Chapter 12

In search of prosodic domains in Lusoga

Larry M. Hyman
University of California, Berkeley

In this paper I raise the question of whether Lusoga, a Bantu language of Uganda, recognizes syntactically determined prosodic domains, which have been extensively described in near-mutually intelligible Luganda. I first briefly recapitulate the syntactic constructions that give rise to the tone group (TG) and tone phrase (TP) domains in Luganda and then consider the same constructions in Lusoga. Whereas the expectation is that pre-verbal constituents will be treated prosodically differently than post-verbal constituents in SVO Bantu languages, Lusoga treats both pre- and post-verbal constituents the same, including both left- and right-dislocations. While certain clitics do form a TG with the preceding word, perhaps forming a recursive phonological word, there is nothing corresponding to the multiword TG or TP of Luganda. Lusoga either fails to distinguish phonological phrases or if they do exist in the language (as universally claimed), Lusoga fails to mark them. I conclude that linguistic typology should not only determine how universal linguistic properties can be reflected in the grammar of a language, but also in how well a grammar can get along without signaling them at all.

> "… the very types of prosodic category above the foot and syllable are syntactically grounded and universal."
> (Selkirk & Lee 2015: 3)

> "… the prosodic phonology of Luganda is among the most intricate and complex of any language."
> (Hyman & Katamba 2010: 69)

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1 Introduction

The purpose of this paper is to raise the question whether the phrasal tonology of Lusoga (Bantu; Uganda), the most closely related language to Luganda, is syntactically grounded – or is free to apply without respect to syntax. Outside of Bantu, cases have been reported where phrasal or post-lexical tonology applies whenever two words meet within a clause, independently of the syntax, and hence without the need of prosodic domains. This includes the VSO Chatino languages of Mexico (Cruz 2011; Campbell 2014; McIntosh 2015; Sullivant 2015; Villard 2015) and the SOV Kuki-Thaadow language (Kuki-Chin; NE India, Myanmar) (Hyman 2010). In such languages appropriate tonal alternations occurring between words are blocked only by pause or "sentence breaks".

The story is considerably different in the Bantu languages. Although there is considerable variation, the expectation is that there will be extensive interaction between the syntax and the prosodic phonology, specifically between syntactic constituency and/or information structure (focus) with tone and/or penultimate lengthening. Specifically, we expect the SVO syntax to be prosodically reflected by an asymmetry between what precedes vs. follows the verb. Thus, in a number of works on Luganda, e.g. Hyman et al. (1987), Hyman & Katamba (2010), we have recognized the following postlexical domains within which tone rules act on the lexical stem and word tones:[1]

(1) a. a smaller tone group (TG), within which H tone plateauing (HTP) occurs
    b. a larger tone phrase (TP), within which H tone anticipation (HTA) occurs

One question is whether this sensitivity to syntax can be attributed, perhaps universally, to the SVO syntax of Luganda (and other Bantu languages), or whether the prosodic phonology of an SVO language can also apply across the board, without any sensitivity to syntactic structure.

As I will show below, despite its near-mutual intelligibility with Luganda, Lusoga provides no evidence of prosodic domains above the phonological word. In what follows I will first briefly identify the above Luganda domains, then consider the corresponding structures in Lusoga, which show no empirical evidence for either prosodic domain. I will then discuss what Lusoga does have and what this might mean for syntax–phonology interactions and the quest for universals.

[1]We also recognize an intersecting clitic group (CG), which pertains mostly to vowel length alternations.

2 Prosodic domains in Luganda

The analysis of Luganda tone is given in (2), as summarized by Hyman & Katamba (2010: 70):

(2)		level of representation	tonal contrasts	description
	a.	underlying input (URs)	/H, ∅/	privative
	b.	intermediate	H, L, ∅	ternary
	c.	broad phonetic output	H, L	equipollent

As indicated, moras are either marked by an underlying privative /H/ or are toneless (∅). Within the lexical (word-level) phonology, L tones arise in one of two ways, illustrated in (3).

(3) a. /ba-lab-a/ → bá-làb-a 'they see'
H H H L
b. /ba-bal-a/ → bá-bàl-a 'they count'
H H L

In (3a) Meeussen's rule converts a sequence of Hs on successive moras to one H followed by all Ls. A sequence /H-H-H-H/ would thus become H-L-L-L. In (3b) L tone insertion applies after a lone H which would not be subject to Meeussen's rule. The result is an intermediate ternary contrast between H, L, and ∅. Finally, after the phrasal phonology applies, the ∅s are all filled in with either H or L, thereby bringing the system back to a binary contrast, this time equipollent.[2]

2.1 The TP

We are now ready to consider the two prosodic domains mentioned in (1). As illustrated in (4), within the TP, H tone is anticipated across words onto any number of preceding toneless moras, indicated here and in subsequent examples by underlining:[3]

(4) a. verb + object
a-bal-a e-bi-kópò → à-bál-á é-bí-kópò 's/he is counting cups'
H L %L H L

[2]There also is a marginal downstepped ꜜH which arises when two phonological phrases meet, the first ending in a HL falling tone, the second beginning with H.

