

Fitting focus phrasing into the Prosodic Hierarchy¹

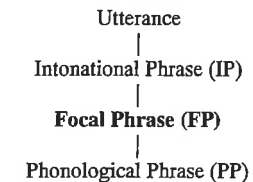
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1 Introduction

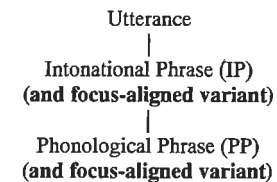
Work since, at least, Byarushengo et al. (1976) on Haya has demonstrated the importance of focus in conditioning phrasal tonology in Bantu languages. It remains controversial, however, how to account formally for the role of focus on phonological phrasing. Problems arise because focus-conditioned phrasing does not match syntactically-defined phrasing. Nor does focus-conditioned phrasing match the repertoire of phonological phrasing provided by the Prosodic Hierarchy (Nespor & Vogel 1986; Selkirk 1986, 1995): Utterance, Intonational Phrase, Phonological Phrase. There are two leading recent proposals for fitting Focus into the Prosodic Hierarchy. Kanerva (1990a, b), proposes to add the Focal Phrase as a distinct level falling between the Phonological Phrase and the Intonational Phrase:

(1) Hypothesis 1 (Kanerva 1990a, b)



However, Truckenbrodt (1995, 1999) argues that there is no need to add an extra level to the Prosodic Hierarchy. Instead, the effect of focus on phrasing can straightforwardly be accounted for within Optimality Theory (OT; McCarthy & Prince (1993a,b et seq.)) by reanalyzing the Focal Phrase as a focus-aligned variant of either the Phonological Phrase or the Intonational Phrase:

(2) Hypothesis 2 (Truckenbrodt 1995, 1999)



In this paper, I test these two approaches on three Bantu languages, and argue the phrasings found in these languages support Kanerva's (1990a,b) proposal that focus motivates adding a new level of phrasing to the Prosodic Hierarchy. The traditional

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hierarchy in (2) does not adequately account for the data. The argument is organized as follows. First, I present data from Haya, a Tanzanian Bantu language, and show, following Byarushengo et al. (1976), that one phrasal tone alternation of this language is conditioned by focus, not syntactic constituency. Then I present a Focal Phrase analysis of this alternation and show that the Haya Focal Phrase cannot plausibly be reanalyzed, à la Truckenbrodt (1995, 1999), as a Focus variant of Intonational Phrase or Phonological Phrase. In the final section of the paper, I briefly discuss the phrasal phonology of two other Bantu languages, Tsonga and Chimwiini. I show that accounting for these processes also requires reference to the Focal Phrase, as their domain is intermediate between the Phonological Phrase and the Intonational Phrase.

2 Haya tonal phrasing conditioned by focus

As Bennett (1977), Byarushengo, Hyman & Tenenbaum (BHT, 1976), Hyman & Byarushengo (1984), Hyman (1999), Tenenbaum (1977), demonstrate, tone realization in Haya is phrasally determined.² For example, a word like /omu-tí/, with an input High tone on the final syllable, has 7 different output tone patterns, depending on its position in the phrase:

(3) Phrasally-conditioned variants of tone of /omu-tí/ (BHT, 1976; p 186, fig (2); Low toned vowels (L) are unmarked; High tones (H) vowels have an acute accent)

- | | | |
|-----------|-------------------------|---|
| (a) L-H-L | omú-tí | 'tree' (pre-pausal/isolation form) |
| (b) H-H-L | oku-bón' ómú-tí | 'to see a tree' |
| (c) L-L-H | omutí gwange | 'my tree' |
| (d) H-L-H | oku-bón' ómu-tí gwange | 'to see my tree' |
| (e) L-L-L | omu-ti gwa Kátó | 'tree of Kato' |
| (f) H-L-L | oku-bón' ómuti gwa Kátó | 'to see the tree of Kato' |
| (g) H-H-H | a-bon' ómú-tí Kátó | 'he _i sees the tree, Kato _i '
'he' and 'Kato' are coreferential) |

In this paper, I discuss the context for the following three variants (concentrating on the tone pattern of the final two syllables):

- pre-pausal (3a);
- phrase-medial (3c);
- assertion or focus-final (3g).

First, I illustrate further systematic differences between the tone of the final two syllables (when one bears a High tone) in pre-pausal (3a) vs. phrase-medial (3c) position. Then I show that focus plays a crucial role in defining the context for the tone alternation illustrated in (3g).

2.1 Phrasal processes conditioned by pause

As shown by data in (4), the alternation between L-H ~ H-L tone on the last two syllables of a word illustrated in (3) is systematic: L-H is found phrase-medially (3c,d), while H-L is found pre-pausally (3a,b):

² All the Haya data in this paper is taken from the sources cited in this paragraph.

(4) Pre-pausal (H-L)

- (a) a-júna
's/he helps'
(b) obu-gólo
'snuff'
(c) a-bóna
's/he sees'
(d) é-mbwa
'dog'

Phrase-medial (L-H)

- a-juná nyina
's/he helps mother'
obu-goló ba-bu-mú-ha
'snuff, they (ba) give it (bu) to him (mu)'
a-boná nyina
's/he sees mother'
e-mbwá bá-ka-gí-ha Kátó
'the dog, they (bá) gave it (gí) to Kato'

Another set of words with a different input High tone pattern (H on the penult) also shows a systematic alternation on the last two syllables of the word when they occur in these same phrasal contexts. As shown by the data in (5), in this set of words, the last two syllables have a H-L tone pattern phrase-medially, but a HL-L pattern pre-pausally (or when the word occurs in isolation) (N.B. apostrophe indicates syncope vowel):

(5) Pre-pausal (HL-L)

- (a) omu-kóno
'hand'
(b) omw-áána
'child'
(c) aba-kázi
'women'
(d) omu-sháija
'man'

Phrase-medial (H-L)

- omu-kóno gwange
'my hand'
a-h' ómw-áán' óbu-gólo
's/he gives the child snuff'
aba-kázi ba-mu-bóna
'the women see him (mu)'
omu-sháij' a-tambúka
'the man walks'

The data in (5) also illustrate another phrasal phonological process, namely, syncope. Notice in (5b) and (5d), that in a phrasal V-V sequence, the first Vowel deletes (or glides) if there is no pause between the two vowels. More examples of syncope are given in (6):

(6) Input

- | | | |
|-----------------------------|--------------------------|------------------------|
| (a) oku-juna omw-áána | to help the child | oku-jun' omw-áána |
| (b) naa-yenda obu-goló | s/he wants the snuff | naa-yend' óbu-gólo |
| (c) omu-kázi a-it-á ej-kóko | the woman kills chickens | omu-kázy a-it' ej-kóko |

Haya has, then, two phrasal processes which are crucially conditioned by pause: syncope, which applies if no pause separates the vowels; and tone retraction, which applies before a pause. The analytical question which now arises is which level of phrasing in the Prosodic Hierarchy (2) best defines the domain of these two processes. The domain of both syncope and tone retraction is plausibly larger than Phonological Phrase, as the context is larger than XP.³ It is extremely hard to distinguish the Intonational Phrase from the Utterance, the two levels above Phonological Phrase, as the definitions of the two levels overlap to a great extent, and languages seldom seem to have enough phrasal rules to clearly motivate both levels. (See Kanerva (1990a) for thoughtful discussion of this point.) However, I propose the relevant domain for syncope and tone retraction is the Intonational Phrase rather than the Utterance, based

³ I follow work like Kanerva (1990), Nespor & Vogel (1986), Selkirk (1986) and Truckenbrodt (1995) in proposing that Phonological Phrase is roughly coextensive with XP.

on the following two criteria which are distinctive for the Intonational Phrase (Nespor & Vogel 1986, p. 188). The Intonational Phrase is delimited by pause, and it is the domain for the realization of intonational tones.

