-finally in Northern Bemba /bá-ka-bil-a/ → *bá-ká-bíl-á* ‘they will sew’ (Bickmore & Kula 2013:107). Sometimes a specific position is targeted, e.g. the antepenultimate syllable in Ndebele [S44], where /ú-ku-phek-is-a/ ‘to make cook’ first becomes *ú-kú-phék-is-a*, then *ú-kú-‘phék-iis-a*, where an inserted stem-initial L creates the downstep and phrase-penultimate vowel lengthening applies (Sibanda 2004:229-230). In other languages, rather than spreading, the /H/ may shift to either the next TBU, as in Jita [JE25] /ku-βón-er-an-a/ → *ku-βon-ér-an-a* ‘to get for each other’ (Downing 1990a) or to a more distant TBU, e.g. the antepenult in Zulu [S42] /ú-ku-hlek-is-an-a/ → *u-ku-hlek-ís-an-a* ‘to amuse each other’ (Downing 1990b:265). The fact that Zulu is closely related to Ndebele shows that shifting is the natural result of spreading + delinking from all but the last TBU. The same is true in cases where long distance H tone shifting occurs across words, as in the Mijikenda language Ribe [E72H]: /á-na-mal-a ku-gul-a nguwo/ → *a-na-mal-a ku-gul-a nguwó* → *a-na-mal-a ku-gul-a nguúwo* ‘s/he wants to buy clothes’, the final H being anticipated onto the lengthened penultimate vowel (Volk 2011:54). While the /H/ has in this case shifted to the final without any obstruction, evidence for spreading + delinking arises when there are intervening voiced obstruents. In such examples the initial /H/ leaves a H tone trace before every such “depressor consonant” in addition to the H on the penult: /ú-a-zi-fugul-a/ → *w-á-zí-fúgúl-á* → *w-á-zi-fúguúl-a* ‘s/he is untying them’ (Cassimjee & Kisseberth 1992:33). Depressor consonant effects are widespread in the Mijikenda [E72-73], Shona [S10] and Nguni [S40] subgroups.

While perseverative tone spreading is undoubtedly the most common process in tone languages in general, some Bantu languages instead have H tone anticipation. Bounded spreading affecting only the preceding TBU appears to be quite rare, although it occurs in different variants in the Rundi-Rwanda [JD60] cluster where /u-mu-gozí/ ‘rope’ can be realized *u-mu-gózí*, *u-mu-gózi*, or *u-mú-gózi* before a H tone (Philippson 1991:193). H tone anticipation is however most commonly restricted to phrase-final position, as in Haya [JE22]: /mu-tí/ ‘a tree’ → *mú-tí* (phrase-finally, as in *mú-tí % Káto* ‘(it’s) a tree, Kato!’) → *mú-ti* (utterance-finally) (Hyman & Byarushengo 1984:56). While bounded H tone anticipation tends to lead to H tone shift, as in the above Haya example, there are a number of Bantu languages that have unbounded anticipatory H tone spreading at the phrase level, e.g. Tiriki [JE413] /mu-lim-i mu-láhi/ → *mú-lím-í mú-láhi* ‘good farmer’ (Paster & Kim 2011:81). In Meeussen’s (1961:427) analysis a /H/ on the final inflectional vowel of verbs is anticipated on all preceding suffixal vowels, as in Lingala [C30B] /na-kak-at-an-í/ → *na-kak-át-án-í* ‘I got confused (general past)’ (Schadeberg 1977:198). Although less common than perseverative shift, several Bantu languages have been reported where an underlying /H/ is shifted onto the preceding TBU. Thus compare Totela [K41] /o-ku-kul-a/ → *o-ku-kul-a* ‘to sweep’ vs. /o-ku-kúl-a/ → *o-kú-kul-a* ‘to grow’ (Crane, to appear). Other languages with anticipatory H tone shift include Nande [JD42] (Mutaka 1994), Tembo [JD531] (Kaji 1996) and Soga [JE16] (Hyman 2017a), the last two of which have been analyzed with an inverted /L/ vs. ∅ system. Long-distance anticipatory phrase-level shifting of an underlying /H/, the mirror image of Ribe, has not been reported, as far as I know, e.g. where the /H/ of an object would shift onto the first TBU of the preceding verb. However, when all but the first of a sequence of suffixal H tones undergo deletion by

Meeussen's Rule (see below), a H on the FV may appear to have shifted onto the second stem mora, as in Haya **ba-jun-angan-á* > *ba-jun-ángán-á* > *ba-jun-angan-a* 'they help each other' (Hyman & Byarushengo 1984:94).

