

Penultimate Lengthening in Bantu: Analysis and Spread

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(Presented at the Third Conference on Bantu Linguistics, Tervuren, March 25-27, 2009)

1. Introduction

The topic of this paper is the process of penultimate lengthening, which, although widespread over much of the Bantu zone, and often cited, has not received serious comparative analysis. In §2 I first provide an overview of penultimate lengthening in Bantu, followed by discussion in §3. I then turn in §4 to the near-complementary process of pre-(ante)penultimate shortening, also widely attested in Bantu. Having documented both phenomena and considered their possible historical relation, I conclude in §5 with some diachronic and typological observations.

2. Bantu penultimate lengthening: an overview

Many Bantu languages have been reported to have penultimate prominence of one sort or another, often called “accent” or “stress”. The most commonly observed effect is penultimate lengthening (henceforth, PL) of the vowel:

“En règle générale, l’accent dynamique tombe sur la syllabe pénultième et s’accompagne d’allongement de la voyelle.” (Van Bulck 1952:859)

“Cet accent tombe, dans plusieurs langues bantoues, sur la pénultième et s’accompagne d’un allongement de la voyelle....” (Burssens 1954:46)

“Stress in Nguni is normally the penultimate syllable which is also normally long....” (Doke 1967:94)

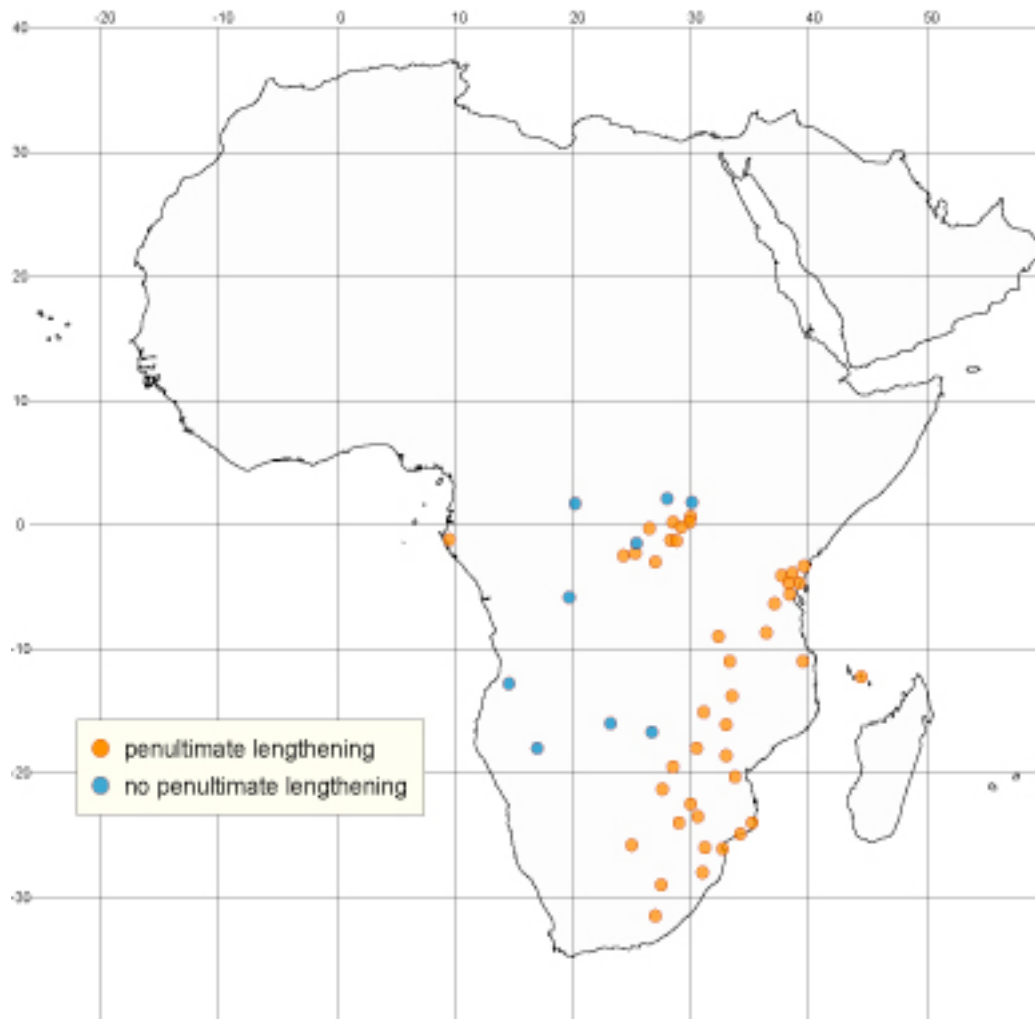
Typical examples are provided from Shona in (1), which show predictable penultimate lengthening realized on different morphemes as causative and applicative suffixes are added:

