(31) a. o-kú-ghùlìr-a e-mí-sòtà → ò-kú-ghùlìr-á é-mí-sòtá   'to hear snakes'

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

   b. o-kú-bòn-à e-mí-sòtà → ò-kú-bòn-à̱ è-mí-sòtà   'to see snakes'

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

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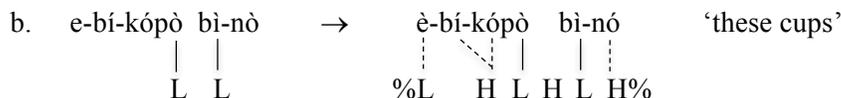
(32) a. o-mu-kàzi a-sek-a → ò-mú-kàzì à-sék-á   'the woman laughs'

              L   %L H L   H%

   b. a-ba-kàzi bà-sek-a → à-bá-kàzí bà-sèk-á   'the women laugh'

             L   L   %L H L H̱ 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   'the fruits, s/he counts them'

             L   %L H L   H%

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

             L   L   %L H L H̱ L   H%

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-nò → è-bí-bàlá bì-nó   'these fruits'

             L   L   %L H L H L H%

b. e-bí-kópò bì-nò   →   è-bí-kópò   bì-nó   'these cups'
            | | ⋮   ╲⋮ | | ⋮
            L   L   %L   H L <u>H</u> 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, the noun 'cups' ends in a single /L/ and hence HTI is blocked.
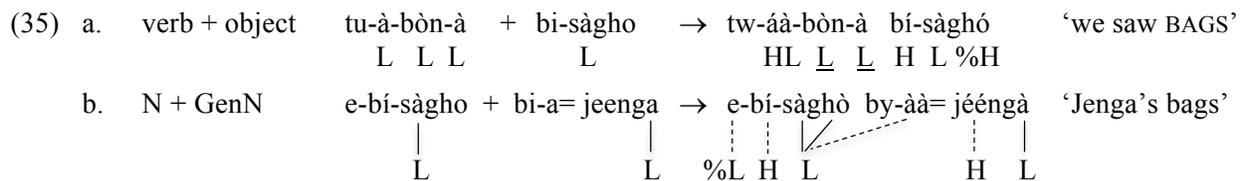
    We thus arrive at the conclusion that syntactic constituency never blocks HTI or HTA. Returning to the two hypotheses in (26), we must address whether Lusoga recognizes prosodic domains at all—or whether it simply fails to give evidence of the syntax-to-prosodic domain mapping that Selkirk's (2011) matching theory predicts. Favoring universality, let's take the latter position, Hypothesis 2 in (26): Lusoga has prosodic domains, but does not mark them the same as Luganda. 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), but might require 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 the effect of an IP-initial %L tone or is perhaps due to some kind of constraint against initial H.

3.3.   The tone group (TG)

In §2 we saw that Luganda distinguishes two prosodic domains, the tone phrase (TP) and the tone group (TG). The preceding discussion of HTA and HTI have both addressed the TP. In this section we show that Lusoga does provide some evidence for the TG, which is however much more restricted than in Luganda. We first note that 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 produce HTP in Luganda are no different from those which fail to produce HTP in Luganda:

(35) a. verb + object   tu-à-bòn-à + bi-sàgho   → tw-áà-bòn-à bí-sàghó   'we saw BAGS'
                           L L L   L   HL <u>L</u> <u>L</u> H L %H

      b. N + GenN   e-bí-sàgho + bi-a= jeenga   → e-bí-sàghò by-àà= jééngà   'Jenga's bags'
                          | | | ⋮ ⋮ |⁄--------⋮ |
                          L   L   %L H <u>L</u>   H   L

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 observe 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 +   o-mu-pakàsi-pakàsi   'a lousy ol' porter'
          L tone spreading :

                                        L   L

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

                                        H L   H L

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

                                        H   L

      d. Output with %L...H%   ò-mú-pákású-pákàsí

                                        %L   H   L H%

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). Although not exemplified in §2, HTP also applies within a word in Luganda.

More significantly for our purposes, (37) shows that HTP also applies between a possessive enclitic and the host noun:

(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 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   'we heard'   →   tw-áá-ghúlír-á =kù   'we heard a little'

          HL   L   HØ Ø Ø H   L

      b. tw-áà-ghùlìr-a   'we heard'   →   tw-áá-ghúlír-á =cì   'what did we hear?'