Two other common rules are H tone plateauing and Meeussen's Rule (Goldsmith 1984b). H tone plateauing results when non-H tones become H in between Hs. This can occur either word-internally or across words, as in Ganda [JE15]: /bá-ki-láb-a/ → *bá-kí-láb-à* 'they see it', *tw-áá-gèènd-à* 'we went' + *tútùtù* → *tw-áá-géénd-á* *tútùtù* 'we went slowly' (Hyman & Katamba 2010:72,74). Although subject to multiple analyses (Meeussen 1963, Carter 1971, van Spaandonck 1971, Goldsmith 1984), Tonga [M64] undoubtedly underwent H tone plateauing in its history. Thus, **bá-la-mu-bón-a* 'they see him' > *bá-lá-mú-bón-a* (by H tone plateauing) > *bà-lá-mú-bòn-a* (by lowering the first and last Hs of the plateau). Synchronically, it is however possible to analyze Tonga as a /L/ vs. Ø system with a rule inserting Hs in between /L/s, e.g. /bà-la-mu-bòn-a/ → *bà-lá-mú-bòn-à* 'they see him' (the L of -à is default).

Meeussen's Rule lowers all but the first of a sequence of Hs on successive TBUs. In some languages the successive Hs delete, i.e. /H-H-H-H/ → H-Ø-Ø-Ø, while in others such as Ganda the affected Hs leave a L trace which is distinct from Ø, i.e. /H-H-H-H/ → H-L-L-L. Meeussen's Rule most commonly applies right-to-left within words, as again in Ganda: /a-bá-tá-lí-láb-a/ → *à-bá-tà-lì-làb-a* 'they who will not see'. However, particularly in the Shona [S10] subgroup it can apply left-to-right across words, even between subject and verb. In this case, /H-H-H-H/ produces alternating Hs: H-Ø-H-Ø. Thus, Ikalanga [S16] *zwi-pó* + *z-ó-swiika* 'the gifts are arriving' is realized *zwi-pó z-o-swiika* and *nd-a-lóβá* + *nyáti* + *thúdzí* + *kwáázo* 'I hit a buffalo (on the) shoulder a lot' first becomes *nd-a-lóβá nyati thúdzí kwaazo* and then (by other rules) *nd-a-lóβá nyáti thúdzi kwáázo* (Mathangwane & Hyman 1999:179,195).

As mentioned above, another process affecting H-H sequences is downstep. It is in fact likely that right-to-left Meeussen's Rule first began this way with each downstepped H later being modified to L: **H-H-H* > *H-^hH-^hH* > *H-L-L*. The reverse effect (*H-H* → Ø-H or L-H), sometimes called Reverse Meeussen's rule, likely derives from two different sources. The first source is intermediate M-H. As noted above, Makua [P31] H-H is realized M-H initially and after Ø. While only one TBU is affected in Makua, a whole sequence can be affected in Rimi [F32]. Rimi also has the common process of H tone raising before L, e.g. /ù-vá-rèk-à/ 'to leave them' → *ù-vá-rék-à* (by H tone spreading) → *ù-vá-^rrék-à* (Hyman 1993:95). Finally, some languages lower phrase- or word-initial H or sequence of Hs, again either to L or Ø. Thus in Tiriki [JE413], earlier **vá-rhùmul-il-aa* + *mu-lína* 'they are hitting for a friend' first becomes *và-rhùmul-il-aa mu-lína* by initial **H* > L, then *và-rhùmúl-íl-á mú-línà* by H tone anticipation (which cannot reach the initial low sequence). The second source is by a tonal "upsweep" where a sequence of Hs start relatively low and reach final peak, as in Xhosa [S41] (Claughton 1983) and Kimatuumbi [P13] where "... each H in a series of consecutive Hs has a higher pitch level than its predecessor" (Odden 1996:6).

While the above survey covers most of the recurrent phonological tone processes, Bantu languages are particularly well known for their morphological and syntactic tones as well. These are discussed in the following sections.