- (1) ku-se:k-a ‘to laugh’
 ku-sek-e:s-a ‘to cause to laugh’
 ku-sek-e:r-a ‘to laugh at’
 ku-sek-es-e:r-a ‘to cause to laugh at’

While the Shona forms are highly representative of a number of Eastern and Southern Bantu languages (see below), descriptions of other languages contain no mention of length, or the role of length is downplayed:

“The stress in Lamba is normally on the penultimate syllable of each word, and in this way is to a great extent the determining factor in word-division.... Unlike Zulu the penultimate stress is not of necessity accompanied by length. Penultimate length is merely incidental in Lamba.” (Doke 1938:33)

The distribution of PL in languages which have lost the inherited length contrast is shown by the light dots on the accompanying map (courtesy of Guillaume Segerer):



As seen, with the exception of Mpongwe (and perhaps a few other languages in Gabon), PL is areally contained. The blank areas in between the light dots indicate Bantu languages which have retained the PB vowel length contrast (and which typically lack PL). The dark dots indicate languages such as Tonga which have also lost the contrast but do not have PL.

It is tempting to hypothesize that there is a direct relation between PL and the loss of PB length: With the loss of length contrasts, PL is free to lengthen the penultimate vowel without threat of merger—vs. non-PL languages such as Luganda which have such contrasts such as *-lim-* ‘cultivate’ vs. *-liim-* ‘spy on’. Still, a few PL languages do exhibit marginal length contrasts (cf. the discussion of Matengo in (25) below):

“...in some other Bantu languages, such as Makonde, Kirufiji and Kishambaa, there is at least partial contrastive vowel length as well as automatic penultimate stress which is in the case of Kishambaa realized phonetically by subphonemic increases in vowel duration, so that short stressed vowels are somewhat longer than short unstressed vowels, and long stressed vowels are somewhat longer than long unstressed vowels.” (Odden 1999:192-3)

Other languages with a V:/V contrast have been shown to have PL effects at the phonetic level, e.g. Luganda (Hubbard 1994), Yao (Ngunga 1995), Kinyarwanda (Myers 2005), and Bangubangu (Meeussen 1954:6): “*Phonetisch* wordt een lange klinker als overlang gerealiseerd in de voorlaatste klankgreep.”

Even if we set aside marginal and phonetic cases, Bantu PL shows considerable cross-linguistic variation with respect to its domain and discourse function (which isn’t always made explicit). First, at least three domains can be distinguished. First, PL may be utterance-penultimate, as in Southern Sotho (and perhaps all of Southern Bantu):

“Normally in Sotho each isolated word and the final word in each sentence has stress on the penultimate syllable accompanied by length. The length of the vowels of the penultimate syllables is appreciably shortened when words are not final in the sentence.” (Doke 1967:125)

Second, PL may be phrase-penultimate, as in Chichewa (Kanerva 1990), Tumbuka (Downing 2006), Makonde (Kraal 2005), and Matengo (Yoneda 2005), where there is a relationship between phrasing and focus. Finally, one language, Komo, has been reported to have PL at the word level: “Penultimate vowel lengthening. That is a word-level boringly regular phenomenon in Komo.” (Paul Thomas, personal communication, 2008). Also reported is a distinction between full phrasal PL vs. “half-length” on the penultimate vowel of every word, thus producing three degrees of length in Tswana and Shona, respectively:

“Full length occurs in the penultimate syllable of a word pronounced in isolation or at the end of a sentence.... This constitutes the characteristic penultimate accent of Tswana.... When a word is in non-final sentence position, it still retains its penultimate accent, but in much lesser degree, i.e. only half-length is used. Normal short length occurs in final and non-penultimate syllables, and in some monosyllabic words.” (Cole 1955:55)

“When an utterance consists of several phonological words, the final word of the utterance, which may be followed by a pause, carries a marker of penultimate length relatively longer than those of preceding vowels. *úya* ‘come’, *úya kú:nó* ‘come here!’, *úya kú’nó, mwà:ná* ‘come here, child!’, *úya kú’nó mwà:ná:ngù* ‘come here, my child!’” (Fortune 1980:1.36)