BHT (1976) emphasizes that both syncope and tone retraction are conditioned by pause rather than utterance-final position. Unfortunately, no examples are given to establish the distinction (and confusingly, they assert that Haya does not have utterance-internal pauses where we might expect them in English). However, I assume the insistence on the importance of pause means that pauses could occur Utterance medially, and that both processes would then apply. Another reason Intonational Phrase appears to be the most appropriate domain for these two processes comes from the realization of intonational tones. As Bennett (1977) shows, the phrase-final syllable is Low toned in declarative sentences like (7a). In Yes-No questions (7b, c), the phrase-final syllable bears a Rising (L-H) tone:

(7) Statement intonation vs. Yes-No Question intonation (Bennett 1977)

- (a) omu-shááj' a-ka-h' ómw-áán' éŋ-koni 'The man gave the child a stick.'
 (b) omu-shááj' éŋ-kony a-ka-gí-h' ómw-áaná' 'Did the man give *the child* a stick?
 (Literally, 'The man, the stick, he gave it (gi) *the child*?')
 (c) omu-shááj' ómw-áán' a-ka-mú-h' éŋ-koni' 'Did the man give the child *a stick*?
 (Literally, 'The man, the child, he gave him (mu) *a stick*?')

Comparison with the data in (5) shows that 'child' and 'man' have the pre-pausal (falling) tone on their penult in the Yes-No Questions. From this I conclude that the domain for assignment of these intonational tone patterns is also the one delimited by pause, the Intonational Phrase domain. However, all of the examples show the intonational tone is realized Utterance finally, highlighting the difficulty in choosing the appropriate phonological domain above the level of the Phonological Phrase. (We shall return to the choice of Intonational Phrase vs. Utterance as the appropriate domain in section 3.3, below.)

To sum up this section, Haya has two phrasal processes which plausibly take Intonational Phrase as their domain. Syncope is found Intonational Phrase-internally, while tone retraction is found at the right edge of the Intonational Phrase.

2.2 Tone alternations conditioned by focus

As BHT (1976), etc., show, words like those in (4) have a third pronunciation (H-H, or High tone on the last two syllables) illustrated in (8), found when they are in the VP and in focus.⁴ Notice in (8c) that not only the focussed word but also following XPs (through the end of the string) have the focus tone pattern (denoted by a following '%'). Note further that syncope applies across the '% phrase' edge, as, crucially, pause does not correlate with the pre-% tone pattern.

⁴ I am adopting BHT's (1976) transcription system, in which '%' follows a word with the focus conditioned tonal alternation. Note there is an obligatory Object Prefix on the verb when the object is postposed.

- (8)
- (a) a-bon' óbu-góló % Káto 'He sees SNUFF, Kato.'
 ('Kato' is a postposed subject NP.)
 (b) a-bu-bón' % óbu-góló % Kakúlu 'He SEES it (bu), the snuff, Kakulu.'
 (Both 'snuff' (object NP) and 'Kakulu' (subject NP) are postposed.)
 (c) ba-mu-júná % nyina 'They HELP her, his mother.'
 ('mother' is a postposed object NP.)

These same points hold for words with the H-L ~ HL-L tone pattern illustrated above in (5). As shown in (9), these words have a HL-L tone pattern in the focus conditioned '%' context. As BHT (1976) emphasize, even though this pronunciation is identical to the pre-pausal one for these words there is no pause at '%' boundary. Confirmation for this is that syncope applies across the '%' boundary in (9d).

(9)

- (a) ni-ba-juná Kakúlu % mbwèènu
 'They are helping KAKULU today.'
 (b) ni-ba-mu-júná % mbwèènu % Kakúlu
 'They are HELPING him (mu) today, Kakulu.'
 ('Kakulu' is postposed object NP.)
 (c) bá-ka-mú-cumbila éŋ-kôko % Kakúlu
 'They cooked for him (mu) the CHICKEN, Kakulu.'
 ('Kakulu' is postposed applicative object NP.)
 (d) bá-ka-gí-cumbila Kakúlw % éŋ-kók' % ába-kázi
 'They cooked it (gi) for KAKULU, the chicken, the women.'
 ('chicken' is postposed object NP; 'women' is postposed subject NP.)

The question which now arises is, how to provide a formal definition of the '% phrase'? This definitely is a distinct domain from that for the other two phrasal processes, as it does not condition syncope. Further, in some cases, we find a different tone pattern at this phrase edge, as can be seen in comparing (4) with (8). It must, then, either be a distinct level of the Prosodic Hierarchy from Intonational Phrase or a syntactically defined domain.

As BHT (1976) point out, there are problems in equating the '% phrase' with a syntactically-defined domain. Preposed topics, unlike postposed, always group into a phrase with the (focussed) VP, as shown in (10).

(10) Preposed topics in same Intonational Phrase with focused VP

- (a) omu-shááj' ómw-áán' a-ka-mú-h' éŋ-koni' 'Did the man give the child *a stick*?
 (Literally, 'The man, the child, he gave him (mu) *a stick*?')
 (b) Kakúlw' ába-kázi ba-mu-bóna
 'Kakulu, the women (they) SEE him (mu).'
 (c) aba-kázi Kakúlu ba-mu-bóna
 'The women, Kakulu, they SEE him (mu).'
 (d) aba-kázi Kakúlw óbu-góló ba-bu-mú-ha
 'The women, Kakulu, the snuff, they (ba) GIVE it (bu) to him (mu).'
 ('women is preposed subject NP; 'Kakulu', 'snuff' are preposed object NPs.)

If the '% phrase' were purely syntactically defined (that is, consistently coextensive with some XP) we would expect preposed topics, like postposed ones, to each be parsed into their own '% phrase'. Note further that there is an obligatory Object Prefix when the object NP is preposed, just like when the object NP is postposed, confirming that the constructions are syntactically parallel. The syntactic representations of preposed vs. postposed topics in (11) emphasize that since the two structures are plausibly syntactic mirror images of each other, their phonological phrasings should also be mirror images if the phonological parse were syntactically-defined:

(11)

(a) Preposed topics: 'The women, Kakulu, they SEE him (mu).' (10c)

[CP [Topic NP aba-kázi] [Topic NP Kakúlu] [VP ba-mu-bóna]]

vs.

(b) Postposed topics: 'He SEES it (bu), the snuff, Kakulu.' (8b)

[CP [VP a-bu-bón'] [Topic NP óbu-góló] [Topic NP Kakúlu]]

The '% phrase' is equally hard to define in terms of the Prosodic Hierarchy (2). The '% phrase' must be a lower level of the hierarchy than the Intonational Phrase. Recall that syncope is not blocked by the '% phrase', so the '% phrase' must be contained within the Intonational Phrase, the domain of syncope. As the Phonological Phrase is the next level down in the hierarchy from the Intonational Phrase, it is the only available phrasal category. However, the '% phrase' does not fit the definition of a Phonological Phrase. As shown in (11), the edge of the '% phrase' does not consistently correspond to any syntactic XP edge. In (11a) the '% phrase' would include the entire string, preposed NPs and VP. However, in (11b), each XP is a distinct '% phrase'. As a result, none of the usual Phonological Phrase algorithms (e.g., Nespor & Vogel (1986), Selkirk (1986)), which crucially align a Phonological Phrase edge with a XP edge, can be adapted to define the '% phrase'.

It is precisely this sort of problem that led Kanerva (1990a, b) to propose adding an additional level, the Focal Phrase, to the Prosodic Hierarchy, as shown in (1). Like the Focal Phrase, the '% phrase' is variable in size because it has an inconsistent relation to any syntactic constituent (XP). Like the Focal Phrase, focus, not syntactic constituency, is the crucial factor delimiting the right edge of the '% phrase'. I propose, then, that the '% phrase' is best redefined as Kanerva's (1990a,b) Focal Phrase. The next section provides an Optimality Theory (OT) analysis of Haya Intonational and Focal phrasal domains.

2.3 Formal OT analysis

The analysis must account for the following generalizations motivated in the preceding discussion. First, the Intonational Phrase (IP) is coextensive with the string delimited by pause (roughly, CP). The focussed element (in VP) defines the right edge of a Focal Phrase (FP). Each following XP is parsed into its own FP. XPs preceding the focussed VP are parsed into a single Focal Phrase (and Intonational

Phrase) with the focussed VP. The constraints in (12) formalize these generalizations:⁵

- (12) (a) AlignR(pause, IP): Align each pause with the right edge of IP
 (b) AlignR(Focus element, FP)
 Align the right edge of the focus element with the right edge of FP.
 (c) AlignR(XP, FP): Align the right edge of XP with the right edge of FP.
 (d) Wrap CP: Each CP is contained in a (single) FP.
 (That is, CP is coextensive with FP.)