5. Verb tonology

As is well-known, Bantu verb morphology is highly agglutinative, having the right-branching structure [prefixes [root - suffixes]_{stem}]_{word} (Meeussen 1967). While any of these positions

may contrast H vs. L tone on the surface due to subsequent phonological changes, tone likely did not contrast on verb extensions, which were *L (or Ø) except possibly causative *-i- (*-i-?) and passive *-u- (-ú-?) (cf. §8). Starting with the verb stem, most Bantu languages continue to distinguish *H vs. *L verb roots, e.g. Totela [K41] /-kul-/ ‘sweep’ vs. /-kúl-/ ‘grow’ (Crane, to appear), Ganda /-bal-/ ‘count’ vs. /-bál-/ ‘bear fruit’ (Snoxall 1967:12), Akoose [A15C] /-pèn/ ‘shine’ vs. /-pén/ ‘skip, jump’ (Hedinger 2012:131). However, other languages such as Matuumbi [P13] (Odden 1988:190), Yao [P21] (Ngunga 2000:15), Saamia [JE34] (Poletto 1998b:332) and Lamogi [JE16] (Hyman 2014:164) have lost the lexical tonal contrast, with all verb tones assigned by the inflectional morphology. A rather striking example of this occurs in Kuria [JE43], where according to tense-aspect and other inflectional properties, a H is assigned to the (underlined> first, second, third or fourth mora of the verb stem (Marlo, Mwita & Paster 2014:279): *ntoo-kóndókóra* ‘indeed we have already uncovered’ (untimed past anterior), *ntooya-koóndókóoye* ‘indeed we have been uncovering’ (hodiernal past progressive anterior focused), *ntore-koondókóra* ‘we will uncover (then)’ (remote future focused), *tora-koondokóra* ‘we are about to uncover’ (inceptive). As seen in these examples, the morphologically assigned H tone subsequently spreads to the penult. In other cases assigned suffixal tones may be sensitive to the tonal contrast on the root. In the Haya [E22] general past, for instance, a suffixal H is assigned to the second mora if the root is toneless (*ba-jun-íl-e* ‘they helped’). If the root is /H/, the suffixal H is assigned to the FV and the H of the root is deleted: *ba-kóm-il-é* ‘they tied up’ → *ba-kom-il-é* (→ *ba-kom-íl-e* before pause) (Hyman & Byarushengo 1984:60). While there are exceptions (as in the first Kuria example above), inflectional stem tones tend to affect the span from the second mora to the FV of the verb stem (see especially the studies in Odden & Bickmore 2014).

Contrasting with languages which have lost the tonal contrast on verb roots are those which have split PB *H into two contrasting tones, one which spreads or shifts, the other which does not. First reported for Shambala [G23] by Meeussen (1955), variations of the same split occur in a number of other Bantu languages including, e.g. Kalanga [S16] (Hyman & Mathangwane 1998:199): *ku-túm-á* (medial), *ku-túùm-á* (prepausal) ‘to send’ vs. *ku-lál-á* (medial), *ku-láál-à* (prepausal) ‘to lie down’. Crucially, the H tone split is observed only in Bantu languages that have lost the PB vowel length contrast, e.g. *-túm- ‘send’, *-dáad- ‘lie down’. The relevant rule in Kalanga is unbounded spreading which normally exempts the FV before pause, e.g. *ku-fúmítik-a* (medial *ku-fúmítik-á*) ‘to cover’. The majority of CVC-V verbs however undergo spreading to the FV: /ku-túm-a/ → *ku-túm-á* (→ *ku-túùm-á* with penultimate lengthening). In this context verbs such as ‘to lie down’ show the effect of the historical long vowel which exempts the FV from H tone spreading before pause. Historically, *-dáad- [-lál-] first underwent tone spreading to -lál-, followed by vowel shortening. Synchronically the exceptional behavior of such verbs requires special treatment.

The tones on prefixes are partially predictable on the basis of their morphological properties. For example, when initial, subject prefixes are all /H/ in Ganda [JE15] except the singular persons and class 9: *n-sek-a* ‘I laugh’, *o-sek-a* ‘you sg. laugh’, *a-sek-a* ‘s/he laughs’, *e-sek-a* ‘it (cl.9) laughs’ vs. *tú-sèk-a* ‘we laugh’, *mú-sèk-a* ‘you pl. laugh’, *bá-sèk-a* ‘they (cl.2) laugh’, *zí-sèk-a* ‘they (cl.10) laugh’ etc. However, from PB (Meeussen 1967:108), all subject prefixes are H if preceded by a “pre-initial” prefix, e.g. negative *te-*: *sí-sèk-a* ‘I don’t laugh’ (*sí-* ‘1sg. neg. subj.’ portmanteau), *t-ó-sèk-á* ‘you sg. don’t laugh’, *t-á-sèk-a* ‘s/he doesn’t laugh’, *tè-tú-sèk-a* ‘we don’t laugh’ etc. The generalization derived from PB is that initial V- and N- prefixes are L, CV- prefixes are H, which remains true even when the augment is added in Ganda: (*a-*)

sek-â ‘s/he who laughs’ vs. *a-bá-sék-â* ‘they who laugh’. (Compare also the tone of V- augments in §6.)