[3]In (4) and subsequent examples %L marks an initial boundary tone which will be crucial to establishing the tone phrases in Luganda. In §3 we will see that this %L is restricted to post-pause position in Lusoga.

b. object + object
a-bal-ir-a o-mu-limi e-bi-kópò → à-bál-ír-á ó-mú-límí é-bí-kópò
3SG-count-APPL-FV H L %L H L
's/he is counting cups for the farmer'

The example in (4a) shows HTA applying from the direct object onto the verb, while (4b) shows HTA from the second object through the first object and, again, onto the verb (which is marked by the applicative *-ir-* suffix). In (5) we see that HTA also applies between a right-dislocated element (RD) and the verb and between RDs, again onto the verb:[4]

(5) a. verb + RD
a-bi-bal-a e-bi-kópò → à-bí-bál-á é-bí-kópò
s/he-them-coun-H L %L H L
's/he is counting them, the cups'

b. RD + RD
a-bí-mù-bal-ir-a o-mu-limi e-bi-kópò → à-bí-mù-bál-ír-á ó-mú-límí é-bí-kópò
s/he-them-him-count-APPL-FV H L %L H L
's/he is counting them for him, the farmer, the cups'

HTA does not, however, apply from the verb onto a constituent that precedes, whether the subject, an adverb, or a left dislocation (LD):[5]

(6) a. subj + verb
o-mu-limi a-bi-láb-à → ò-mù-lìmì à-bì-láb-à 'the farmer sees them'
H L %L H L

b. LD + LD
o-mu-limi e-bi-kópò a-bi-láb-à → ò-mù-lìmì è-bì-kópò à-bì-láb-à
H L H %L L L %L H L
'the farmer, the cups, he sees them'

As indicated by the dashed underlining, (6a) shows that HTA does not apply from the verb onto the subject *ò-mù-lìmì*, which instead receives default L tones. Nor is

[4]Here and elsewhere it is important to note that, without exception, when two vowels meet across a word boundary, they coalesce with deletion or gliding of the first vowel and compensatory lengthening of the second. Thus, (5a) is pronounced [à-bí-bál éé-bí-kópò]. Thus, to answer one reviewer, there is no pause between a right dislocation and what precedes. For more on the phonological processes involved, see Clements (1986), Hyman & Katamba (1999), and references cited therein.

[5]Below in (9a) I will suggest that each such constituent is marked by an initial %L boundary tone which is responsible for blocking HTA.

there HTA from one LD onto another in (6b).[6] Instead, LDs and other pre-verbal constituents are marked off in a way that post-verbal constituents including RDs are not.[7]

Before accounting for this fact let us consider the opposite marking of dislocations in closely related Haya (Byarushengo et al. 1976: 201–202; Hyman & Katamba 1999: 155). In this language a /H-∅/ sequence is realized [HL-L] at the end of a tone phrase, e.g. in isolation:

(7) a. a-ba-kázi → à-bà-kâzì 'woman'
H HL

b. e-m-búzi → e-m-bûzi 'goat(s)'
H HL

Noting this, we now see in (8) that Haya presents a near mirror-image of Luganda (we can ignore the "augment" initial vowel H on the nouns):

(8) a. base sentence: a-ba-kázi ni-ba-bal-íl-a ó-mw-ána é-m-bûzi
H H H HL
'the women are counting the goats for the child'

b. three LDs: a-ba-kázi ó-mw-ána é-m-búzi ni-ba-zi-mu-bal-îl-a
H H H HL
'the women, the child, the goats, they are counting them for him'

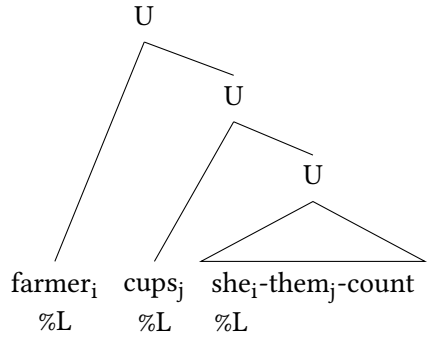
c. three RDs: ni-ba-zi-mu-bal-îl-a á-ba-kâzi ó-mw-âna é-m-bûzi
HL HL HL HL
'they are counting them for him, the women, the child, the goats'

The base sentence is given in (8a). In (8b) we see that the /H/ of LDs is not affected, while in (8c), the /H/ of the verb and each RD becomes HL. RDs are thus each marked off, while LDs are not. The two languages are thus analyzed with the reverse nested structures in (9) (Byarushengo et al. 1976: 84; Hyman & Katamba 2010).

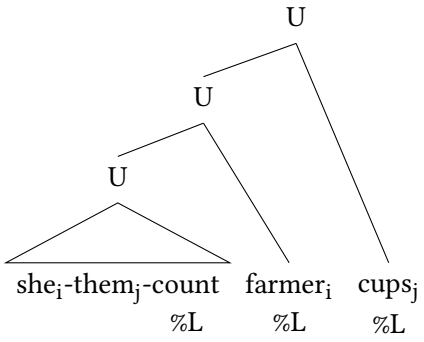
[6] Note in (6b) that HTA does not apply between *e-bi-kópò* 'cups' and *a-bi-láb-à* 'he sees them' because the former ends in a L tone. For HTA to apply, the preceding word must end with a toneless vowel.

[7] Again, not shown is the V#V coalescence that automatically applies between any words in sequence, including LDs and RDs, but does not affect the tonal discussion.

(9) a. Luganda marks beginnings of complete Us



b. Haya marks ends of complete Us



In (9) I have labeled each complete syntactic utterance with U. Luganda thus marks the beginning of each U with a %L boundary tone, while Haya marks the end of each U with a final L% boundary tone, one of whose effects is to convert a penultimate H into HL. As Byarushengo et al. (1976) point out, each L% correlates with the end of a complete assertion.