In some languages pre-pausal moraic PL depends on the utterance type, e.g. Tswana:

“Utterances consisting of statements and questions with interrogative morphemes are characterized by a syllable length pattern in which the penultimate syllable is longer than other syllables.” (Cole 1955:1.35a)

“Questions without interrogative words differ from statements by, among other signs, the lack of the relatively longer penultimate length. *áto’ra rugwa:kú* ‘he has taken the spoon’ vs. *áto’ra rugwa’ku?* ‘has he taken the spoon?’” (Cole 1955:1.39)

Similarly, pre-pausal PL is observed in citation forms and declaratives in Shekgalagari, but not in corresponding yes-no questions (where short H-H alternates with long HL:-L) (Hyman & Monaka 2008):

- (5) a. ri-nâ:rɪ ‘buffalos’
 b. a-bal-a ri-nâ:rɪ ‘he is counting buffalos’
- (6) a. ri-nárí ‘buffalos?’
 b. a-bal-a ri-nárí ‘is he counting buffalos?’

Since such variations by utterance type are usually not fully described, a number of colleagues were contacted and asked to compare Hyman & Monaka’s (2008) findings for Shekgalagari with the distribution of PL in several other Bantu languages. The results are provided in (7).¹

(7)

	Shekgalagari	Sesotho	Ikalanga	Kinande	Ndebele	Chichewa
Declaratives	+	+	+	+	+	+
Yes-No Q	-	-	+	-	+	+
WH Q	-	-	+	-	+	+
Ideophones	-	-	-	-	+	+
Paused lists	-	+	-	+	+	+
Imperatives	-	+	+	+	+	+
Hortatives	-	+	+	+	+	+
Vocatives	-	±	+	+	+	+
Exclamatives	-	-	+	+	+	+
1σ word	-	+	+	+	+	+

To illustrate the relevant utterance types, we begin with the Shekgalagari examples in (8)-(12), which show that there is no PL in WH questions, imperatives, hortatives, vocatives, and exclamatives:

- (8) a. ri-nárí zhé †ríhí ‘which buffalos?’
 b. ányí a-bón-á ri-nárí ‘who sees the buffalos?’
- (9) a. bal-á ‘count!’ (cf. xU-ba:l-a ‘to count’)
 b. bal-á †rí-nárí ‘count the buffalos!’
- (10) a. á †hí-bál-ε ‘let’s count!’
 b. á †hí-bál-ε ri-nárí ‘let’s count the buffalos!’
- (11) a. múnaká ‘Monaka!’
 b. ntó gabaloxúŋ ‘come here, Ghabalogong!’
- (12) a. á †jí-xólú ‘what a situation!’
 b. á †jí-tjútʃu já mú-khyu ‘what an idiot of a person!’

In addition, there is no PL in ideophones, whose pre-pausal vowel undergoes final devoicing:

¹ The table in (7) was made possible by generous personal communications (2008) from Malillo Machobane and Katherine Demuth (Sesotho), Joyce Mathangwane (Ikalanga), Ngesimo Mutaka (Kinande), Galen Sibanda (Ndebele), and Sam Mchombo and Al Mtenje (Chichewa).

- (13) a. y-á-rɪ bílɔ̄ ‘it (fish) appeared suddenly out of water’ (lit. it-said bílɔ̄)
 b. a-rɪ bítsɪ ‘he left in a hurry’ (lit. he-said bítsɪ)

Similarly, there is no PL in “paused lists”, where each paused word may optionally undergo final lengthening:

- (14) a. a-bal-a ri-nama: ... ri-nawá: ... lí ri-nâ:rɪ ‘he’s counting meats, beans, and buffalos’
 b. a-bón-á lɔ̄-rɔ̄li: ... malflɪ: ... lí mɔ̄-rî:rɪ ‘he sees dust, rubbish, and hair’

Finally, when the prepause word is monosyllabic there is no PL (vs. the other languages in (7) which lengthen the last vowel of preceding word):

- (15) a. ri-ná-rí ʒé ‘these buffalos’
 b. a-bat-a fɛ ‘he wants this one’

To summarize, there are four different intonational patterns before pause in Shekgalagari:

- (16) a. PL : *declaratives, citation forms*
 b. final devoicing (no PL) : *ideophones*
 c. final lengthening (no PL) : *paused lists*
 d. Ø (none of the above) : *questions, imperatives, hortatives, vocatives, exclamatives, monosyllabic words*

As indicated in (16d), there is an important “mismatch” in Shekgalagari: While a short penult is PHONOLOGICALLY unmarked, it is PRAGMATICALLY marked, hence not assigned in questions, imperatives, vocatives etc. As seen in the examples, some of the utterance types involve specific grammatical constructions, e.g. the marker *á* in hortatives and exclamatives. On the other hand, the only difference between a declarative and a yes-no question is the presence vs. absence of PL. Thus Hyman & Monaka suggest that the absence of intonation = a yes-no question!² As seen on the accompanying map, and despite the variations in (7), it is clear that PL is quite widespread, but varied in Bantu. In the following section I take up some of the questions raised by these and other facts.