Object prefixes showed the same tonal distinctions in PB, i.e. L tone **-ñ-* ‘me’, **-kù-* ‘you sg.’, **-mù-* ‘him/her’, *-jî-* ‘class 9’ vs. *-tú-* ‘us’, *-mú-* ‘you pl.’, *-bá-* ‘them (cl.2)’, *-jí-* ‘them (cl.10)’ etc. (Meeussen 1967:109). While some Bantu languages maintain the original tonal differences, others have leveled out the contrast, often assigning different tones in different parts of the paradigm. Thus, in Ganda, object prefixes are H in the infinitive vs. Ø in the present tense: *o-ku-mú-sìb-a* ‘to tie him/her’, *o-ku-bá-sìb-a* ‘to tie them (cl.2)’ vs. *a-mu-sìb-a* ‘s/he ties him/her’, *a-ba-sìb-a* ‘s/he ties them (cl.2)’. The one exception is the reflexive, which often has different tone from the other object prefixes (cf. Marlo 2015:14), e.g. *-éé-* is always H in Ganda: *o-kw-éé-sìb-a* ‘to tie oneself’, *y-éé-sìb-a* ‘s/he ties himself/herself’.

The various inflectional markers which occur between the subject and object prefixes often show contrastive tone, sometimes producing minimal pairs, e.g. *-na-* vs. *-ná-* in Chewa [N31b] *ti-na-thándiiza* ‘we helped’ (recent past) vs. *ti-ná-thándiiza* ‘we helped’ (general past). Similarly, in Bemba [M42] *-a-* marks remote past, while *-á-* is found in the more recent past tenses (Sharman 1956). Since both are exploited in inflectional paradigms, often such prefixes team up with the inflectional endings and melodic tones of the verb stem. Thus again in Chewa the remote past tense prefix *-naa-* also requires a penultimate H tone: *tí-naa-thandíiz-a* ‘we helped’.

Along with different segmental marking, verb tones can also be quite different in corresponding affirmative and negative utterances as well as in main vs. relative clauses (in some languages also subject vs. non-subject relative clauses). Thus consider the following tones on the present habitual of */-jun-/* ‘help’ and */-kóm-/* ‘tie’ in Haya [E22] (Hyman & Byarushengo 1984:94,96,97):

	<i>main clause affirmative</i>	<i>subject relative clause affirmative</i>	<i>main clause negative</i>
underlying:	<i>/ba-tu-jun-á/</i> <i>/ba-tu-kóm-á/</i>	<i>/á-bá-tu-jun-a/</i> <i>/á-bá-tu-kóm-a/</i>	<i>/ti-bá-tu-jun-á/</i> <i>/ti-bá-tu-kóm-a/</i>
lexical rules:	<i>ba-tu-jun-á</i> <i>ba-tu-kom-á</i>	<i>á-ba-tú-jun-a</i> <i>á-ba-tu-kóm-a</i>	<i>ti-ba-tu-jun-á</i> <i>ti-ba-tu-kóm-a</i>
surface form:	<i>ba-tu-jún-a</i> <i>ba-tu-kóm-a</i> ‘they help/tie us’	<i>a-ba-tú-jun-a</i> <i>a-ba-tu-kôm-a</i> ‘they who help/tie us’	<i>ti-ba-tu-jún-a</i> <i>ti-ba-tu-kôm-a</i> ‘they don’t help/tie us’

Besides the addition of the augment */á-/* and negative prefix */ti-/* in the second and third columns, the verb stem tones of the three pairs do not match. In the first column the FV */-á/* is H on both toneless and H tone verbs. In the second column the FV */-a/* is toneless on both verbs. In the third column the FV is */-á/* if the verb root is toneless, but */-a/* if the root is */H/*. The interactions between the tones of the different parts of the verb can be quite complex and the relation between underlying and surface tone often opaque, thus requiring a careful and systematic control of all of the variables. While many of the tone patterns can be derived by concatenating the tones of the individual morphemes, in other cases a “replacive” tone is assigned by the morphology. This happens in Soga [JE16], where all but the distant past tense prefix *-á-* is realized with phonological Ls: *y-á-sùmùlùl-á* ‘s/he untied’ (from */-sumulul-/*), *y-á-kàlàkàt-á* ‘s/he scraped’ (from */-kàlakat-/*, originally */-kálakat-/*). The final *-á* is from a H%

boundary tone. For more on the tonal morphology of the Bantu verb see Marlo (2013) and the papers in Odden & Bickmore (2014).