Before moving on to the tone group, it should perhaps be pointed out that if the TP correlates with the phonological (or even intonational) phrase of prosodic domain theory, we don't expect to find a TP break within a simple noun phrase. While this is largely the case, there is a problem with numerals in Luganda:

(10) a. noun + adjective:
a-ba-limi a-ba-nénè → à-bá-límí á-bá-nénè 'big farmers'
H L %L H L

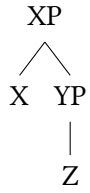
b. noun + numeral:
a-ba-limi ba-sátù → à-bà-lìmì bà-sátù 'three farmers'
H L %L H L

As expected, HTA applies in (10a) from an adjective onto a preceding noun. However, HTA does not apply in (10b) from the numeral onto the noun. It is as if the noun is in a separate TP, as in the case of a preverbal constituent. I don't see any reason to think of numerals as predicative, such that 'farmers' would be preposed to the numeral (as a subject is to the verb marked by %L). While it is hard to motivate syntactically, the apparent need is for there to be an analogous %L separating the numeral from the preceding noun. This being said, Bantu languages that allow a subset of modifiers to be either pre- or post-nominal, e.g. demonstratives (van de Velde 2005), may also not phrase them with the head noun.

2.2 The TG

The TG is a smaller domain in which the head V or N of the corresponding XP undergoes reduction when followed by an appropriate dependent with H tone. In Haya, the V or N undergoes deletion of its one or more H tones, while in Luganda, the V or N loses the L(s) of a H to L pitch drop, as the result of a process of H tone plateauing (HTP). For this to occur several conditions must be met, as schematized in (11) (Hyman & Katamba 2010: 75):

(11)



where: (i) X ≠ [+FOCUS]
(ii) Z ≠ [+AUGMENT]

Z = a phonological word

In (11), Z stands for a phonological word (PW) which is not necessarily the head of YP (as when there is an empty head, e.g. 'we saw two'). The [±FOCUS] feature refers to whether a verb tense, aspect, mood (TAM)/polarity is inherently focused. The following pair of examples shows that negation is inherently [+FOCUS] (cf. Hyman & Watters 1984):

(12) a. tw-áá-làb-à → tw-áá-láb-á bí-kópò 'we saw CUPS' ($Past_2$)
H L L H ∅ ∅ H L

b. te-tw-áá-làb-à → tè-tw-áá-làb-à bì-kópò 'we didn't see cups' ($Past_2$)
H L L H L L H L

In (12a) the Hs of the verb and object create an all-H plateau, requiring the Ls of the verb to be deleted (indicated by ∅). (As glossed, focus is on *bí-kópò* 'cups', marked by the absence of the augment *e-*.) However, H tone plateauing (HTP)

does not apply in (12b), where the only grammatical difference is the negative marking on the verb.[8]

The [±AUGMENT] feature refers to whether a noun has an augment, usually an initial *e-, o-* or *a-*. As seen in (13a), HTP will not apply if the augment is present. (13b) shows that the augment is obligatorily absent after a negative verb (without any focus effect), as it was in (12b) above.

(13) a. tw-áá-làb-à → tw-áá-làb-à è-bì-kópò 'we saw cups' ($Past_2$)
H L L H L L H L
b. te-tw-áá-làb-à →*tè-tw-áá-làb-à è-bì-kópò 'we didn't see cups' ($Past_2$)
H L L H L L H L

Within the verb phrase the YP can be anything as long as it isn't [+AUGMENT] (or a RD). This includes an object NP, prepositional phrase, adverb etc. Within the noun phrase, plateauing occurs only in (some) compounding (Hyman & Katamba 2005) and before a possessive/genitive NP. In (14) we see that HTP does not apply between a noun and following adjective (possibly because adjectives are not YPs):

(14) a. N + A e-bi-kópò → e-bi-kópò è-bì-nénè 'big cups'
H L H L H L

b. bi-kópò → te-tw-áá-làb-à bì-kópò bì-nénè
H L H L L H L H L
'we didn't see big cups'

While this could also be attributed to the augment on *è-bì-nénè* 'big' in (14a), the non-plateauing in the absence of the augment after the negative verb in (14b) unambiguously shows that N + A fails to become a TG. The examples in (15) show that a possessive pronoun and genitive noun will form a TG with the preceding head noun:

(15) a. N + Poss
e-bi-kópò → e-bi-kópó by-ê 'his/her cups'
H L H ∅ HL

b. N + GenN
e-bi-kópò → e-bi-kópó by-áá=Kátáámbâ 'Katamba's cups'
H L H ∅ HL

[8]HTA also does not apply since it must cross a word boundary, but it cannot do so when the preceding word ends L (vs. ∅).

In (15a) the final L of 'cups' is deleted as a result of plateauing with the HL of *by-ê* 'his/her'. The same occurs in (15b), where there is plateauing with the HL of proper noun, pronounced *Kàtàámbâ* in isolation.

It is important to note that the TG is a relation of the head and one word (Z) to its right. That is, the full YP in (11) does not join the head X to form the TG. This is illustrated in (16).

(16) a. tw-áá-làb-à → tw-áá-láb-á bí-kópò bi-nénè 'we saw BIG CUPS' ($Past_2$)
H L L H ∅ ∅ H L H-L

b. tw-áá-làb-à → tw-áá-làb-à bì-tábó bí-nénè 'we saw BIG BOOKS' ($Past_2$)
H L L H L L H-L

In (16a) there is plateauing between the verb and 'cups', which maintains its H-L pitch drop before the H-L of the adjective 'big'. In (16b) the verb joins with *bi-tabo* 'cups', but since the latter is underlyingly toneless there is no possibility of H tone plateauing. Crucially, the verb cannot "see" the H of the adjective 'big'. The Hs that are observed on *bì-tábó* result from HTA within the larger TP domain.