3. Discussion

The variation seen in (7) and the examples from Shekgalagari raise a number of questions: (i) What is the full range and distribution of PL properties in Bantu? (ii) How and why does PL originate? (iii) How is PL related to other length phenomena reported in Bantu. For example, many Bantu languages restrict long vowels to the penult (or to penultimate and antepenultimate positions). As will be discussed below, we must ask whether PL or such positional restrictions are a cause vs. an effect of the loss of the Proto-Bantu *V/V: contrast?

An additional question concerns the relation of PL to accentual prominence (stress). There are three common claims concerning accent placement in Bantu:

² Interrogatives need not involve raising of the overall pitch range—which may occur on both statements AND questions to mark excitement and other “attitudinal” (Bolinger 1978) or “paralinguistic” (Ladd 1996) functions. It should be pointed out that there is an independent, paralinguistic process of PL called emphatic lengthening—see Hyman & Monaka (2008)

- (17) a. initial : mostly NW Bantu, e.g. Duala, Kukuya, Bobangi, Ntomba, Bolia, Tetela
b. penult : mostly Eastern and Southern Bantu (examples above)
c. none : scattered, probably widespread, e.g. Mongo

As seen, initial and penultimate prominence are largely in complementary distribution, characterizing the Northwest vs. East-South of the Bantu zone, respectively. Other languages are said to lack stress altogether:

“...l'accent dynamique est entièrement éclipsé [en Lomongo] par la marcation bien plus essentielle des tons.”³ (Hulstaert 1934:79)

“...even [those Ngombe speakers] who readily recognize the position of tone in the words of their own language, find it difficult to decide where the stress of a given word lies.” (Price 1944:28)

In fact, initial and penultimate “accent” are not parallel. “Initial” usually means “stem-initial”, as in Ntomba:

“Cet accent porte en général sur la première syllabe de la racine.... Un radical monosyllabique reporte l'accent sur le préfixe de classe.” (Mamet 1955:11)

On the other hand, as we have seen, “penultimate” usually means “utterance-“ or “phrase-penultimate”. Even the attraction of H to the penult can be across words, as in Giriyama (Philippon 1998:321):

- (18) a. ku-tsol-a ki-revu ‘to choose a beard’
b. ku-on-a ki-révu ‘to see a beard’
 ⊕
 H

From the observed variation we can hypothesize that penultimate prosody starts out as intonational and undergoes “boundary narrowing” as indicated in (19).

- (19) Utterance > Intonational phrase > Phonological phrase > Word

While Komo has been said to have word-penultimate PL, which may be unique within Bantu, there are occasional cases of languages with stem-level prosody, e.g. accent assignment in Kivunjo Chaga:

“Assign accent to a lexical stem, choosing the penult, if possible.

“The Kivunjo accent is unlike that of more typical accentual languages in that it has no overt phonetic manifestation. Rather, it serves an organizational function.... In addition, some stem classes are lexical exceptions to the Accent Rule, producing... no accent.” (McHugh 1990:226)

The question which needs to be addressed is why the penult should receive intonational/phrasal prominence? As I argued for penultimate stress (Hyman 1977:45), there is a tendency to avoid the final syllable. In the Bantu context we note the following:

³ Hulstaert (1961:129) went as far as to design experiments showing that there is no stem-initial stress in Lomongo.

(i) Final position is not a good place for tonal contrasts. Utterances like to end low. As a result, utterance-final H can be lowered to M (Kukuya), contoured to HL (Luganda), delinked to L (Nkhotakota Chichewa), and/or anticipated onto penult (Chichewa, Haya). In addition, a H to L pitch-change is more optimally realized on two syllables than as a HL falling contour on a final syllable.