Besides the above internal elements (prefixes, root, suffixes), the verb may be marked by clitics. While proclitics are less common (and less prone to affect the verb tones), enclitics are common, especially locative $*=pá$ (class 16), $*=kú$ (class 17) and $*=mú$ (class 18). As indicated, these carry *H tone, as do WH enclitics in languages that have them, e.g. Ganda [JE15] *bá-láb-á=ání* ‘who do they see?’, *bá-láb-á=kí* ‘what do they see?’ In these examples the verb *bá-láb-à* ‘they see’ has undergone H tone plateauing as it often does when a full word follows (cf. §7).

6. Noun tonology

Compared to verbs, the tonology of nouns is much simpler as is the internal structure of nominal forms (including adjectives), which consist of an augment + noun class prefix + stem. (Some Bantu languages have however lost the historical augment.) Underived noun stems were either monosyllabic or bisyllabic in PB and contrasted all of the possible combinations of *H and *L: $*-dì$ ‘root’, $*-tí$ ‘tree’, $*-gèni$ ‘stranger, visitor’, $*-tímà$ ‘heart’, $*-gòdí$ ‘string’, $*-kádá$ ‘crab’. Concerning bisyllabic stems, both *H-H and *L-H tend to merge with other tone classes. Although sometimes with modifications and elaborations (see for example Kenstowicz 2008 re Nande [JD42]), some languages clearly do keep the contrast, e.g. Mongo [C61] *ñ-jòkù* ‘elephant’ ($*-jògù$), *ñ-gùbú* ‘hippopotamus’ ($*-gùbú$), *lò-lémi* ‘tongue’ ($*-dímì$), *lò-sálá* ‘feather’ ($*-cádá$) (van Spaandonck 1971:200, 202, 203). *H-L and *H-H often merge, though often not without complications (Philippson 1999). Although pronounced the same in isolation, sometimes when such nouns are examined in context, a difference appears. In the variety of Tiriki [JE413] studied by Paster & Kim (2011), both *H-L and *H-H noun stems appear as H-L in isolation: *mú-xónò* ‘arm’ ($*-kónò$), *mú-xàlì* ‘wife’ ($*-kádí$). However, when a H tone appears on the following word it is anticipated on the final vowel of nouns like ‘arm’, producing a downstep, but not on ‘wife’: *mú-kó’no mú-gáli* ‘big arm’, *mú-xàlì mú-gáli* ‘big wife’ (cf. Paster & Kim 2011:8). The two H-L stems thus continue to reflect the PB contrast.

While the above is what can be expected directly from PB, additional patterns may arise through contact and other means. There are, for example, no fewer than nine different tone patterns on bisyllabic noun stems in Nande [JD42] (Hyman & Valinande 1985:255). Borrowings often introduce a tone patterns that attempt to imitate English or Swahili stress, e.g. with a H plateau and penultimate HL falling tone, as in Soga [JE16] *è-séènté* ‘money’ (< Eng. cent), *ò-mú-dáàlí* ‘medal, award’ (< English medal), *è-cí-jîkó* ‘spoon, ladle’ (< Swahili *kijiko*), *lùpûyá* ‘money’ (from Hindi *rupee*). Other stem patterns may occur in derived forms. In Soga [JE16], a replacive tone melody otherwise found only on verbs characterizes deverbal nouns and adjectives ending in $/-ù/$ (which then receives a final H% boundary tone). As a result, the $/L/$ (PB *H) vs. \emptyset contrast on the verb root is merged: *ò-mú-lám-ú* ‘a living person’ ($-lam-$ ‘recover from illness’), *è-cí-kàl-ú* ‘something dry, empty’ ($-kàl-$ ‘become dry’), *ò-mú-tàmùv-ú* ‘a drunkard’ ($-tamiir-$ ‘become drunk’), *è-cí-tàlàiv-ú* ‘something rusty’ ($-talaig-$ ‘become rusty’). As seen, the replacive tone overwrites the tonal distinction on roots.

Turning to prefixes, the augment, when present, is historically *H. This is still true in Lamogi [JE16]: *ó-mu-kalí* ‘woman, wife’, *é-ki-sirhí* ‘cockroach’, *á-ma-futá* ‘oil’, also nearby Bukusu [JE31c]: *ó-mu-xasi* ‘woman, wife’, *ó-mu-lume* ‘obstinate, difficult person’. In others the H tone has shifted later into the word or drops out entirely, leaving a H tone trace. This latter

happens in Makhuwa [P31] where the H tone on a noun such as *ma-láshi* ‘grass’ derives from the historical augment (**á-ma-*) (van der Wal 2009:32). In still other languages the H is there only when a proclitic precedes the noun, e.g. Ganda *o-mu-limi* ‘farmer’ vs. *n’ óó-mù-limi* ‘with a farmer’ (from /na + ó-mu-limi/). In Haya, the augment is L after pause, but H if anything precedes: *o-mu-limi* ‘farmer’ vs. *a-ka-jun-’ ó-mu-limi* ‘s/he helped the farmer (distant past)’ (from /a-ka-jun-a + ó-mu-limi/).