Constraint (12a), high ranked because never violated, optimizes parsing the entire string delimited by pause into a single IP (Intonational Phrase). Wrap (12d) optimizes a Focal Phrase (FP) which is coextensive with the clause (CP). However, the Focal Phrase, unlike Intonational Phrase, is conditioned by focus. This is formalized by ranking (12b), the constraint optimizing a Focal Phrase edge immediately following a focussed element, above Wrap (12d). Also ranking (12c) above Wrap (12d) optimizes parsing all XPs following the focussed element into separate Focal Phrases. This constraint interaction also formalizes why the Focal Phrase should be between Phonological Phrase (which roughly corresponds to XP) and Intonational Phrase (which roughly corresponds to CP), in the hierarchy shown in (1). The Focal Phrase is maximally aligned with CP by constraint (12d). However, if the focussed element is not at the right edge of CP, the Focal Phrases are smaller, mostly coextensive with XPs as required by constraints (12b,c). As a result, the Focal Phrase ranges in size from being coextensive with XP to coextensive with CP.

The analysis is exemplified in (13), using the data in (11):⁶

(13)

	AlignR (IP, CP)	AlignR Foc	Wrap	AlignR (XP, FP)
(a) √{(aba-kázi Kakúlu BA-MU-BÓNA)}				**
(b) * {(aba-kázi) (Kakúlu) (BA-MU-BÓNA)}			*!	
(c) * {(aba-kázi Kakúlu) (BA-MU-BÓNA)}			*!	*
(d) √ {(A-BU-BÓN') (óbu-góló) (Kakúlu)}			*	
(e) * {(A-BU-BÓN' óbu-góló Kakúlu)}		*!		**
(f) * {(A-BU-BÓN') (óbu-góló Kakúlu)}			*	*!

Crucial constraint rankings:

Wrap >> AlignR(XP, FP) optimizes parsing entire CP into single FP
 AlignR(Foc) >> Wrap optimizes interrupting CP to align focussed element with right edge of FP

⁵ The Align constraints only insert right constituent boundaries. I assume that the left boundaries are inserted by some convention like Idsardi's (1992) Bracket Matching or Selkirk's (1995) Exhaustivity. See Selkirk (1995) and Truckenbrodt (1995, 1999) for further discussion of the use of Align constraints to define constituents in the prosodic hierarchy, and see Truckenbrodt (1995, 1999) for further discussion and motivation of Wrap (12d).

⁶ N.B.: '}' is Intonational Phrase edge; '}' is FP edge; the focussed word is in small caps.

Candidate (13a), with the preposed topic NPs parsed into a single domain (Intonational Phrase and Focal Phrase) with the verb, is optimal in its set, as it satisfies all the highest ranked constraints. The CP contains a single Focal Phrase, satisfying Wrap, and the Focal Phrase and Intonational Phrase are well-aligned. In contrast, candidates (13b) and (13c) both violate Wrap by gratuitously parsing the CP into more than one Focal Phrase, even though this is not necessary to satisfy AlignFoc (12b). The next set of candidates, (13d) – (13f), has postposed topics and shows that the same constraints and rankings optimize parsing CP into several Focal Phrases if the focussed element is not at the right edge of the clause. Candidate (13e) is non-optimal, even though it satisfies Wrap, because it violates higher-ranked AlignFoc (12b). Candidate (13f) is also non-optimal because, once Wrap is violated to satisfy AlignFoc, each XP is optimally parsed into its own Focal Phrase. As candidate (13d) does satisfy AlignFoc and parses each XP into its own Focal Phrase, it is optimal. (In both candidate sets, I assume that the final word in the string, which is final in both Focal Phrase and Intonational Phrase, has the tone pattern appropriate to the larger domain, Intonational Phrase.)

To sum up this section, two levels of prosodic phrasing are motivated in Haya. The Intonational Phrase is the domain for syncope and tone retraction. There is also a '% phrase' which is the domain for focus-conditioned tonal alternations. I have proposed that the correlation of '% phrasing' with focus/assertion is best analyzed by equating the '% phrase' with Kanerva's (1990a,b) Focal Phrase. As it is not consistently coextensive with any particular syntactic constituent, it cannot be purely syntactically defined. This also makes it hard to define as the Phonological Phrase, the only available level of the Prosodic Hierarchy (2) below the Intonational Phrase, as the Phonological Phrase should also be consistently equivalent to some syntactic constituent. The variability in size of the '% phrase' which correlates with the variability of focus placement, is best expressed by directly labeling this phonological domain a Focal Phrase. Proposing to account for focus-conditioned phrasing by adopting a special focus level has been argued to be unnecessary in recent work by Truckenbrodt (1995, 1999). In the next section, I show this alternative approach does not provide a satisfactory analysis of the Haya data.

3 Considering the alternatives

3.1 The Focal Phrase in Chichewa

The Focal Phrase was originally proposed by Kanerva (1990a,b) to account for focus-determined phonological phrasing in Chichewa, a Bantu language spoken in Malawi. As shown in (14), in Chichewa, an entire XP (Subject NP, VP or Topic NP) is usually parsed into a single domain (in parentheses). One can quickly identify these phrase edges by observing the following phonological regularities. First, there is only one long vowel per domain, the phrase penult vowel. Further, there is never a High tone on the domain-final syllable.⁷

⁷ See Kanerva (1990a,b) and references therein for detailed discussion of these and other processes which take this same domain.

(14) Chichewa phrasing (Kanerva, 1990, chapter 4, figs. (34), (38), (44), (84); Bresnan & Kanerva (1989),)

- (a) (njingá yá mwáná wá 'mng'óono)
bicycle of child of small
'bicycle of small child'
- (b) (kwá mwáná wá bwénzí laánu)
to child of friend your
'to your friend's child'
- (c) (mténgó uuwu)
tree this
'this tree'
- (d) (chífukwá chá 'mkángó wá úkúulu)
because of lion of bigness
'because of the big lion'
- (e) (tinapátsá mwaná njingá yá kúaméleeka)
we.gave child bicycle of at.America
'We gave the child an American bicycle.'
- (f) (máayi) (wagonetsá mwáná wááke)
mother put to sleep child her
'Mother has put her child to sleep.'
- (g) (a-li-pítíríze) (phunziro)
they-it-continue (subjunctive) lesson
'They should continue it, the lesson.'

Notice, too, that each XP in Chichewa, e.g. the entire VP, is parsed into a separate domain. This contrasts with Haya, where we saw that the entire clause (the string delimited by pause) is roughly equivalent to a single phrasal domain, the Intonational Phrase.

However, if any word (or constituent) in the VP is placed in focus, that word must end a phonological domain. This is illustrated by the different phrasings that can be assigned the basic sentence in (15a). As shown, either the entire verb phrase or any of its subconstituents can be focused by asking the appropriate WH-question:

(15) Focus and phrasing in Chichewa (Kanerva, 1990, chapter (4), fig. (101))

- (a) anaménya nyumbá ndí mwáála 'He hit the house with a rock.'
he hit house with rock
- (b) What did he do? (VP focus)
(anaményá nyumbá ndí mwáála)
- (c) What did he hit the house with? (Oblique PP focus)
(anaményá nyumbá ndí mwáála)
- (d) What did he hit with the rock? (Object NP focus)
(anaményá nyuúmba) (ndí mwáála)
- (e) What did he do to the house with the rock? (V focus)
(anaménya) (nyuúmba) (ndí mwáála)

When the entire VP (15b) or the final subconstituent of the VP (15c) is in focus, the entire VP is a single phonological phrase. When a non-final constituent is focused

(15d,e), the VP is parsed into more than one phrase, as the focus constituent must be phrase-final.