However, there are cases where a H tone plateau can encompass several words. The following examples show that HTP can affect sequences of Head-Dependent words without respect to bracketing (Hyman 1988: 159):

(17) a. e-bi-kópó by-áá mú-gáándá w-áá=Kátáámbâ [N_1 [N_2 N_3]]
H ∅ H ∅ HL
'cups of brother of Katamba'

b. e-bi-kópó by-áá=kááwá by-áá=Kátáámbâ [[N_1 N_2] N_3]
H ∅ H ∅ HL
'cups of coffee of Katamba'

The more common right-branching structure is observed in (17a). In this case $N_2 + N_3$ form a constituent which then joins N_1. In the less common left-branching structure in (17b), $N_1 + N_2$ first form a constituent, which then joins N_3. Although a single, three-word TG is formed, HTP does not apply to the whole constituent all at once. This is seen from the fact that an intervening toneless phonological word blocks HTP (Hyman 1988: 157). In the following examples, underlined Hs are from the application of HTA:

(18) a. e-bi-kópò by-àà mù-túúndá + bí-kópò [N_1 [N_2 N_3]]
H L H L
'cups of the cup-seller' (literally, seller-cups)

b. mu-kúbà + bà-límí w-áá Kátáámbâ [[N_1 N_2] N_3]
H L HL
'farmer-beater of Katamba' (literally, beater-farmers)

Even though the same right- and left-branching complex TGs are formed, HTP must progress on a word-by-word basis. For this reason I proposed that HTP be a domain-juncture rule of the following form (Hyman 1988: 158):

(19) $L^n \rightarrow \emptyset$ / [$_{TG}$[... $_{PW}$[... H __] [H ...]$_{PW}$ ...]$_{TG}$

Presented as a rule of L tone deletion followed by the fusion of the left and right H tones, the conception is that HTP occurs between PWs which are grouped together within a TG.[9]

In summary, the above and other Luganda facts potentially bear on multiple issues concerning prosodic domain theory vs. direct reference to syntax, the nature and number of prosodic domains (TP, TG, and ultimately the CG), the potential interaction between domains (domain juncture effects, nesting), and the interaction of prosodic domains with information structure (focus). With all of this hyper-activity in Luganda, we now turn to consider the equivalent structures in closely related Lusoga.

3 Prosodic domains in Lusoga (?)

In Lusoga the most striking property is a historical process of H tone retraction (HTR) onto the preceding mora. In the following examples %L is an initial boundary tone, and H% is the declarative phrase-final boundary tone (which also occurs, but is variable in Luganda):

(20) a. ò-kú-lágír-á 'to command' cf. Luganda ò-kú-lágír-á
%L H% %L (H%)

b. ò-kú-ghùlìr-á 'to hear' cf. Luganda ò-kù-wúlìr-á
%L H L L H% %L HL(H%)

The infinitive in (20a) is lexically toneless, realized L-H-H-H-H by mapping %L to the first mora, and H% to the remaining moras. The Luganda realization is either the same, or all L if the variable H% is not chosen. In contrast, the verb root has an underlying tone in (20b). In this case the Luganda form is more straightforward:

[9] A perhaps equivalent alternative is that TGs are nested.

The verb base *-wúlir-* 'hear' has an underlying /H/ on its first mora, which as seen earlier in (3b) then conditions L tone insertion on the second mora. The remaining toneless moras receive L tone, unless H% is realized, in which case the output is *ò-kù-wúlìr-á*, with a final H. In Lusoga, instead, the H is realized on the preceding infinitive prefix *-kú-* followed by two L tone moras. The H tone of the verb root clearly has shifted onto the preceding mora. The historical derivation is presented in (3).

(21)

stage 1		*stage 2*		*stage 3*		*stage 4*	
o-ku-ghúlir-a	>	o-ku-ghúlìr-a	>	o-kú-ghùlìr-a	>	ò-kú-ghùlìr-á	'to hear'
H		HL		H LL		%L H LL H%	
o-ku-kálakat-a	>	o-ku-kálàkat-a	>	o-kú-kàlàkat-a	>	ò-kú-kàlàkát-á	'to scrape'
H		HL		H LL		%L H LL H%	

At stage 1 we start with a H tone on the first mora of the verb base. Stage 2 represents the L tone insertion rule that was discussed with regard to Luganda, but which characterizes both languages. Stage 3 is where H tone retraction (HTR) applies in Lusoga only. As seen, I have indicated a L tone phonological "trace" on the original root-initial H tone mora in stage 3.

While (3) is historically correct, the proposed synchronic analysis is that *H is now /L/. In other words, the Lusoga tone contrast has become /L/ vs. ∅ (Hyman 2018):

(22)

a.	o-ku-ghùlir-a	'to hear'	b.	o-ku-kàlakat-a	'to scrape'
	L			L	

Two rules are needed to derive the correct outputs. The first is L tone spreading (LTS): an input L spreads one mora to the right:

(23)

a.	o-ku-ghùlìr-a	'to hear'	b.	o-ku-kàlàkat-a	'to scrape'
	L			L	

The second rule is H tone insertion (HTI): a H is inserted on a mora that precedes an input L:

(24)

a.	o-kú-ghùlìr-a	'to hear'	b.	o-kú-kàlàkat-a	'to scrape'
	H L			H L	

As seen in (25) HTI has to be specified to insert a single H before a sequence of L morphemes (which we can assume to fuse into a single, multilinked L):

(25) AUG-INF-it-him-us-give-APPL-FV
ò-kú-cì-mù-tù-ghà-èr-á → ò-kú-cì-mù-tù-ghè-èr-á
L L L L %L H L H%
'to give it to him for us'

With this established, we now have two relevant criteria to test for postlexical domains in Lusoga:

(i) HTI conditioned by the initial /L/ syllable of one word onto the final syllable of the preceding word. The question is whether a word-initial L will condition the insertion of a H onto the final vowel of the preceding word.