As seen in the above examples, noun class prefixes were all L in PB, as they continue to be in most Bantu today. However, in some languages additional layers of tones coming in from the left have obscured the original situation, particularly in the Kongo area (see Blanchon 1998), where so-called “tone cases” have arisen (Schadeberg 1986). Thus, in Phende [L11] a /Ø-H/ stem such as /-kunuzú/ ‘basket’ has the following morphologically assigned forms: *gi-kunuzú* (default: citation, subject), *gi-kunuzú* (predicative ‘it’s a basket’), *gi-kú^hnzú* (object of affirmative verb). The last two forms show that there are two types of H tone coming in from the left: In the predicative the H links to and stops on the prefix, whereas in the object form the H spreads to the first syllable of the stem, creating a following downstep. While these forms illustrate three of the major “tone cases”, Phende in fact makes a five-way distinction in tone patterns on nouns (Hyman 2017b:113). It is likely that the *H of the augment and of the predicative marker **ní* played a role in establishing such contrasts (cf. Schadeberg 1986, Blanchon 1998). Other unexpected tones can arise through borrowings or derivation. While noun class prefixes are generally Ø in Ganda, e.g. *e-ki-sígè* ‘eyebrow’, the word *e-ki-bàlà* ‘fruit’ bears a H tone prefix /kí-/ either because it is borrowed from Soga (where *Hs are shifted onto the preceding mora) or because it is a deverbal nominalization, meaning ‘that which bears fruit’ (*-bál-* ‘bear fruit’), in which case *kí-* would be an appropriately H tone subject prefix (cf. §5).

7. Phrasal tonology

While the previous two sections have dealt with the lexical (word-level) tones of nouns and verbs, many of the most interesting tonal phenomena occur at the phrase level. This includes interactions with other word classes, e.g. noun modifiers, as well as sentence-level constituents within and across which tonal processes apply. Noun modifiers often have distinct tone patterns of their own, e.g. the /L-L/ of Ganda *bùlì* ‘every’, which is also unusual in preceding the (obligatorily augmentless) noun: *bùlì kì-tabo* ‘every book’ (cf. toneless (*e-*)*ki-tabo* ‘book’). Within the noun phrase it is quite common for different modifiers to affect the tone of an adjacent noun or other word in various ways. In Ganda, bisyllabic possessive pronouns assign a H tone to the preceding noun. Possessive pronouns condition the H tone plateauing, as do possessive nominals (introduced by the connective -a): *o-mu-pákàsì* ‘porter’ vs. *o-mu-pákásí w-ê* ‘his/her porter’, *o-mu-pákásí w-áá Kátáám̃bâ* ‘Katamba’s porter’ (cf. *Kataambâ*). Although bisyllabic possessive pronouns are themselves L, they assign a H to the preceding nominal: *ki-tabo* ‘it’s a book’ vs. *ki-tabó ky-ààngè* ‘it’s my book’ (cf. *e-ki-tábò ky-ààngè* ‘my book’, where the assigned H is retracted onto the first stem mora). If the preceding noun has a H tone, H tone plateauing will also occur: *o-mu-pákásí w-ààngè* ‘my porter’. Demonstratives also assign a preceding H, but without plateauing: *o-mu-pákàsì ò-nó* ‘this porter’. This suggests that the noun + possessor construction forms a tighter bond than noun + demonstrative.

Different interactions also occur between the verb and what follows. There often are construction-specific effects, such as “metatony” which originally referred to the class 15 *ku-*