As we can see, this parsing is very reminiscent of Haya postposed topics in (8) and (9). The only difference is that the XP, rather than the clause, is the approximate domain of maximal phonological phrasing in Chichewa. And indeed, the analysis proposed in the preceding sections follows Kanerva's (1990a,b) analysis of Chichewa in proposing that the effect of focus on phrasing is best formalized by distinguishing a Focal Phrase level from that of Phonological Phrase and Intonational Phrase. This is a controversial choice, however, as we shall see in the next sections.

3.2 Truckenbrodt's analysis

Truckenbrodt (1995, 1999) shows convincingly that Chichewa focus-conditioned phrasing can be straightforwardly accounted for without appealing to a distinct domain, the Focal Phrase. Instead, he proposes that the influence of focus on phonological phrasing is best analyzed by redefining the Focal Phrase as a focus defined variant of Phonological Phrase. This approach is formalized in (16). The Align constraint in (16a) requires a focussed element to be at the right edge of its phrase (in this case, Phonological Phrase). This constraint outranks the following two, (16b, c) which optimize aligning the Phonological Phrase (PP) with the right edge of some syntactic constituent, XP or CP.

- (16) (a) AlignR(Focus element, PP)
Align the right edge of the focus element with the right edge of PP.
(b) Wrap CP: Each CP is contained in a (single) PP.
(That is, CP is coextensive with PP.)
(c) AlignR(XP, PP): Align the right edge of XP with the right edge of PP.

That is, these constraints and rankings define the Phonological Phrase as normally being coextensive with a syntactic constituent. However, the focus-conditioned constraint (16a) defines a focus-conditioned variant of the Phonological Phrase. No special focus level in the Prosodic Hierarchy is necessary to derive the focus-conditioned phrasing.

The tableau in (17) shows that this analysis correctly accounts for the Chichewa phrasings in (15b) vs. (15e):

(17)

	AlignR Foc	Wrap	AlignR (XP, PP)
(a) √(anaményá nyumbá ndí mwáála)			**
(b) * (anaményá) (nyumbá) (ndí mwáála)		*!	
(c) * (anaményá) (nyumbá ndí mwáála)		*!	*
(d) √ (anaménya) (nyuúmba) (ndí mwáála)		*	
(e) * (anaménya) (nyuúmba ndí mwáála)		*	*!
(f) * (anaménya nyuúmba ndí mwáála)	*!		**

Candidate (17a) is optimal in the first set of candidates, as Wrap optimizes parsing the entire VP into a single Phonological Phrase if no element within the VP is focussed. The other two candidates, (17b,c), gratuitously violate Wrap by parsing the VP into several Phonological Phrases, even though focus does not motivate this. Candidate (17d), is optimal in the next set of candidates, where the verb is focussed within the VP, as the focussed verb and each following XP is a separate Phonological Phrase. Candidate (17f) is non-optimal, as the focussed element is not at the right edge of its Phonological Phrase, while candidate (17e) is non-optimal as it violates the constraint (16c) requiring each XP to be parsed into a separate Phonological Phrase if Wrap cannot be satisfied.

This alternative appears to have a number of obvious advantages over the one assumed in (13), above, which includes the Focal Phrase as a new level of the Prosodic Hierarchy. It achieves the same focus-conditioned parse for Chichewa without introducing a new entity, the Focal Phrase. Further, it achieves this parse through the familiar technique of constraint interaction. A particular case (AlignR(Foc,PP)) can be analyzed as a variant of a more general case (AlignR(XP,PP), Wrap) by ranking a particular constraint over a more general. It works well for Chichewa, since the domain of all the phonological processes which apply within the maximal Phonological Phrase are affected by focus. (Notice in (15), above, that both penult lengthening and tone retraction take the focus-aligned Phonological Phrase as their domain.)⁸

Unfortunately, there are problems with extending this analysis to Haya. First, recall that only one phonological process applies within the domain conditioned by focus, namely, the tone alternations applying at the '% phrase' edge. Other processes – pause, syncope, tone retraction – are not affected by focus. As a result, if we try to redefine the Focal Phrase of Haya as a misaligned Intonational Phrase, for example, we still need some other phonological constituent to be a domain for these other processes. That is, in formal terms, redefining the Focal Phrase as a focus variant of some other phrase like Intonational Phrase for Haya would mean, first, replacing Focal Phrase with Intonational Phrase in all the constraints in (12). The distinct Intonational Phrase constraint (12a) would be eliminated, since Intonational Phrase must be consistently aligned with some syntactic constituent type. But this would lead to eliminating the Intonational Phrase as a distinct domain from the Focal Phrase, an undesirable result as we need a distinct phonological domain for syncope and tone retraction. The constraints in (12') and the tableau in (13') make these points concrete:

(12') Redefining the Haya Focal Phrase as a variant of Intonational Phrase

- (a) AlignR(Focus element, IP)
Align the right edge of the focus element with the right edge of IP.
(b) AlignR(XP, IP): Align the right edge of XP with the right edge of IP.
(c) Wrap CP: Each CP is contained in a (single) IP.
(That is, CP is coextensive with IP.)

⁸ See Seidl (2001), however, for a critique of Truckenbrodt's (1995) analysis of Chichewa.

(13')

	AlignR Foc	Wrap	AlignR (XP, IP)
(a) √(aba-kázi Kakúlu ba-mu-bóna)			**
(b) * (aba-kázi) (Kakúlu) (ba-mu-bóna)		*!	
(c) * (aba-kázi Kakúlu) (ba-mu-bóna)		*!	*
(d) √ (a-bu-bón') (óbu-góló) (Kakúlu)		*	
(e) * (a-bu-bón' óbu-góló Kakúlu)	*!		**
(f) * (a-bu-bón') (óbu-góló Kakúlu)		*	*!

As we can see in (13'), the constraints in (12') continue to correctly define the '% phrase', but the phrasing necessary to define the domain of syncope and pausally conditioned tone alternations has been eliminated.

In short, if Focal Phrase is eliminated from the analysis of Haya, we still need two domains above the level of the Phonological Phrase to define properly the context for all the phrasal processes discussed. If we look at the Prosodic Hierarchy in (2), it appears we do have two domains available, Intonational Phrase and Utterance, without resorting to the Focal Phrase. In the next section I show why this alternative is undesirable.

3.3 An alternative to the Focal Phrase for Haya

There is a way of defining the two domains necessary to account for Haya phrasal phonology which is consistent with Prosodic Hierarchy in (2), and so consistent with Truckenbrodt's (1995, 1999) approach. One could propose that the Utterance (rather than the Intonational Phrase) is the domain for syncope and tone retraction, while the Intonational Phrase corresponds to the '% phrase'. While this proposal would work, it presents important conceptual problems. First of all, it misses a generalization. In this alternative, the real distinction between Intonational Phrase and Utterance domains has nothing to do with syntax, which is how the distinction is usually defined (see, e.g., Nespor & Vogel (1986), Selkirk (1986)), but with focus. In other words, this alternative redefines Utterance as the CP-sized phrase not conditioned by focus, while Intonational Phrase is the CP-sized phrase which is. The advantage of an analysis which appeals to the 'Focal Phrase' is that it at least makes this distinction explicit. Further, redefining the Focal Phrase as a misaligned Intonational Phrase assumes we can define a well-aligned Intonational Phrase, where focus is neutral or plays no role in delimiting the domain. As we saw in (14) and (15), this is true for Chichewa, where Phonological Phrases are normally coextensive with XP except when misaligned to satisfy the requirement that a focussed element be at the right edge of its phrase. No particular focus is implied by the 'normal' phrasing. However, in this alternative analysis of Haya, the Intonational Phrase would always be right-aligned with a focussed element. Indeed, assertion (focus) is described by BHT (1976) as the only consistent factor conditioning the '% phrase' edge. It would be more convincing to reanalyze Focal Phrase as a focus-conditioned Intonational Phrase if some Intonational Phrases could be defined independent of focus.