(ii) HTA from one word onto toneless moras of the preceding word(s), as in Luganda. The question is whether there are any syntactic configurations that block HTA (as some do in Luganda).

To anticipate the demonstration, the conclusion we will reach is that syntactic constituency never blocks HTI or HTA, thereby raising two competing hypotheses:

(26) Hypothesis 1: Lusoga does not have the prosodic domains found in Luganda.
Hypothesis 2: Lusoga has prosodic domains, but does not mark them the same as Luganda.

The significance of the first is that the mapping of syntactic structures into prosodic domains would not be universal in the sense of Selkirk & Lee's claim in the quote at the beginning of this paper. The problem with the second is that there is no empirical evidence to justify the prosodic domains. To see this we need to consider the Lusoga facts which correspond to Luganda's TP and TG. We first consider HTA, then HTI.

3.1 H tone anticipation (HTA)

Unlike Luganda, the final H% boundary tone can reach the subject (as well as left-dislocations):

(27) a. Luganda ò-mù-lìmì [à-lágír-á 'the farmer commands'
%L %L H%
b. Lusoga ò-mú-límí [á-lágír-á (idem)
%L H%

Similarly, unlike Luganda, HTA can spread a lexical or inserted H tone onto the subject:

(28) a. Luganda ò-mù-lìmì [à-bál-á é-mí-sótà ‘the farmer counts snakes’
%L %L H L H%

b. Lusoga ò-mú-límí [á-bál-á é-mí-sòtá (idem)
%L H L H%

The following examples show that H% and HTA can also reach left-dislocations:

(29) a. o-mu-limi e-bi-tabo a-bi-bal-a → ò-mú-límí é-bí-tábó á-bí-bál-á
%L H%
‘the farmer, the books, he counts them’

b. o-mu-limi e-bi-tabo a-bi-bon-a → ò-mú-límí é-bí-tábó á-bí-bòn-á
L %L H L
‘the farmer, the books, he sees them’

Spreading of H% and HTA can also start from a right-dislocated element:

(30) a. a-bi-bal-a o-mu-limi e-bi-tabo → à-bí-bál-á ó-mú-límí é-bí-tábó
%L H%
‘he counts them, the farmer, the books’

b. a-bi-bal-a o-mu-limi e-bi-kopo → à-bí-bál-á ó-mú-límí é-bí-kópò
L %L H L
‘he counts them, the farmer, the cups’

As in Luganda, HTA will apply only if the preceding word ends in at least one toneless mora, as in (31a). It will not apply if the preceding word ends in L, as in (31b).

(31) a. o-kú-ghùlìr-a e-mí-sòtà → ò-kú-ghùlìr-á é-mí-sòtá
H L H L %L H L H L H%
‘to hear snakes’

b. o-kú-bòn-à e-mí-sòtà → ò-kú-bòn-à è-mí-sòtá
H L H L %L H L H L H%
‘to see snakes’

From the above we can safely assume that HTA will apply no matter what the syntactic configuration. As stated in §1, this is quite surprising, given that almost all Bantu languages treat pre-verbal constituents differently from post-verbal ones. In the next section we will see that HTI leads to the same conclusion.

3.2 H tone insertion (HTI)

In this section it will be briefly demonstrated that HTI can also apply across any syntactic boundary. Because nouns have a prefix which is underlyingly toneless, this will have to be demonstrated by means of other word classes, e.g. verbs and demonstratives. Consider first (32a), where the subject prefix *a-* is underlyingly toneless:

(32) a. o-mu-kàzi a-sek-a → ò-mú-kàzì à-sék-á 'the woman laughs'
L %L H L H%

b. a-ba-kàzi bà-sek-a → à-bá-kází bà-sèk-á 'the women laugh'
L L %L H L H L H%

In this case the subject noun 'woman' ends with a L tone by virtue of the L tone spreading (LTS) rule. Therefore, the final H% cannot spread onto the subject noun. Compare this now with (32b), where the subject prefix /bà-/ has an underlying /L/. In this case HTI overrides LTS onto the final mora of the subject noun. In historical terms, the *H of **bá-* has been anticipated from the verb onto the subject (cf. Luganda *à-bà-kázì bá-sèk-á*). The same facts are seen with left dislocations:

(33) a. e-bi-bàla a-bi-bal-a → è-bí-bàlà à-bí-bál-á
L %L H L H%
'the fruits, s/he counts them'

b. e-bi-bàlà bà-bi-bal-a → è-bí-bàlá bà-bì-bál-á
L L %L H L H L H%
'the fruits, they count them'

In (33a), H% does not reach the left-dislocated noun /e-bi-bàla/ 'fruits', since its /L/ spreads onto the final mora. In (33b), however, where the subject prefix /bà-/ has /L/ tone, HTI applies, and the H links to the final mora of the left-dislocated noun. In fact, HTI will apply across any sequence of words, provided that the preceding word does not end in a single /L/. This is illustrated in (34).

(34) a. e-bí-bàlà bì-no → è-bí-bàlá bì-nó 'these fruits'
L L %L H L H L H%

b. e-bí-kópò bì-no → è-bí-kópò bì-nó 'these cups'
L L %L H L H L H%

The proximate demonstrative /-no/ 'this, these' requires a L tone noun class agreement prefix, here /bì-/. As seen in (34a), the prefix conditions HTI on the final mora of 'fruits'. In (34b), on the other hand, the noun 'cups' ends in a single /L/ and hence HTI is blocked.