infinitive, where “the final element has to be set up as *-a* (low) or *-á...* (with metatony: high if an object follows, low otherwise)” (Meeussen 1967:111). The standard example comes from Songye [L23] (Stappers 1964), further discussed by Dimmendaal 1995:32 and Schadeberg (1995:176): *ku-sep-a* ‘to laugh (at)’, *ku-sep-á mfumu* ‘to laugh at the chief’. When followed by anything other than the object, metatony does not apply: *ku-sep-a kwǎ-mbwá* ‘the laughing of the dog’. In other Bantu languages a similar alternation may take place in specific verb tenses, even when the post-verbal constituent is not an object. This suggests that verb-final L~H alternations do not share a common origin—and may be due either to the presence vs. absence of a H tone augment on the following nominal (as speculated by Dimmendaal and Schadeberg), or to a final /H/ on the verb which becomes L when phrase-final, as in Abo [A42] (Hyman & Lionnet 2012). Other languages reduce or otherwise affect the tone of the verb whenever non-final in certain tenses, e.g. in the present habitual, but not present progressive in Haya [E22]: /ba-jun-á/ ‘they help’ → *ba-jun-a káto* ‘they help Kato’ vs. /ni-ba-jun-á/ → *ni-ba-jun-á káto* ‘they are helping Kato’. Tone reduction also occurs within the noun phrase when the noun is followed by a possessive or adjective: /é-ki-kómbe/ ‘cup’ → *e-ki-kombe ky-áitu* ‘our cup’, *e-ki-kombe ky-aa káto* ‘Kato’s cup’, *e-ki-kombe ki-lúngi* ‘a beautiful cup’ (Hyman & Byarushengo 1984:73). In Ganda [JE15] H tone plateauing occurs instead, however not when the following nominal begins with an augment: /bá-gul-a/ ‘they buy’ → *bá-gùl-a e-bi-kópò* ‘they buy cups’ vs. *bá-gùl-á bí-kópò* ‘they buy CUPS’ (not something else). As in Haya, negative and certain “marked” affirmative forms (progressive, perfect, subjunctive, imperative) do not group with what follows the verb: /te-bá-lí-gul-a/ ‘they will not buy’ (general future) → *te-bá-lì-gùl-a bí-kópò* ‘they will not buy cups’.

As the preceding examples illustrate, a major question the Bantuist faces is determining the level or domain within which rules such as H tone reduction, plateauing, spreading, shifting or anticipation occur. Mention was made of the fact that PB *H tones are anticipated onto the preceding TBU in both Totela [K41] (Crane 2014) and Soga [JE16] (Hyman 2017a). Thus, the infinitive of PB *-*dóot*- ‘to dream’ is realized on the *L prefix *ku-* in both languages: *ò-kú-lòòt-à* ‘to dream’ (→ Soga *ò-kú-lòòt-á* with final H% boundary tone). While H tone anticipation can take place across words, the two languages differ: In Soga a H can be anticipated from a main clause verb onto the preceding subject. Compared to the more conservative Ganda *à-bà-kázì bá-sèk-à* from /á-ba-kázi/ ‘women’ and /bá-sek-a/ ‘they laugh’, the corresponding Soga sentence shows the *H of **bá-* being realized on the last syllable of ‘women’: *à-bá-kázì bá-sèk-á* (cf. *ò-mú-kázì à-séká*, the final \emptyset s becoming H from the H% boundary tone). In contrast, in the following Totela sentence, the /H/ of the subject prefix /*chí-*/ cannot be anticipated from the main clause verb onto the subject: *è-chì-yùni + chì-là-ùlùk-à* ‘the bird is flying’. On the other hand, the H does anticipate from the verb onto the subject of a relative clause: *è-chì-yùni ch-à-yùmb-à chì-là-ùlùk-à* ‘the bird that sang is flying’. This is the normal state of affairs: Most Bantu languages are asymmetric in how they treat what precedes vs. follows the verb in a main clause. In most cases preverbal constituents are bracketed off from the verb (and each other). This includes the subject, adverbials, and left-dislocations. On the other hand, post-verbal constituents normally phrase with the verb (and often with each other), including objects, prepositional phrases, adverbials, and so forth. This is the state in Totela and Ganda. However, right-dislocations are often phrased separately. A typology of prosodic domain constituents regarding left- and right-dislocations in main clauses is presented into the following summary table, where S = the sentence beginning with the verb and LD includes the subject and adverbials):

LD	S	RD	Ganda [JE15]	(Hyman & Katamba 2010:84)
LD	S	RD	Haya [JE22]	(Byarushengo et al 1976:202)
LD	S	RD	Chewa [N31b]	(Downing & Mtenje 2011:1966-7)
LD	S	RD	Soga [JE16]	(Hyman 2017)

As seen, all four logical constituencies are represented, ending with Soga, which phrases both left- and right-dislocations with the verb.

The above gives but a hint of the wide range of syntax-tone interfaces attested in Bantu, which has provided much of the material for theoretical work, starting with Chimwiini phrasal vowel length (Kisseberth & Abasheikh 1974, Selkirk 1986) and phrasal tone (Kisseberth & Abasheikh 2011). One interesting overlap is with the conjoint-disjoint distinction whereby the same tense can have two different forms depending on phrasing or focus, e.g. Makhua [P31] *nthíyáná o-caalé nramá* ‘the woman ate RICE’ vs. *nthíyáná o-hoó-cá* (nramá) ‘the woman ATE (rice)’ (van der Wal 2017:15). For more examples and discussion of these and other issues see the Bantu studies in Zwicky & Kaisse (1984), Inkelas & Zec (1989), Selkirk & Lee (2015), and van der Wal & Hyman (2017).