In sum, even though it is technically possible to analyze the two Haya phrasing domains in terms of Utterance vs. Intonational Phrase, this requires stretching the definitions of Utterance and Intonational Phrase to the point that they are no longer

testable. Analyzing the two phrasings in terms of Focal Phrase and Intonational Phrase instead makes it explicit that there is a level of phrasing that is not defined in terms of syntactic constituents, but rather in terms of focus. This proposal does require adding another level to the Prosodic Hierarchy, however, and it is a concern to add entities to a theory. This is only a serious concern, though, if the entities are well-supported and well-defined as a result of testing them on a wide body of language data. Unfortunately, little research has been documented on phonological processes above the Phonological Phrase level. And, in fact, as I will show in the next section, work that exists for other Bantu languages raises problems for the Prosodic Hierarchy in (2) similar to those discussed for Haya, providing further evidence for the Focal Phrase as a level in the Prosodic Hierarchy.

4 More evidence for the Focal Phrase

In this section, I briefly discuss phrasal phonological alternations in two more Bantu languages, Tsonga, spoken mainly in Mozambique and South Africa, and Chimwiini, spoken in Somalia. Like Haya, each of these languages has more than one distinct phrasal process, taking demonstrably distinct phrasal domains. And like Haya, at least one of the phrasal domains does not clearly match either some syntactic constituent or some level of the Prosodic Hierarchy in (2), with focus continuing to play a role in motivating mismatches.

4.1 Tsonga (Kisseberth 1994)

As Kisseberth (1994) shows, the tone pattern of most words in Tsonga is conditioned by their phrasal context. One source of phrasal High tone alternations is that, as shown in (18), the lexical High tone of a verb stem is realized through the penult of a following toneless complement noun. (This process is referred to as HTS1; in the data below, the domain of High tone realization discussed in the surrounding text is underlined>:

(18) Tsonga HTS1 to verb complement (Kisseberth 1994, p 142, fig (5))

(a)	ndzi-lává	'I want'	nyama	'meat'
	ndzi-lává	nyá:ma		'I want meat'
(b)	ndzi-lává	'I want'	xi-komu	'hoe'
	ndzi-lává	xí-kó:mu		'I want a hoe'
(c)	ndzi-vóná	'I see'	xi-hlambetwana	'cooking pot'
	ndzi-vóná	xí-hlám-bétwá:na		'I see a cooking pot'
(d)	ndzi-jóndzísá	'I am teaching'	xi-phukuphuku	'fool'
	ndzi-jóndzísá	xí-phúkúphú:ku		'I am teaching a fool'

Notice in (18a), for example, that nyama 'meat' is toneless (Low-toned) in isolation but has a High tone through its penult when it follows a High-toned verb stem. As shown in (19), it is not only the High tone of verb stems which triggers HTS1. The final High tone of a noun or pronoun also is realized through the penult of a following toneless word:

(19) Tsonga HTS1 from final vowel of noun or pronoun (Kisseberth 1994, p 154, figs (24), (26); p 149, fig (14))

- (a) ndzi-xavela n'w-áná tí-n-gú:vu
/ndzi-xavela n'w-áná tí-n-guvu/
I- buy child clothes
'I am buying a child clothes'
- (b) ndzi-nyíká xi-s!íwan!á xí-kó:mu
/ndzi-nyíká xi-síwaná xi-komu/
I- give pauper hoe
'I am giving the pauper a hoe'
- (c) toná tí-n-gú:vu, xi-hontlovila x-!á-xá:va
them clothes giant he-buy
'As for them, the clothes, the giant is buying'
- (d) voná vá:-nhu, ti-n-gu:vu v-lá-xá:va
them people clothes they-buy
'As for them, the people, the clothes they are buying.'

Notice in (19a,b), the High tone of the Indirect Object noun is realized through the penult of the following Direct Object noun. And in (19c,d) we see that the High tone on the final syllable of the emphatic pronoun (*toná*, *voná*) is realized through the penult of the following coreferential noun.

The data in (19c, d) reveal a syntactic restriction in the domain of High tone realization, showing it is not an across-the-board phrasal process. Notice that the High tone of the emphatic pronoun is realized only through the penult of the immediately following coreferential noun, which Kisseberth (1994) argues is in the same maximal NP as the pronoun. Even though the next word ('giant' in (19c), 'clothes' in (19d)) is also toneless and so would appear to be a potential target for HTS1, it remains toneless as it is in a separate maximal NP. These examples reveal a general restriction on HTS1, namely that it does not extend beyond a right maximal XP boundary.⁹ High tones of preverbal maximal NPs are never realized on following constituents, whether they are other maximal NPs, as in (19c,d) and (20d) or the VP, as in (20a,b,c), below:

(20) No HTS1 from preverbal nouns (Kisseberth 1994: 153-155; ' indicates where HTS1 fails to apply)

- (a) miná | ndz-a-ti:rha 'as for me, I am working'
I I-work
- (b) hiná | h-a-hle:ka 'as for us, we are laughing'
us we-laugh
- (c) ti-ho:mú | ndz-a-sa:va 'as for the cattle, I am buying'
cattle I-buy
- (d) n-sá:tí | ti-n-gu:vu w-!á-xá:va 'the wife, as for the clothes, she is buying'
wife clothes s/he-buy

However, HTS1 does not always extend its domain all the way to a right maximal XP boundary. As shown in (21), the second object in a double object

⁹ Notice, this is the mirror image of Haya, where preverbal nouns always formed a tone domain with the verb, while postverbal nouns could be parsed in separate tone domains from the (focussed) verb and from each other.

construction is not included in the domain, even if both object nouns are toneless. (Though as noted in presenting (19a,b), above, there is HTS1 from the first to the second object if the first has a stem High tone and the second is toneless):

(21) (Kisseberth 1994, p 148, fig (13); ' indicates where HTS1 fails to apply)

- (a) ndzi-nyíká xí-kóxa | nya:ma 'I am giving an old woman meat'
I- give old woman meat
- (b) ndzi-nyíká xí-phúkúphúku | fo:le 'I am giving a fool tobacco'
I- give fool tobacco
- (c) ndzi-kómbélá mú-nhu | ti-n-gu:vu 'I am asking someone for clothes'
I- ask for someone clothes
- (d) ndzi-kómbélá xí-phúkúphúku | n-gulu:ve 'I am asking a fool for a pig'
I- ask for fool pig

To summarize the data so far, in Tsonga stem High tones can be realized through the penult of an immediately following word if it is within the same maximal XP. There is a further syntactic restriction within VPs, namely, HTS1 does not extend beyond V' (verb plus noun complement), if the source of the High tone is the verb stem (21). While the domain is syntactically conditioned, it is not always coextensive with a syntactic constituent. As shown in (19), both noun complements of a toneless verb form a HTS1 domain distinct from the verb, even though they group into a single maximal VP with the verb (with the first complement within V'). The HTS1 domain must, then, be a prosodic constituent, most plausibly Phonological Phrase as that is the constituent which roughly correlates with (maximal) XP.

A look at more data shows that the domain of HTS1 is arguably conditioned by focus/prominence. Recall from (18), above, that a High tone from the verb stem is realized through the penult of a following toneless complement noun. However, if the complement NP is branching (that is, if the noun is followed by a modifier), HTS1 does not apply, as shown in (22a,b,c). Nor does HTS1 apply between the Indirect Object NP and the following Direct Object NP, if the Direct Object NP is branching, as shown in (22d) vs. (22e):

(22) (Kisseberth 1994, p. 157, fig (27); Cole-Beuchat 1959, p 136; Beuchat 1962, p 109; ' indicates where HTS1 fails to apply)

- (a) hi-vóné | ti-n-guvu lé-ti-nyíngí 'We saw many clothes.' cf. (20, 22)
we-saw clothes many
- (b) ndzi-lává | ti-m-balelo ti-m-birhí 'I want two laths'. cf. (18a,b)
I-want laths two
- (c) ndzi-vóná n-gúlú:ve 'I see a pig'
I-see pig
ndzi-vóná | n-guluve y!á we:n!á 'I see your pig'
I-see pig your
- (d) váná vá-nyíkélá n'anga yóbíhá | xi-hlangi xáminá nyáma.
children they-give doctor wicked baby my meat
'The children give meat to my baby on behalf of the wicked doctor.'
- (e) váná vá-nyíkélá n'anga yóbíhá | xi-hlangi xáminá | nyama yobola.
children they-give doctor wicked baby my meat rotten
'The children give rotten meat to my baby on behalf of the wicked doctor.'