We thus arrive at the conclusion that syntactic constituency never blocks HTI or HTA. Returning to the two hypotheses in (26), we must address whether Lusoga recognizes prosodic domains at all – or whether it simply fails to give evidence of the syntax-to-prosodic domain mapping that Selkirk's (2011) matching theory predicts. Favoring universality, let's tentatively entertain the latter theory-driven position, Hypothesis 2 in (26): Lusoga has prosodic domains, but does not mark them. As was seen in §2, Luganda marks TPs with an initial %L, which can be taken to block HTA from the verb or between sentential preverbal constituents, each one of which begins a TP with its own %L. As Lisa Selkirk puts it (email of March 18, 2016):

> In Lusoga, if HTA can extend from verb to subject and so on, it must be that there is no such L at the left edge of TP/ip. In other words a "domain-less" HTA can spread its way leftward in Lusoga without a problem, but it would be blocked by the boundary L in Luganda.

Under this interpretation Lusoga would not have %L internal to the intonational phrase (IP), at most an IP-initial %L to predict the realization of post-pause toneless words such as *ò-kú-lágír-á* 'to command' in (20a). Such words require an initial L to precede the multiple Hs from H%. This could either be the effect of an IP-initial %L tone or is perhaps due to some kind of constraint against initial H.

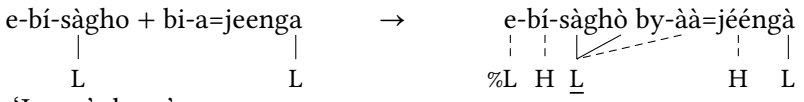
3.3 The TG

In §2 we saw that Luganda distinguishes two prosodic domains, the TP and the TG. The preceding discussion of HTA and HTI have both addressed the TP. In this section we show that Lusoga provides evidence for the TG only at the phonological word (PW) level. Importantly, there is no "phrasal" TG in Lusoga, i.e. no case of a head (X) + phonological word (Z) producing H tone plateauing (HTP). The examples in (35) show that the configurations that were seen to produce HTP in Luganda in (4a) and (15b) above fail to produce HTP in Lusoga:

(35) a. verb + object

tu-à-bòn-à + bi-sàgho	→	tw-áà-bòn-à bí-sàghó
L L L L		HL L L H L %H
'we saw BAGS'		

b. N + GenN

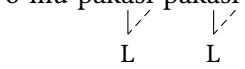


'Jenga's bags'

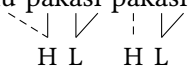
In (35a) the distant past affirmative verb is followed by an object noun which lacks the augment vowel since it is in focus, while (35b) consists of a genitive construction marked by the proclitic /bi-a=/ on the second noun. In neither case is there HTP as was observed in Luganda in (12a) and (15b), respectively.

While there is no case of a TG consisting of two phonological words (PWs), HTP does apply word-internally and between a PW and certain enclitics. The first is seen in a process of noun reduplication which introduces a derogatory meaning. Thus, when *ò-mú-pákàsí* 'porter' is reduplicated to *ò-mú-pákásí-pákàsì* 'a lousy ol' porter' the portion I have underlined shows HTP. A full derivation is provided in (36).

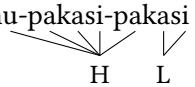
(36) a. reduplicated input + L tone spreading: o-mu-pakàsi-pakàsi 'a lousy ol' porter'



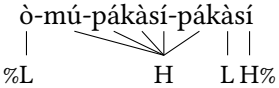
b. H tone insertion: o-mu-pakasi-pakasi



c. H tone plateauing: o-mu-pakasi-pakasi



d. Output with %L…H%: ò-mú-pákàsí-pákàsí



As seen, we begin with two identical stems /-pakàsi/, which both undergo LTS in (36a). HTI also applies twice in (36b). This is followed by HTP in (36c) and assignment of the boundary tones in (36d).[10]

More significantly for our purposes, (3.3) shows that HTP also applies between a possessive enclitic and the host noun:

[10]Although not exemplified in §2, HTP also applies within a word in Luganda.

(37)	σ	/L/	: ò-mú-tì	vs.	ò-mú-tíí=gwè	'his/her tree'
	σ–σ	/L-Ø/	: ò-mú-kàzì		ò-mú-kází=wè	'his/her wife'
		/Ø-L/	: è-kí-kópò		è-cí-kópó=cè	'his/her cup'
	σ:–σ	/LØ-Ø/	: è-kí-wùùka		è-cí-wúúká=cè	'his/her insect'
		/ØL-Ø/	: à-ká-sáàlè		à-ká-sáálé=kè	'his/her arrow'
		/ØØ-L/	: è-kí-déédè		è-cí-déédé=cè	'his/her grasshopper'
	σ–σ–σ	/L-Ø-Ø/	: ò-bú-thùpùzi		ò-bú-thúpúzí=bwè	'his/her corruption'
		/Ø-L-Ø/	: ò-mú-pákàsì		ò-mú-pákásí=wè	'his/her porter'
		/Ø-Ø-L/	: ò-bú-vúbúkà		ò-bú-vúbúká=bwè	'his/her adolescence'

The tones of the unpossessed nouns in the first data column, all of which have a H to L pitch drop, are shown after HTI and LTS have applied, but without a final phrasal H%. As seen, the L tone possessive enclitic /-è/ 'his/her' fuses with a noun class agreement prefix. When HTI applies to the preceding noun, HTP applies, and the H to L pitch drop is lost. (There is no final H%, since the forms end H-L.) As can be recalled from (15a), noun+possessive is an environment where HTP applies in Luganda as well. The examples in (38a,b) show that HTP also applies in verb+enclitic constructions:

(38) a. tw-áà-ghùlìr-a → tw-áá-ghúlír-á=kù
HL L — HØ ØØ H L
'we heard' — 'we heard a little'

b. tw-áà-ghùlìr-a → tw-áá-ghúlír-á=cì
HL L — HØ ØØ H L
'we heard' — 'what did we hear?'