8. Conclusions

As seen, the tonal properties of Bantu languages show considerable variation and generate questions both about analysis and history. Concerning the latter, it still hasn’t been firmly established whether PB had a binary *H/*L or privative *H/∅ contrast. As mentioned, the former is largely confined to NW Bantu, while the latter is found throughout the rest of the Bantu zones. Since the languages of zones A-C show more dramatic change and erosion in their phonology and morphology, one might propose that the *H/*L contrast developed as the complex agglutinative structure of PB started to erode. The most evolved languages are often clear on this point, e.g. Nzadi [B865], which has developed contour tones on its largely monosyllabic stems: **-bòmbó* > *m̀-bwǒm* ‘nose’, **-lúmè* > *ò-lùm* ‘husband’ (Cohen 2011:269). However, since the non-NW languages are more closely related and share greater typological consistency, they could have undergone a *H/*L > *H/∅ change as a group, by areal diffusion, or perhaps a bit of both. Although there is agreement that *H is the marked tone (and remains marked when it restructures as /L/ in privative L/∅ systems), the main question is whether the non-H tone was phonological active in PB. One piece of evidence that would settle the question in favor of *H/*L is if it could be established that monomoraic *CV morphemes contrasted not only *H and *L but also *HL and *LH contours. However, there is no evidence for this. In a count from an earlier Filemaker Pro™ version of Bastin et al (2002), I counted 331 CV entries of which 168 are *H, and 111 are *L (with the remaining 52 entered without a tone). By contrast, CVV are like CVCV entries in contrasting all four patterns, hence counting as two TBUs: Of 238 entries, 59 are LL, 59 are HL, 18 are LH, and 49 are HH. (12 are entered only with a H on the first vowel, 2 with only a L on the first vowel, and the remaining 39 are entered without a tone.)

Additional support for the *H/∅ reconstruction is Meeussen’s (1961) reconstruction of the lack of a tonal contrast on TBUs occurring in the “prosodic trough” between the first mora of the verb root and the inflectional FV. As exemplified above from Lingala these moras acquire

the tone of the FV: H before a H final, otherwise \emptyset (phonetically L). If the applicative, causative and other extensions were reconstructed with *L tone, these Ls would have to have been quite inactive to allow the FV H to replace them. Although Meeussen was aware of verb forms which consist of a sequence of H post-root vowels followed by a L on the FV (and vice-versa) and recognizes these with final *HL and *LH, it is likely that such patterns developed later—and that their final morpheme was -VV, most likely bimorphemic -V-V. They thus might be analyzed as *H \emptyset and * \emptyset H. There is, however, the one caveat briefly mentioned in §5: There are clear cases where causative *-i- and passive *-u- exert a H tone effect in some languages. While Meeussen (1967:92) conjectured that these two extensions may have been *H in PB, another possibility is that they were themselves “final vowel” morphemes functioning as a grade system in the same “slot” as subjunctive *-e, perfective *-i, and imperfective *-a. If these were FV morphemes, it would not be surprising for them to carry a contrastive *H tone—cf. the H tone /-í/ stative FV in Basaá [A43], which may be related to causative *-i-, vs. the L tone of derivational extensions (Lemb & Degastines 1973:35). For more recent work on the H tone properties of the causative and passive extensions, see Hyman & Katamba (1990), Ebarb & Marlo (2010) and Ebarb (2014).

In summary, at least two related conclusions for future research can be drawn from the preceding. First, to arrive at a satisfactory interpretation of the PB tone system, one needs to address the tonal properties of specific morphemes and constructions. Second, this should be undertaken by conducting the same kind of Tervuren-style pan-Bantu surveys as have been done in morphology, e.g. concerning the augment, object markers, negative constructions and so forth (see Marlo 2013 for the most comprehensive statement to date). It could for instance be advantageous to map out the languages that have lost the PB tonal contrast on verb roots to see if any other tonal or non-tonal properties tend to correlate as a system changes from compositional to paradigmatic tone. In this way we could not only gain further insight into the nature and history of Bantu tonology, but also of the role of tone in grammatical systems in general.

For other recent overviews of Bantu tone see Kisseberth & Odden (2003), Downing (2011), and Odden & Marlo (in press).

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