There is no obvious syntactic motivation for why a branching NP must form a distinct phonological domain from a preceding word, while a non-branching one does not. However, branching (modified) NPs are arguably more contrastive than unmodified ones. Further, they are phonologically heavy, being longer than non-branching complements. For both of these reasons, branching complements are more phonologically prominent. In this way, a branching complement can be equated with a focussed one, unsurprisingly also forming a distinct phonological domain.¹⁰

That branchingness is a parameter in Phonological Phrase construction is confirmed by the data in (23). Even though the right edge of the maximal XP is usually a boundary for HTS1, if the VP is followed by a postposed subject noun, the High tone from the verb stem is realized through the penult of that noun:

(23) Tsonga HTS1 to postposed noun (Kisseberth 1994, p 150, fig (16))

- | | |
|--------------------------------|--------------------------------------|
| (a) x-á-!fá:mbá xí-hóntlóví:la | 'He's going, the giant' |
| xi-hontlovi:la | 'giant' |
| (b) y-á:-!já n-gúlú:ve | 'It's eating, the pig' |
| n-gulu:ve | 'pig' |
| (c) x-á:-!nwá xí-phúkúphú:ku | 'He's drinking, the fool' |
| xi-phukuphu:ku | 'fool' |
| (d) x-á:-tá xí-kó:xa | 'She's coming, the old woman' |
| xi-ko:xa | 'old woman' |
| (e) vá-xává tí-ho:m!ú vá:-nhu | 'they are buying cattle, the people' |
| they-buy cattle people | |

This can be understood as motivated by the mirror image of the constraint illustrated in (22). Just as a heavy postverbal NP must form a separate Phonological Phrase from the verb even though it is within the maximal VP, a light postverbal NP cannot form a separate Phonological Phrase from a preceding VP element, even though it is not within the maximal VP.¹¹

A final focus related factor conditioning Phonological Phrases is found with negative verbs. As shown in (24), the grammatical High tone of the negative verb is realized through the final vowel of the verb phrase, even if the verb phrase contains double objects and branching complement NPs which are generally a barrier to HTS1.¹²

¹⁰ As Nespor & Vogel (1986) and Truckenbrodt (1995) show, branchingness is also a parameter on Phonological Phrase construction in Italian. See this work for detailed discussion.

¹¹ This constraint on Phonological Phrase formation is obviously outranked by the one illustrated in (21), which shows that non-branching NPs are phrased separately from a preceding V' if one can form a Phonological Phrase which is coextensive with [vVN].

¹² The alert reader will have noticed that these data illustrate another phrasal rule of Tsonga, namely, phrase penult vowel lengthening. An inspection of the data shows that the domain for this process is often distinct from that of HTS1. For example, in (21), the domain for HTS1 is V' (verb plus first noun complement) while the domain for lengthening is the entire maximal VP. Similarly, in (20a,b) the subject pronoun and verb are in separate HTS1 domains, while the entire subject NP-VP complex is the domain for lengthening. And in (23) the entire clause (VP plus postposed subject) is the domain for HTS1, while the VP and postposed subject form two domains for lengthening, as do the preposed NPs in (20c,d). As Kisseberth (1994) argues, if the subject NP-VP complex, postposed and preposed NPs each are daughters of the same higher constituent (which he terms S''), then the domain of lengthening has a straightforward syntactic definition: it is coextensive with the daughters of S''.

(24) Negative VPs (Kisseberth 1994, pp 162-163, figs (33), (34))

- | | |
|--------------------------------------|--|
| (a) a-vá-xav!éléí xí-kóxa nyá:má | 'They are not buying meat for the old woman' |
| (b) a-ndzí-nyíkí mú-fáná tí-n-gú:vú | 'I am not giving the boy clothes' |
| (c) a-ndzí-vóní n-gúvú yá mí:ná | 'I do not see my cloth' |
| (d) a-ndzí-vóní tí-n-gúlúvé tá mí:ná | 'I do not see my pigs' |

As Hyman (1999) argues, negative constructions are inherently focussed, and so tend to have more prominence by having marked tone patterns. This is what we see in (24). HTS1 extends through the end of the negative VP, and so makes this VP more phonologically marked by containing more High tones than affirmative VPs.

The data in (22) through (24) confirms that the domain of HTS1 is not coextensive with a syntactic constituent. It shows further that prominence or focus plays a role in conditioning the variable length of the domain. In terms of Truckenbrodt's (1995, 1999) theory, this focus-conditioned variability is easily formalizable by proposing that Phonological Phrases in Tsonga have a focus-conditioned variant. One need not add a focus-conditioned level of phrasing to the Prosodic Hierarchy to account for this range of variation.

What the Prosodic Hierarchy (2) cannot account for would be another phonological process in Tsonga, which takes roughly XP as its domain, but which still must apply in a domain distinct from HTS1. Unfortunately, this is just what we find. As Kisseberth (1994) shows, there is another phrasal High tone alternation (HTS2), which has as its source a High-toned verb prefix. As shown in (25), the High tone of a prefix to a toneless verb stem is realized through the penult of a following toneless word:

(25) Tsonga HTS from verb prefix H (Kisseberth 1994, p 142, fig (4))

- | | |
|-------------------------------------|----------------------------------|
| (a) vá-xává nyá:ma | 'they are buying meat' |
| (cf. ndzi-xava nya:ma) | 'I am buying meat' |
| (b) vá-xává tí-n-gú:vu | 'they are buying clothes' |
| (cf. ndzi-xava tí-n-gu:vu) | 'I am buying clothes' |
| (c) vá-xává xí-kó:mu | 'they are buying a hoe' |
| (cf. ndzi-xava xi-ko:mu) | 'I am buying a hoe' |
| (d) vá-kúmá xí-hlámébtwá:na | 'they are getting a cooking pot' |
| (cf. ndzi-kuma xi-hlambetwa:na) | 'I am getting a cooking pot' |
| (e) vá-tísá xí-hóntlóví:la | 'they are bringing a giant' |
| (cf. hi-tisa xi-hontlovi:la) | 'we are bringing a giant' |
| (f) vá-rívalélá sví-phúkúphú:ku | 'they forgive fools' |
| (cf. ndzi-rivalela svi-phukuphu:ku) | 'I forgive fools' |

The data in (26) show that HTS2, like HTS1, only affects a single immediately following XP complement. In double object constructions, a second toneless object remains toneless:

(26)

- (a) *vá-xávélá xí-phúkúphúku* | fo:le 'They are buying tobacco for a fool'
 they- buy fool tobacco
 (cf. ndzi-xavela xi-phukuphuku fo:le 'I am buying tobacco for a fool')
- (b) *vá-xávélá mú-nhu* | ti-n-gu:vu 'They are buying clothes for someone'
 they-buy someone clothes
 (cf. ndzi-xavela mu-nhu ti-n-gu:vu 'I am buying clothes for someone')

The data so far reveal no difference between HTS1 (where the source of the High tone is a stem) and HTS2 (where the source of the High tone is a verb prefix). However, the data in (27) show that HTS2 has a more restricted domain, as the High tone of a verb prefix is not realized on a following postposed subject NP (compare these with (23), above):

- (27) No HTS2 to postposed subject nouns (Kisseberth 1994, p 149, fig (15); ' indicates where HTS2 fails to apply)
- (a) *v-á-tí:rha* | va:nhu 'They are working, the people.'
 (b) *x-á-rí:la* | xi-hla:ngi 'It is crying, the baby.'
 (c) *x-á-hlé:ka* | xi-hla:ngi 'It is laughing, the baby.'