(ii) Final position is not a good place for quantity contrasts. Thus, numerous Bantu languages have final vowel shortening (FVS), which also begins before pause but can be “narrowed” to smaller domains, as in Luganda (Hyman & Katamba 1990). Interestingly, no Bantu language realizes inherited vowel length as long before pause. For example, combinations of CV verb root + the final inflectional vowel *-a*, which may be realized with long vowels in medial position, typically undergo pre-pausal FVS: /pa-a/ ‘give’, /li-a/ ‘eat’ → medial [pa:], [lya:], utterance-final [pa], [lya].

(iii) Even beyond prosody, final position is not a good place for segmental contrasts. In this case there is a strong tendency to narrow restrictions to word-final position. While PB and “canonical” Bantu systems lack codas altogether, those languages which have developed codas typically restrict these to a small subset of consonants found in onset position, with the frequent lack of a voice contrast. In addition, some Bantu languages have restrictions on word-final vowel contrasts. Thus, Lunda, which has an underlying five-vowel system /i, e, u, o, a/ does not permit final /e, o/.

What I would like to propose is that penultimate prominence (lengthening etc.) is a post-PB innovation, areally diffused, possibly as separate innovations in some cases. In this context compare the position of Bennett (1978:14-15) who assumes PB had initial primary and secondary final accent, the latter ultimately becoming penultimate:

“...the frequency of primary or secondary penultimate stress, coupled with the devoicing of final vowels in such languages as Gisu, the general shortening of final vowels, the reduction of tonal contrasts on final vowels, and the complete loss of final vowels in many languages of Zaire and the northwest, suggests that a situation such as that ascribed to Bolia (stem stress with secondary penultimate stress), or at least a strong avoidance of final stress, must have been quite widespread at some earlier stage.”

Much of Bennett’s argument is based on the distribution of vowels within the Bantu word. As seen in (20), PB vowel contrasts were restricted by position:

(20) *prefix V* - *first stem V* - *internal Vs* - *final stem V*

*i *I *U *a *L	*i *u *I *U *ε *ɔ *a *H, *L	*i *I *U *a *L	*i *u *I *U *ε *ɔ *a *H, *L
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While all seven vowels contrasted in the first and last syllables of the stem in PB, only four vowels contrasted in prefix and stem-internal positions. In addition, these are the only two positions in which tonal contrasts have been reconstructed (cf. Meeussen 1967). Thus, except to the extent that it coincides with stem-initial, the penult was not a position of maximal contrast in PB, nor is it in the daughter languages. Bennett thus hypothesizes that these two position, (stem-) initial and final were positions of prominence in PB.

4. Pre-(ante)penultimate shortening

While the penult shows no tendency to license a fuller set of vowel quality contrasts, it may be implicated in the realization of contrastive length. A number of (East & West) Bantu languages limit contrastively long vowels by position, producing alternations such as those in (21).

- (21) a. pre-penultimate shortening in Cokwe (van den Eynde 1960:17)
 ku-huul-a ‘peel off’ → ku-hul-il-a ‘peel off for’ (APPLICATIVE)
- b. pre-antepenultimate shortening in Lunda (elicited with Boniface Kawasha)
 ku-kwáat-a ‘to hold, arrest’ → ku-kwáat-ish-a → ku-kwát-ish-il-a
 (CAUSATIVE) (CAUSATIVE+APPLICATIVE)

As indicated in (21), some languages such as Cokwe limit vowel length contrasts to the penult, while others such as Lunda restrict contrastive length to the penult and antepenult. Other languages with such restrictions include Chimwiini (Kisseberth & Abasheikh 1974), Kimatuumbi (Odden 1990a), Safwa (Voorhoeve, n.d.), Malila (Kutsch Lojenga 2007), Kikongo (Odden 1990b), Beembe (Jacquot 1962:241), and Yaka (Ruttenberg 2000). In some languages there is a double restriction in that the (ante)penult must coincide with the first stem syllable. In Punu vowel length is contrastive only on a stem-initial penult. Thus, of 232 verb stems with initial /CV:/ in Blanchon (1996), all but 7, or 97%, are bisyllabic. Similarly, in Yaka, long vowels are limited to a stem-initial penultimate or antepenultimate syllable. Of 753 verb stems with initial /CV:/ identified from Ruttenberg (2000), 335 are bisyllabic, 408 trisyllabic, and only 10 (or 1.3%) quadrisyllabic.

A most interesting case is found in Ngangela, where a vowel can be long only if all of the following vowels up to and including the penult are also long. Otherwise, there is pre-penultimate shortening:

“... une voyelle ne peut être longue que si toutes les voyelles qui suivent jusqu’à la pénultième comprise sont également longues.” (Maniacky 2002:20)

This restriction produces alternations such as those seen in (22).