c. ti-tw-áà-ghùlìr-a → ti-tw-áà-ghùlìr-á=kù
HL L — H L H L
'we didn't hear' — 'we didn't hear a little'

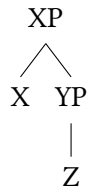
In (38a), the locative noun class 17 enclitic *=kù* is used also as an attenuative marker. As seen, HTI applies followed by HTP on the host verb. The same is seen in (38b) with the interrogative enclitic *=cì* 'what'. However, for HTP to apply, the verb must have the same [−FOCUS] status as was discussed in Luganda. Recall that negative verbs are [+FOCUS], and hence although HTI applies before *=kù*, there is no HTP in (38c). In addition, there is no HTP with the corresponding nominal interrogative *=cì* 'which' (also paralleling Luganda; cf. *mù-kázì =cí* 'which woman?'):

(39)							
	σ	/L/	: mú-tì	→	mú-ˡtíí=cì		'which tree?'
	σ–σ	/L-Ø/	: mú-kàzì	→	mú-kàzí=cì		'which woman?'
		/Ø-L/	: bí-kópò	→	bí-kóˡpó=cì		'which cups?'
	σ:–σ	/LØ-Ø/	: cí-wùùka	→	cí-wùùká=cì		'which insect?'
		/ØL-Ø/	: ká-sáàlè	→	ká-sáàlé=cì		'which arrow?'
		/ØØ-L/	: cí-déédè	→	cí-dééˡdé=cì		'which grasshopper?'
	σ–σ–σ	/L-Ø-Ø/	: bú-thùpùzi	→	bú-thùpùzí=cì		'which corruption?'
		/Ø-L-Ø/	: mú-pákàsì	→	mú-pákàsí=cì		'which porter?'
		/Ø-Ø-L/	: bú-vúbúkà	→	bú-vúbúˡká=cì		'which adolescence?'

As seen, the enclitic =cì 'which' does not condition HTP (perhaps because it isn't a YP), but always inserts a H, potentially combining with a preceding L to create a downstepped ˡH.[11]

The above shows that clitics work differently from full words in Lusoga. HTP occurs in the same environment as in Luganda, except that Z must be an enclitic. Thus, compare (40) with the corresponding Luganda configuration in (11).

(40)



where: (i) X ≠ [+FOCUS]
(ii) Z ≠ [+AUGMENT]

Z = an enclitic

We have seen that there are two kinds of X=cl: those which form a TG satisfying (40), hence HTP, vs. those which don't satisfy (40), hence occurring without HTP. I propose that the first has the structure of a nested phonological word [[word]$_{PW}$ =cl]$_{PW}$, while the second has the structure of a clitic group [[word]$_{PW}$ =cl]$_{CG}$. If correct, this would mean that HTP only applies within a PW whose definition, however, is subject to the syntactic characterization in (40). A historical conjecture would be that HTP started out in individual words (X), then expanded to X = Z, then X # Z, always meeting the configuration and conditions (i) and (ii) in (40). Note in this regard that enclitics only condition HTP with their lexical host, not with each other:

(41) a-ta-a=muu=kuu=cii buli lunaku → á-tá-á=ˡmúú=ˡkúú=ˡcí bùlì lúnàkú

H L H L H L H L H L H H L H%

s/he-puts=in=a.little=what every day

'what does s/he put a little of in every day?

[11]Recall from (34b) that the inserted H cannot be assigned to a single L when it occurs between two phonological words.

In Lusoga, all enclitics are /L/, requiring HTI on the preceding mora. They also differ from full words in preventing a preceding long vowel from undergoing final vowel shortening (cf. 'tree' and 'which tree?' in 39). The unavoidable conclusion is that Lusoga tonology is not sensitive to prosodic domains above the (nested) PW level.

4 Two outstanding problems

I would like to end the coverage of tonal phenomena by considering two outstanding problems. The first is a return to numerals, this time in Lusoga. We saw in (10b) that Luganda doesn't allow HTA from a numeral onto the preceding noun. There is an analogous issue in Lusoga, which is that numerals which begin with /L/ do not condition HTI (vs. demonstratives, which do). This is seen in (42).

(42) a. è-bí-sàghò bì-bìrí — cf. è-bí-sàghó bì-nó

%L H L L H% — %L H L H L H%

no H here

'two bags' — 'these bags'

b. tw-áà-gùl-à bì-bìrí — cf. tw-áà-gùl-á bì-nó

%L H L L H% — %L H L H L H%

no H here

'we bought two' — 'we bought these'

We see this between a numeral and noun in (42a) and between a numeral and a preceding verb in (42b). We know that /bì-bìri/ has a /L/ on its prefix because of the augmented form, *é-bì-bìrí* '(the) two', where the normally L augment receives a H from HTI. Positing an initial %L was said to be unmotivated for Luganda, but is even more so in Lusoga, which otherwise doesn't have clause-internal %L. This is, however, the only situation I have discovered to date where a /L/ does not trigger HTI.

The second issue also characterizes both languages, this time in exactly the same way. The question is why HTA always has to leave at least one L tone behind. This is seen in the Luganda sentences in (43a,b).