          HL   L   HØ Ø Ø H   L

      c. ti-twáà-ghùlìr-a   'we didn't hear' →   ti-tw-áà-ghùlìr-á =kù   'we didn't hear a little'
                                                                           (No HTP because
          HL   L   H   L H   L   NEG = [+FOCUS])

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 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-$^{\downarrow}$tíí =cì   'which tree?'
      σ−σ   /L-Ø/   :   mú-kàzì   →   mú-kàzí =cì   'which woman?'
             /Ø-L/   :   bí-kópò   →   bí-kó$^{\downarrow}$pó =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-déé$^{\downarrow}$dé =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-vúbú$^{\downarrow}$ká =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 conditioning downstepped $^{\downarrow}$H (of which Lusoga has more than Luganda). Thus, clitics work differently from full words. 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)

           XP
        ╱ ╲   where: (i)   X ≠ [+FOCUS]
    X   YP   (ii)   Z ≠ [+AUGMENT]
           |
          Z   (Z = an enclitic)
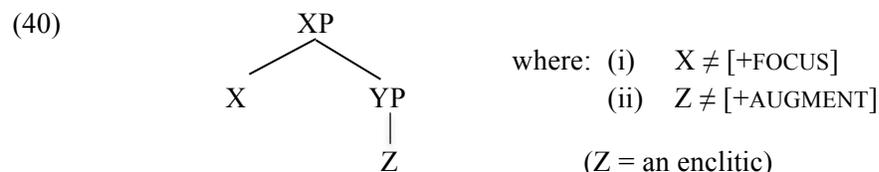
We have seen that there are two kinds of X=cl: those which form a TG satisfying (40), hence HTP, vs. those which don't satisfy (40), hence occur without HTP. I propose that the first has the structure of a nested phonological word [[word]$_{PW}$ =cl]$_{PW}$, while the second has the structure of a clitic 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). An 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   →   <u>á-tá-á</u> =$^{\downarrow}$múú =$^{\downarrow}$kúú =$^{\downarrow}$cí bùlì   lúnàkú
       ┊ ┊   ┊ ┊   ┊ ┊   ┊ ┊   ┊ ┊   ┊ ┊ ┊
       H <u>L</u>   H L   H L   H L   H L   H L H%   'what does s/he put a little of in every day?'
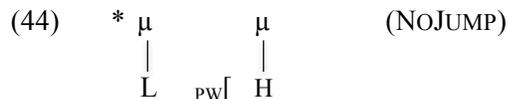   s/he-puts   in   a.little   what   every   day

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 to 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   'two bags'   cf.   è-bí-sàghó bì-nó   'these bags'

%L H L   L   H%   %L H L   H̲   L H%

↑
no H here

b.   tw-áà-gùl-à bì-bìrí   'we bought two'   cf.   tw-áà-gùl-á bì-nó   'we bought these'

%L H   L   L H%   %L H L   H̲   L H%

↑
no H here

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 augment does receive 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 (42a,b).

(42) a.   verb + object   a-láb-à bi-tabo   →   à-láb-à b̲ì̲-̲t̲á̲b̲ó̲   '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 m̲ù̲-̲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 (42a) is anticipated onto the preceding mora, and yet the prefix *bì-* stays L. In (42b), 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 such as the following?

(43) 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 (43a) we see that HTA has not applied word-internally; although not emphasized, HTA can only apply if it can cross a word boundary. The problem in (43b) is that HTA should leave one L behind ((42b) shows the same with a lexical /H/). Finally, (43c) 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 (44):

(44)　　* 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 *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 (44) can stop the creation of a L 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 (44) puts a check on HTS-left: It spreads as far as it can, but stops short if the result would be a L PW[H sequence.

5.　　Conclusion

To summarize the findings for Lusoga, there is no prosodic evidence for a 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. 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, Lusoga is not a counterexample to the claim that syntax-prosody "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:

(45)　a.　| LD | S　RD |　　Luganda

　　　 b.　| LD　S | RD |　　Haya

　　　 c.　| LD | S | RD |　　Chichewa

　　　 d.　| LD　S　RD |　　Lusoga

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 2011:1966-7). 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:

(46) 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

APP   Applicative
FV   Inflectional final vowel
HTA   H tone anticipation
HTI   H tone insertion
HTP   H tone plateauing
HTR   H tone retraction
LD   Left dislocation
LTI   L tone insertion
LTS   L tone spreading
PW   Phonological word
RD   Right dislocation
SG   Singular
TG   Tone group
TP   Tone phrase
UR   Underlying representation

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