- | | | | | | |
|---------|----------------|----------------------------|-----|----------|--------------------------------|
| (22) a. | -teetáán̄ga | ‘partager’ | cf. | -tééta | ‘couper’ |
| | -teetaan̄gééni | ‘partagez! (pl.)’ | | | |
| b. | -vuulwííθa | ‘rappeler, remémorer’ | cf. | -vulúka | ‘se rappeler’ |
| | -taambwííθa | ‘distribuer’ | cf. | -tambúla | ‘recevoir’ |
| | -ʃaambwííθa | ‘infecter, contaminer’ | cf. | -ʃambúka | ‘être contaminé’ |
| c. | -puláán̄ga | ‘couper en tranches’ | cf. | -púla | ‘couper au couteau’ |
| | -holwééθa | ‘refroidir (tr.), calmer’ | cf. | -holóka | ‘refroidir (intr.), se calmer’ |
| | -afáán̄ga | ‘atteindre plusieurs fois’ | cf. | -áʃa | ‘lancer’ |

In (22a) we see that the length of the vowel of *-tééta* remains in related tri- and quadrisyllabic verb stems, since all of the vowels up to the penult are also long. The verbs in (22b) contain the underlying roots *-vuul-*, *-taamb-* and *-ʃaamb-*. As seen, their length is preserved in the forms involving the *-iθ-* causative extension, since the penultimate vowel is also long. On the other hand, the root vowel loses its length in the corresponding non-causative forms to the right, where the penultimate vowel is short. Finally, (22c) shows that this is not a case of length agreement (whereby pre-penultimate syllables lengthen before a long penult). Thus, the roots *-pul-*, *-hol-* and *-af-* do not become long in the forms on the left.

The interpretation I would give to the Ngangela facts is the following: (i) Syllables form an increasing prominence cline (crescendo) up to the penult. (ii) A long vowel is licensed in a less prominent syllable only if it occurs in all more prominent syllables.⁴ While it is the word-penultimate position which licenses preceding length, it should be noted that there is some variation in the noun phrase. Thus, Maniacky (2002:20) reports that ‘my cow’ can be pronounced *ŋgóombe yáaŋge* or *ŋgómbe yáaŋge*. In the first realization, the penult of the first word is calculated independently of the second word (and length is thus preserved), while in the second realization, the penultimate position is calculated over the two-word noun phrase (“syntagme nominal”). Since the short vowel in [mbe] separates [ŋgó:] from the long penult [yáa], *ŋgóombe* shortens to *ŋgómbe*. Given that a number of Bantu languages treat noun + possessive as a single domain, it is likely that *ŋgómbe yáaŋge* is the older realization. Unfortunately, phrase-level shortening appears to be unsystematic in Ngangela:

“Pour finir, signalons que la perte de longueur vocalique est assez aléatoire au niveau post-lexical. La position pénultième dont on doit tenir compte est celle du mot, et non celle de l'énoncé tout entier. Dans notre étude tonale, nous définirons un groupe prosodique qui correspond au syntagme nominal. Dans ce cas-là, l'abrègement est plus sensible à l'ensemble de l'énoncé, sans vraiment être systématique.” (Maniacky, p.20)

To summarize, we have seen that positional shortening may target either pre-penultimate or pre-antepenultimate long vowels. In addition, the Ngangela facts show that positional shortening may be suspended via licensing from length in the prominent penult. While Ngangela suggests that such licensing is calculated on the basis of the word-penultimate syllable, restrictive (ante)penultimate length is typically calculated at the phrase level in other languages, which may restrict shortening to underlying contrastive length, e.g. length which originates in the stem vs. derived from V+V concatenation within prefixes or between a prefix and V-initial stem. Thus, as the following examples show, pre-antepenultimate shortening is stem-based and phrasal in Kimatuumbi (Odden 1990a:260, 261):

- (23) a. *kìkóloombe* ‘cleaning shell’
kìkólombe chaángu ‘my cleaning shell’
 b. *naa-kálaangite* ‘I fried’
naa-kalangite chóolya ‘I fried food’

Differing from Kimatuumbi, the pre-stem is subject to shortening in Safwa (Voorhoeve, n.d.)