(43) a. verb + object

a-láb-à bi-tabo → à-láb-à bì-tábó 's/he sees BOOKS'

H L %L H L H%

b. object + object
te-y-a-bal-ir-a mu-límí bi-kópò → tè-y-à-bál-ìr-à mù-límí bí-kópò
H L L H L %L H L L H L
's/he didn't count cups for the farmer'

c. proclitics
by-àà= [bà= [kàtàámbâ '(it's) those of the Katambas'
HL

As seen, the H% in (43a) is anticipated onto the preceding mora, and yet the prefix *bì-* stays L. In (43b), the H of /bi-kópo/ 'cups' is anticipated up to the second syllable of toneless /mu-limi/ 'farmer', leaving the prefix L. In addition, HTA does not apply from the host onto proclitics, as seen in (42c). The question is: What's wrong with prohibited L to H sequences in the following corresponding outputs?

(44) a. * tè-y-à-láb-à] [bí-kópò 's/he didn't see cups'
H L H L

b. * te-y-à-láb-à] [bí-tábó 's/he didn't see books'
H L H

c. * by-àà= [bá= [kátáámbâ 'those of the Katambas'
%L H L

In (44a) we see that HTA has applied word-internally. As we have said, HTA can only apply if it can cross a word boundary onto a ∅ mora. The problem in (44b) is that HTA should leave one L behind. (43b shows the same with a lexical /H/.) Finally, (44c) shows that a proclitic doesn't count as "crossing a word boundary". Why should all of the above examples prohibit HTA from hitting every available toneless mora on its leftward path?

The answer is that the ungrammatical forms in (43) have the prohibited configuration in (45):

(45) * μ μ (NoJump)
L PW[H

The prohibited sequence is one where one would jump from a L to a H across a PW boundary. This NoJump constraint has the following "conspiratorial" effects on HTA: (i) It stops the H from reaching the first mora of a word, which could then be preceded by a (%)L; (ii) It stops the H from reaching the first mora of a proclitic, which would have be PW-initial, preceded by a (%)L. NoJump is the kind of OT constraint that can of course be dominated by another constraint, e.g.

faithfulness to an input /H/, as in Luganda *tè-y-à-láb-à bí-bàlá* 's/he didn't see fruits', where *bí-bàlá* 'fruits' exceptionally has a /H/ prefix. The constraint in (45) can stop the creation of a L $_{\text{PW}}$[H output, but cannot remove a word-initial H tone. Of course the remaining question is why Luganda and Lusoga bother to implement HTA at all, since the affected moras would otherwise have become L, presumably by default. For this Selkirk (2016) has proposed the constraint HTS-left: H tone wants to spread to the left as far as it can go. The constraint in (45) puts a check on HTS-left: It spreads as far as it can, but stops short if the result would be a L $_{\text{PW}}$[H sequence.

5 Conclusion

To summarize the findings for Lusoga, there is no empirical evidence for a prosodic domain corresponding to the TP in Luganda. Specifically, there is no evidence that what precedes the verb is treated differently from what follows it. The domain corresponding to the TG in Luganda does exist but is more restricted, being limited to certain word=enclitic combinations.[12] At this point one might ask what other evidence there might be for prosodic domains in Lusoga. Two possibilities are intonation, which has thus far not yielded anything concrete, and instrumental phonetic studies, e.g. on segment durations, which I have not done – and which in any case would take us beyond my question, which had to do with whether there are discrete, categorical effects of prosodic domains in Lusoga.

I would like to conclude with some further thoughts about Lusoga in terms of linguistic typology, defined for our purposes as the study of how languages are the same vs. different. First, since there is no known empirical evidence to choose between the two hypotheses in (26), Lusoga is not a counterexample to the claim that syntax–phonology "matching" is universal. Second, nothing looks syntactically or prosodically aberrant in Lusoga. Rather, it is the lack of interest that Lusoga shows for prosodic constituents that is striking, particularly from a Bantu point of view. In fact, Lusoga provides the missing "cell" in the typology of whether LDs and RDs phrase with the main clause in Bantu:

(46)

a.	LD	S	RD	Luganda	c.	LD	S	RD	Chichewa
b.	LD	S	RD	Haya	d.	LD	S	RD	Lusoga

[12] As pointed out to me by Jenneke van der Wal (p.c.), it is possible to treat such word=enclitic combinations as recursive phonological words, i.e. [[word]$_{\text{PW}}$ clitic]$_{\text{PW}}$, since they share the same tonal properties as the lexical phonological word.

We have already seen that Luganda and Haya are mirror images of each other as far as whether LDs (Luganda) or RDs (Haya) are marked off from the main clause. Chichewa has been reported to mark off both LDs and RDs (Downing & Mtenje 2011: 1966–1967). Finally Lusoga provides the fourth possibility: Neither LDs nor RDs are marked off.

The Lusoga distinterest in marking prosodic domains is remarkable from a Bantuist and perhaps universalist point of view. However, it has long been known that languages vary in how much they "care" about some of the "best bets" in phonology. Lusoga can now be added to the list of languages which have shown a disregard for one or another prosodic property:

(47) a. Syllable structure: Gokana cares very little if at all about grouping its Cs and Vs into syllables (Hyman 2011)
b. Word stress: Bella Coola cares very little if at all about highlighting one syllable per word (Newman 1947: 132)
c. Prosodic domains: Lusoga cares very little if at all about reflecting syntactic constituency in the post-lexical phonology (this study)

For me, typology should not only determine the different ways in which universal linguistic properties can be reflected in the grammar of a language, but also how well a grammar can get along without signaling them at all.

Abbreviations

3	third person	IP	intonational phrase
APPL	applicative	LD	left dislocation
AUG	augment	LTS	L tone spreading
CG	clitic group	PW	phonological word
FV	final vowel	RD	right dislocation
HTA	H tone anticipation	SG	singular
HTI	H tone insertion	TAM	tense, aspect, mood
HTP	H tone plateauing	TG	tone group
HTR	H tone retraction	TP	tone phrase
INF	infinitive	UR	underlying representation

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