These data show that HTS2 must be a distinct process, applying in a distinct phonological domain. The problem is that the domain of HTS2 is smaller than that of HTS1, as no element outside the maximal VP can be within its domain. However, if HTS1 applies within the Phonological Phrase, then there is no available prosodic domain for HTS2, as there are no smaller prosodic domains than Phonological Phrase in the Prosodic Hierarchy (2). The domain of HTS2 also cannot be a purely syntactic constituent (e.g., VP), as it is subject to the same focus-related condition as holds for HTS1. As shown in (28), the NP complement fails to form a HTS2 domain with the preceding verb if the NP branches (compare with (23), above):

- (28) (Kisseberth 1994, p. 157, fig (27); Beuchat 1962, p 109; ' indicates where HTS2 fails to apply)
- (a) *váná vá-nyfékéla* | n'anga yóbíhá xi-hlangi xáminá nyáma.
 children give doctor wicked baby my meat
 'The children give meat to my baby on behalf of the wicked doctor.'
- (b) *vá-xávisá tí-n-gú:vu* 'They are selling clothes'
vá-xávisá tí- | n-gu:vu t!á vo:n!á 'They are selling their clothes'

And as both domains are roughly coextensive with XP, it is not plausible to propose that the domain of HTS1 is the Intonational Phrase, the next larger prosodic domain. That would wrongly imply that HTS1 is generally roughly coextensive with the root clause, the syntactic correlate of the Intonational Phrase. Instead, I propose that the domain of HTS1 is the Focal Phrase, while the domain of HTS2 is the Phonological Phrase. Like the domain of HTS1, the Focal Phrase is roughly coextensive with XP, but variable in size due to the influence of focus (Kanerva 1990a,b). This is the main factor distinguishing the domain of HTS1 from that of HTS2. There is more

variability in the domain of HTS1, as its size is subject to more focus or prominence related factors.

To sum up, in Tsonga, as in Haya, we find distinct phonological processes applying in domains which are also distinct but still roughly coextensive with the same syntactic constituent, in this case XP. And, as in Haya, we find that it is most plausible to label one of these domains the Focal Phrase, as this best accounts for the focus-conditioned variation in the size of the domain. As I show in the next section, Chimwiini provides a similar case.

4.2 Chimwiini (Kisseberth 2000; Kisseberth & Abasheikh 1974)

As Kisseberth & Abasheikh (1974) and Kisseberth (2000) show, Chimwiini, a Bantu language closely related to Swahili spoken in Somalia, has two prominence-related processes, vowel length and accent, with phrasal conditions on their realization. As Kisseberth (2000) shows, the phrasal conditions on these processes provide evidence for a level of prosodic phrasing between the Phonological Phrase and the Intonational Phrase.

Vowel length in Chimwiini is lexically contrastive. However, as Kisseberth & Abasheikh (1974) and Kisseberth (2000) have shown, the surface occurrence of vowel length is subject to the following phrasal conditions:¹³

(29)

- (a) long vowels can only occur in phrase penult or phrase antepenult position;
 (b) phrase antepenult vowel can only be long if the penult is light.

The data in (30) illustrates these conditions on phrasal vowel length alternations. All the words in the left column of data have a long vowel in the penult when they occur in isolation. However, when they are followed by another word in the same phrase, placing their long vowel outside the three-syllable window at the right edge of the phrase for the realization of vowel length, the vowel shortens:¹⁴

(30) Vowel length alternations in Chimwiini (Kisseberth 2000, fig (18))

- | | | | | |
|-----|-----------------|-------------------|-----------------------|-------------------------|
| (a) | <i>i-yéele</i> | 'it was full' | <i>i-yele máayi</i> | 'it was full of water' |
| (b) | <i>fíile</i> | 'cl. 1 died' | <i>filee n-dála</i> | 'cl.1 died from hunger' |
| (c) | <i>x-súuka</i> | 'to weave, plait' | <i>x-suka mi-sála</i> | 'to weave, plait mats' |
| (d) | <i>x-fáanya</i> | 'to make' | <i>x-fanya máashe</i> | 'to make blind' |
| (e) | <i>mw-áana</i> | 'child' | <i>mw-ana úyu</i> | 'this child' |
| (f) | <i>m-zéele</i> | 'old man' | <i>m-zele úje</i> | 'that old man' |

As usual, the analytical problem is to determine how to define the relevant phrases. Notice in (30) that the vowel length domain in Chimwiini shares some similarities

¹³ Selkirk (1986) has argued that vowel length in Chimwiini should be considered a form of stress prominence, as the conditions on vowel length realization in (29) closely resemble the Latin stress rule. However, as Kisseberth & Abasheikh (1974) and Kisseberth (2000) make clear, it is accent, rather than vowel length, which is the most likely candidate for stress prominence in Chimwiini. This point is noted briefly below. See Kisseberth & Abasheikh (1974) and Kisseberth (2000) for more detailed discussion.

¹⁴ In the Chimwiini data, an accent mark over a vowel indicates accent, not tone. Also, I adopt Kisseberth's (2000) convention of using '/' to indicate the phrasing relevant for vowel length and accent.

with the tone alternation domains of Tsonga. A verb plus a following nominal complement form a length domain (30a-d), as do NPs (30e,f). The data in (31) shows that the domain for vowel length alternations is shorter than a clause and, in fact, generally coextensive with XP:

(31) (Kisseberth 2000, figs (19), (20))

- (a) wáawe/ (ní) mú-le 'Father is tall.'
 (b) múu-nthu / mú-le 'The person is tall.'
 (cf mu-nthuu mú-le 'tall person')
 (c) mw-ana úyu / hu-pendaa má-zu 'This child likes bananas'
 (d) má-zu / hu-pendowa na mw-ana úyu 'Bananas are liked by this child.'
 (e) wowi íyi/ i-yele máayi/ yána 'This river was full of water yesterday'
 (f) wanaa-nthí / wa-m-pele ra'íisi / zawaadí=ze / barzaa=ni
 'The citizens / gave the president / his gifts/ in the meeting hall.'
 (g) n-thovele maandá / mtuzii-ní 'I dipped bread into the sauce'
 (h) ní-m-thovelele mw-aaná / maandá / m-tuzii=ní
 'I dipped for the child / bread / into the sauce.'

This data reveals further similarities with the tone alternation domains of Tsonga. Notice in all the data that subject NPs phrase separately from the VP. Within the VP, the verb plus its first (NP object) complement are grouped together into a domain, but following verbal complements and adjuncts form separate domains (31e-h). As Kisseberth (2000) argues, following Selkirk (1986), these generalizations can best be captured by proposing that the domain for the length alternations is the Phonological Phrase, the prosodic constituent roughly coextensive with XP.

As Kisseberth & Abasheikh (1975) and Kisseberth (2000) show, there is another form of phrasal prominence in Chimwiini, namely accent. The main phonetic property of accent is pitch change. However, as accent is the locus for intonational melody assignment (each accented syllable after the first is downstepped in declarative sentences; the final accent is sharply raised in pitch in yes-no questions), they argue that accent is related to stress rather than being a purely tonal phenomenon. Accent also is a distinct prominence property from vowel length, as its realization is subject to different positional constraints. Recall from (29) that long vowels occur in either phrase penult or antepenultimate position. In contrast, accent is realized on the phrase penult in the unmarked case; in the marked case on the final syllable (a position where long vowels can never occur). Looking again at the data in (30) and (31), we can see that the same domain, the Phonological Phrase, relevant for vowel length is also relevant for accent. Notice that each vowel length phrase generally also has a single accented vowel. Most of the phrases in (30) and (31) have the accent on the default penult syllable, but in (31g, h), we see examples of the marked, final accent pattern. As Kisseberth (2000) notes, the Prosodic Hierarchy (2) predicts that several phrasal alternations might take the same domain, in this case, the Phonological Phrase. What the Prosodic Hierarchy does not predict is that we might find evidence for another process which takes a domain that is larger than the Phonological Phrase yet smaller than the Intonational Phrase. As noted for Tsonga, above, there is no level in the Prosodic Hierarchy corresponding to this size domain. Unfortunately, however, this is just what we find in Chimwiini.