- (24) a. *a-gaa-gúzy-a* ‘he can sell’
 b. *a-ga-buúzy-a* ‘he can ask’ cf. *a-ga-buzy-aág-a* ‘he may ask’

Despite Voorhoeve’s characterization of the process in terms of syllables,

“...any long vowel preceding the third syllable [mora?] from the final word boundary is reduced to a short vowel.” (Voorhoeve n.d.:10)

⁴ This notion of a crescendoing cline seems also to apply to the optional pre-penultimate reduction of [e, o] to [a] in Shimakonde (Liphola 2001), where it is not possible for reduction to affect a vowel to the right of a mid vowel that has not been reduced (cf. Ettliger 2008).

(24b) suggests that shortening applies to any long vowel which precedes the third MORA of the word (cf. Botne 1988 and Kutsch Lojenga 2007 for closely related Ndali and Malila, respectively). A moraic basis has been recognized also in Beembe:

“L’opposition entre voyelles brèves et voyelles longues se trouve neutralisée entre consonnes dans les noms verbaux lorsque la dérivation par suffixes aboutit à la formation de radicaux comptant plus de quatre mores.” (Jacquot 1962:241).

The generalization appears to be that pre-penultimate shortening is calculated by syllable, while pre-antepenultimate shortening is calculated by mora. Thus, two situations are predicted not to occur: (i) Since pre-penultimate shortening is not calculated by mora, no language should shorten a penultimate vowel when the final vowel is long. (ii) Since it is not calculated by syllable, pre-antepenultimate shortening should not allow both the penultimate and antepenultimate vowels to surface as long. While one can imagine how these generalizations might be undermined by subsequent sound changes, I am unaware of only one case from Kimatuumbi (Odden 1996).⁵ The first non-attestation may also be accounted for by saying that the vowel length of the final syllable is irrelevant to positional shortening. Otherwise we would expect underlying /CVV.CV.CVV/ to undergo (moraic) pre-antepenultimate shortening of the first long vowel. Instead, the form typically is realized with the antepenultimate syllable vowel long and the final vowel short.

5. Conclusion

In the preceding sections we have seen that penultimate lengthening is widespread in Bantu, but varied in its distribution by utterance type. We have also seen that the penult is privileged as a position for the realization (and licensing) of contrastive length. The question is whether there is a historical link between non-lexically contrastive PL and pre-(ante)penultimate shortening which often neutralizes lexical contrasts? Consider languages with pre-antepenultimate shortening. As was seen in Safwa in (24b), if both the antepenult and the penult are underlyingly long, only the latter will survive.⁶ This also true of Chimwiini, which allows only one long vowel per phrasal domain (Kisseberth & Abasheikh 1974), which Selkirk (1986) interpreted by assigning a Latin stress-like metrical structure. What this means is that even in languages where the one permitted long vowel may be antepenultimate or penultimate, the latter position is privileged. Might this, then, have been a contributing factor to the loss of contrastive vowel length and the development of PL?

⁵ In Kimatuumbi, an antepenultimate long vowel generally shortens before a penultimate long vowel, as expected, such shortening fails to apply before the applicative + reciprocal combination -y-aan- (Odden 1996:157). In addition, the two moras of the perfective final *-ite* (and variants) appear to be counted as only one (Odden 1996:160). Similarly, subsequent developments sometimes obscure otherwise general PL. For example, in Kinande, PL fails to apply to verb forms where imperfective **-ag-a* has undergone *g*-deletion to become final *-a*: (ultimately, short *-a*) (Mutaka 2000:107). PL also fails to apply when the perfective final is shortened in Makonde (Manus 2003:388), where **-ile* > *-ii* and in Zulu (and elsewhere in Nguni), e.g. *baboni:le* → *babone*: ‘they saw’ (Doke 1967). In such cases, PL is calculated on the basis of the full forms /-ag-a/ and /-il-e/, but is not realized as PL since the targeted vowel is realized surface-finally.

⁶ I do expect there to be languages in which a combination of a long root vowel followed by a long suffix vowel result in the shortening of the latter. Languages such as Punu and Yaka have gone one step further by restricting the length contrast to the initial stem syllable.

It was stated in §2 that PL almost exclusively occurs on languages which have lost the PB vowel length contrast. However, among the few languages which have retained the contrast, Matengo shows the position length restrictions can co-exist with PL:⁷

“Long vowels... only appear in the antepenultimate, penultimate or final [?] syllables of any word. Long vowels before the antepenultimate syllable are shortened.... It should be noted that although the unit of the rule ‘vowel in the penultimate syllable becomes long vowel’ is the tone phrase, the unit of shortening of long vowels in the [pre-]antepenultimate syllable is the word.” (Yoneda 2005:394)

As seen in (25a), a phrase-penultimate short vowel undergoes PL:

- | | | | | |
|---------|------------------------|---|------------------------|---------------------|
| (25) a. | /kibega/ | → | [kibe:ga] | |
| | /kibega kinjahi/ | → | [kibega kinja:hi] | (glosses not given) |
| b. | /-dʒo:ba/ | → | [dʒo:ba] | ‘to peel’ |
| | /-dʒo:beka/ | → | [dʒo:be:ka] | ‘to peel for’ |
| | /-dʒo:batoka/ | → | [dʒobato:ka] | ‘to peel off’ |
| c. | /-dʒo:beka likalatasi/ | → | [dʒo:beka likalata:si] | ‘to peel paper for’ |

The first two forms in (25b) show that contrastive length can be realized in penultimate and antepenultimate position, while the third form shows pre-antepenultimate shortening. The example in (25c) confirms Yoneda’s point that PL is phrasal, but pre-antepenultimate shortening is a property of the word domain. Thus, ‘to peel for’ is not shortened when followed by a noun object.

In §3 it was suggested that PL originates from intonation and gradually undergoes boundary narrowing (cf. (19)). One question that has not been dealt with is whether PL could represent the phonologization of a tempo effect. Recall from (7) that PL is blocked in yes-no questions in some of the Bantu languages. In addition, one finds descriptions in the literature such as the following concerning Xhosa:

“There is a gradual resetting of the baseline of pitch upwards from the beginning of the sentence... and the shortening... of the length of the penult with the increase of the tempo of the speech production.” (Louw 1995:239)

If there was an original tempo difference between declarative and interrogative sentences, perhaps this could have played into the phonologization process. PL might then have first arisen as a mark of declarative intonation, thereafter gradually spreading into other utterance types, some of which might originally have had brisker tempos (e.g. imperatives, exclamatives). In this case Shekgalagari would be ultra-conservative and Ndebele and Chichewa innovative (cf. (7)).

While the above may seem intuitive, tempo considerations do produce at least one complication documented in Chinima Makonde (Kraal 2005). Abbreviating penultimate lengthening as PUL, Kraal (2005:75) states the situation as follows:

⁷ In this citation I have added a question mark to indicate that the few cases of final length appear to be limited to a few grammatical morphemes, e.g. *àsê:* ‘this (class 7)’, *lê:lô:* ‘yes-no question marker’ (Nobuko Yoneda, personal communication, 2009). I also have corrected “antepenultimate” to *pre-antepenultimate* in the last line.

“Every p-phrase is subject to PUL. But with fast speech, the penultimate syllable of a non-final p-phrase may be reduced.”

The complication, thus, is that a penultimate vowel may first be lengthened, but then shortened in fast speech, as shown in (26a), where % marks a phonological phrase boundary:

(26) a.	<i>Normal speech rate</i>		<i>Fast Speech</i>	
	vàlúúmè % vávììlì		vàlúmè vávììlì	‘two men’
	vàlúúmè % vákúlúùngwà		vàlúmè vákúlúùngwà	‘big men’
b.	/vàlúúmé/	→	vàlúúmé	→
			PL	
			→	vàlúúmè
			H-retraction	→
				vàlúmè
				Penult Shortening

Kraal presents tonal evidence to show that one cannot simply say that PL is suspended in fast speech. In (26b) PL first applies, thereby triggering the retraction of the final H tone onto the penult. With fast-speech shortening the result is a H-L stem *-lúmè*. Had PL and H-retraction not applied, the stem would have been realized *-lúmé*, as it is phrase-internally. What this means is that PL is not the only attested innovation, since penultimate shortening can also be phonologized based on tempo considerations. By recognizing this possibility we are forced to consider the alternative that Shekgalagari may have had more widespread PL but lost it in most utterance types.

So, with so many open questions, what can we reasonably conclude from the above? First, PL is a post-PB innovation which begins at the utterance level, then narrows to phonological phrases. Second, PL has nothing to do with stem-initial “accent” which has very different properties. Third, PL generally, but not necessarily, occurs in languages having lost the PB *V/V: contrast. Finally, PL may co-occur with positional restrictions on vowel length. This yields the following typology of vowel length systems in Bantu:

(27)	<i>Lexical Contrast</i>	<i>Penultimate Lengthening</i>	<i>Positional Shortening</i>	<i>Example</i>
	+	+	+	Matengo
	+	+	-	Bangubangu
	+	-	+	Kimatuumbi
	+	-	-	Luganda
	-	+	n/a	Shona
	-	-	n/a	Tonga

Of these, all but the first two are quite widely attested within Bantu.

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