As Kisseberth (2000) shows, Chimwiini has not only the basic accent phrase just discussed, but also what he calls an Extended Accent Phrase. This extended

phrase is longer than the usual phrasing relevant for vowel length and accent, as it includes the entire maximal VP or relative clause. For example, notice below in (32a,b, c, e), that both complements of the verb are parsed into separate Phonological Phrases (each of these phrases has one long vowel and its own accent). However, both complements have the marked final accent, showing these smaller accent domains are parsed into an Extended Accent Phrase which determines accent placement for all its subconstituents:

(32) Kisseberth (2000, fig (48)) – notice final vowel of every word in VP accented

- (a) mí / n-thinz-il-ee namá / kaa chi-sú 'I cut meat with a knife'
 I I-cut meat with knife
 (b) sh-pokele wa-geení / mi-zigo ayó 'We took from the guests that luggage.'
 We-took guests luggage that
 (c) mu-nthu m-pela jaamá / peesá / ni Nuuru
 man gave Jama money is Nuru
 'The man who gave Jama money is Nuru.'
 (d) kuwa sh-pela peesá / i-wa-yawatishize wáa-nthu
 that we-were given money it-them-surprised people
 'That we were given money surprised people.'
 (e) sí / chi-m-bozele mw-aalimú / chi-buku ch-a hisaabú
 We we-him-stole teacher book arithmetic.
 'We stole from the teacher his arithmetic book.'
 (f) sí / chi-m-boozelé / mw-aalímu / chí-buku ch-a hisaabu
 'We STOLE from the teacher his arithmetic book.'

While the Extended Accent Domain is generally coextensive with a syntactic constituent (VP or a relative clause), the data in (32f) shows that it is conditioned by focus. If we compare (32e) with (32f), we see that normally all the Phonological Phrases within the VP are assigned the marked final accent. However, if the verb is given contrastive focus, as in (32f), there is a Phonological Phrase break after the verb (as in Haya, focussed elements must be at the right edge of their phrase), and the following Phonological Phrases now have the default penult accent. The Extended Accent Domain must, then, be some prosodic constituent, one dominating the Phonological Phrase. In the Prosodic Hierarchy in (2), this level is the Intonational Phrase. As Kisseberth (2000) argues, however, the Extended Accent Domain is not a likely candidate for Intonational Phrase, as it is intermediate in size between XP (Phonological Phrase) and a root clause (Intonational Phrase). This is shown by the data in (32c,d), where the Phonological Phrase following the relative clause is either deaccented (as in (32c)) or has the default penult accent (as in (32d)).

Though the traditional Prosodic Hierarchy in (2) does not provide an level of phrasing intermediate between Phonological Phrase and Intonational Phrase, the modified Hierarchy in (1), does: the Focal Phrase. I propose, then, that the Extended Accent Domain is a Focal Phrase. Like a Focal Phrase (and a Phonological Phrase), the Extended Accent Domain is roughly coextensive with XP, but variable in size as it can be conditioned by focus. Further, since these phrases are assigned the marked final accent pattern, they are likely more prominent than phrases with the default penult accent.

5 Conclusion

In sum, I have shown that Haya, Tsonga and Chimwiini all provide good evidence for including the Focal Phrase in the Prosodic Hierarchy, as shown in (1). The traditional Prosodic Hierarchy (2) does not include sufficient levels of phrasing to account for languages with several phrasal rules applying in distinct domains. One problem is that it does not explicitly allow for a level of phrasing that is conditioned only by focus. As we saw, this is necessary for Haya, where there are two roughly CP-size domains, but one is always conditioned by focus, the other is not. Another problem is that languages like Tsonga and Chimwiini have more than one distinct phrasal domain roughly coextensive with XP, but the Prosodic Hierarchy in (2) only provides one level, the Phonological Phrase. Adding the Focal Phrase provides a second level. It also correctly accounts for the fact that this second level is larger than the Phonological Phrase and more directly conditioned by focus than the Phonological Phrase.

These problems highlight that much more work needs to be done on productive phrasal phonological processes above the Phonological Phrase level. As Kisseberth (2000) also notes the Prosodic Hierarchy in (2) has not actually been widely tested, because there are so few well-documented languages with a variety of phrasal processes arguably applying in distinct domains. However, just this short survey provides evidence that there are such languages, and that the domains relevant to their phonology are not obviously coextensive with either syntactic constituents or constituents in the Prosodic Hierarchy (2). I have shown that focus is definitely one of the factors conditioning these mismatches. Further research is necessary to understand others.

References

- Beuchat, P.-D. (1962). Additional notes on the tonomorphology of the Tsonga noun. *African Studies* 21, 105-122.
- Bennett, Tina L. (1977). Interrogatives. In Byarushengo et al., 171-188.
- Bresnan, Joan & Jonni M. Kanerva (1989). Locative inversion in Chichewa: A case study of factorization in grammar. *Linguistic Inquiry* 20, 1-50.
- Byarushengo, Ernest Rugwa, Larry M. Hyman & Sarah Tenenbaum. (1976). Tone, accent, and assertion in Haya. In Larry M. Hyman, ed. *Studies in Bantu Tonology (SCOPIL 3)*, 185-205.
- Byarushengo, Ernest Rugwa, Alessandro Duranti & Larry M. Hyman, eds. (1977). *Haya Grammatical Structure. SCOPIL 6*.
- Cole-Beuchat, P.D. (1959). Tonomorphology of the Tsonga noun. *African Studies* 18, 133-145.
- Hyman, Larry M. & Ernest Rugwa Byarushengo (1984). A model of Haya tonology. In G.N. Clements & John Goldsmith, eds. *Autosegmental Studies in Bantu Tone*. Dordrecht: Foris.
- Hyman, Larry M. (1999). The interaction between focus and tone in Bantu. In: *The Grammar of Focus*, Georges Rebuschi & Laurice Tuller (eds.), pp. 151-177. Amsterdam: John Benjamins.
- Idsardi, William J. (1992). *The Computation of Prosody*. PhD dissertation, MIT.
- Kanerva, Jonni M. (1990a). *Focus and Phrasing in Chichewa Phonology*. New York: Garland.
- Kanerva, Jonni M. (1990b). Focusing on Phonological Phrases in Chichewa. In Sharon Inkelas & Draga Zec, eds. *The Phonology-Syntax Connection*. Chicago: The University of Chicago Press, 145-161.
- Kisseberth, Charles W. (1994). On domains. In Jennifer Cole & Charles Kisseberth, eds. *Perspectives in Phonology*, pp 133-166. Stanford: CSLI Publications.
- Kisseberth, Charles W. (2000). The phonology-syntax interface: Chimwiini revisited. ms., Tel Aviv University.
- Kisseberth, Charles W. & Mohammad Imam Abasheikh (1974). Vowel length in Chi-mwi:ni – a case study of the role of grammar in phonology. In M. W. La Galy, R.A. Fox & A. Bruck, eds. *CLS Papers from the Parasession on Natural Phonology*, 193-209.
- McCarthy, John J. & Alan Prince (1993a). Prosodic Morphology I. Constraint interaction and satisfaction. ms., University of Massachusetts, Amherst, and Rutgers University.
- McCarthy, John J. & Alan Prince (1993b). Generalized Alignment. In Geert Booij & Jaap van Marle, eds. *Yearbook of Morphology 1993*. Dordrecht: Kluwer, 79-153.
- Nespor, Marina & Irene Vogel (1986). *Prosodic Phonology*. Dordrecht: Foris Publications.
- Seidl, Amanda (2001). *Minimal Indirect Reference: A Theory of the Syntax-Phonology Interface*. London: Routledge.
- Selkirk, Elisabeth O. (1986). On derived domains in sentence phonology. *Phonology Yearbook* 3, 371-405.
- Selkirk, Elisabeth O. (1995). The prosodic structure of function words. *UMOP 18 (Papers in Optimality Theory)*, 439-469.
- Tenenbaum, Sarah (1977). Left- and right-dislocation. In Byarushengo et al., 161-170.
- Truckenbrodt, Hubert (1995). Phonological Phrases: Their Relation to Syntax, Focus, and Prominence. Ph.D. dissertation, MIT.
- Truckenbrodt, Hubert (1999). On the relation between syntactic phrases and phonological phrases. *Linguistic Inquiry* 30, 219-255.