Minimal prosodic stems/words in Malawian Tonga: A Morpheme-Based Templates Theory analysis

Winfred Mkochi

Chancellor College, University of Malawi
wmkochi@cc.ac.mw

Abstract

The paper aims to investigate the real size of the minimal prosodic stem/word in Malawian Tonga (popularly known as ciTonga), a Southern Bantu language spoken in Malawi. At the surface level, it is realized in three ways. Firstly, in common speech styles it is required to be disyllabic, just like in many Bantu languages, as evidenced by prefixing of the vowel [i] before monomoraic verb stems (e.g. *ii.-lja* 'eat'). Similar stems in some elderly people's speech styles avoid prefixing of [i] and the stem/word is monosyllabic (but bimoraic, e.g. *ljaa*). There are other monosyllabic (but bimoraic) stems/words, however, which appear in both the common and the elderly speech styles (e.g. *koo* 'catch'). This state of affairs raises two important questions: Firstly, what is the real level of analysis (syllable or mora) in ciTonga? Secondly, what is the real size of the minimal prosodic stem/word in this language? Drawing evidence from an optional process of deletion of initial vowels in vowel-initial verb stems, and deletion of final syllables of LV (liquid plus vowel) type, the paper suggests that the real level of prosodic stem/word analysis in this language is the syllable, and not the mora, and that the required size of the minimal prosodic stem/word is essentially disyllabic. Thus, the

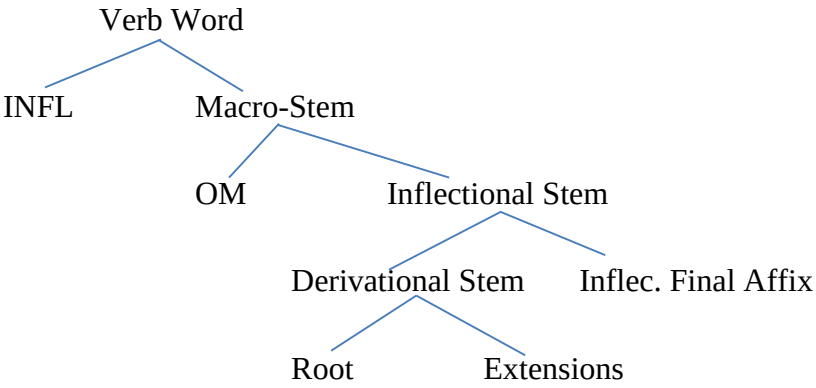
status of monosyllabic stems/words in this language is that they are sub-minimal and that they attain bimoraicity through a general process of phonological phrasing which is a well-known phenomenon in Bantu languages. These findings are in sharp contrast with previous ones where the mora was considered to be the level of prosodic stem analysis in this language (see Mtenje, 2006; Mkochi, 2007/2008, 2009 & 2014). The paper is recast within Optimality Theory (OT) as developed by Prince and Smolensky (1993/2004) and extended by others (e.g. Downing, 2006). I am a native speaker of ciTonga and thus a primary source of the data. Sometimes, data recordings of my fellow native speakers supplemented my own intuitions.

Keywords: Prosodic stem, minimal prosodic stem, syllable, mora, Bantu languages, ciTonga

1. Introduction

According to Mtenje (2006), like in many other Bantu languages, a morphologically complex verb in Malawian Tonga, "popularly known as ciTonga", comprises a string of inflectional prefixes (showing information about subject, tense/aspect, object, etc), a root, one or more derivational affixes (extensions) and an inflectional final vowel. Thus, following Mtenje, I shall assume the Bantu verb structure given in (1) below (see also Myers, 1998 & Downing, 2000)[1].

(1) *Bantu verb structure*



(INFL = Inflection; OM = Object Marker; Inflec. = Inflectional)

For the sake of simplicity, but still achieving the purpose of this paper, I shall use the term morphological stem or verb stem or stem for Inflectional Stem. Thus, a basic morphological stem/word (without prefixes) consists of a root and a final vowel (fv) (an inflectional final affix). The commonest final vowel is **-a**. It expresses indicative or neuter and imperative moods. These facts are illustrated in (2) below. I have used the symbol "[" where necessary to indicate that the constituent to its right is a morphological stem.

(2) *Basic Morphological Stem*

[βe.le.βee.t-a
speak-fv
"speak"

The problem that this paper attempts to resolve concerns the real size of the minimal verb stem/word in terms of syllable or mora count in output forms. Downing (2005) and many other Bantu language scholars indicate that Bantu languages impose a bisyllabic (or disyllabic) minimality requirement on verbal stems. In ciTonga, however, the size of the minimal prosodic stem can be either

disyllabic or monosyllabic (but bimoraic), sometimes depending on speech style. In common speech styles[2], for instance, when the input morphological stem is monosyllabic, the vowel [i] is usually prefixed to it when in citation form as illustrated in (3) below[3].

(3) *The vowel [i] is prefixed to monosyllabic verb stems/words in common speech styles*

Input	*Output*	*English gloss*
-swa	ii-swa!	break!
-lja	ii-lja!	eat!
-fwa	ii-fwa!	die!
-wa	ii-wa!	fall down!

However, some native elderly speakers of this language do not prefix the vowel [i], leaving the output form with a monosyllabic (but bimoraic) shape. Thus the output forms of the input verbs in (3) above would be as given in (4) below.

(4) *The minimal word is monosyllabic in some elderly speech styles*

swaa
ljaa
fwaa
waa

Finally, there are in this same language several surface monosyllabic (*but bimoraic*) verb words/stems which do not take any prefix in citation form, but they are equally acceptable *in both the two speech styles*. This fact is illustrated in (5) below.

(5) *Some minimal prosodic stems/words are monosyllabic in both common and elderly speech styles*

too	‘take’
koo	‘catch’
poo	‘get cold’
pee	‘get subdued’
mee	‘germinate’

Thus, there are two connected problem questions: Firstly, what is the real level of prosodic stem[4] analysis (syllable or mora) in ciTonga? Secondly, what is the real size of the minimal prosodic stem/word in this language? I am going to argue in this paper that, just like in many Bantu languages, the real level of stem analysis in this language is the syllable and that the real size of the minimal prosodic word/stem is disyllabic (Batibo &Rottland, 1992; Brandon, 1975; Downing, 2001; Myers, 1987; etc.). The evidence I present indicates that monosyllabic words/stems in ciTonga are sub-minimal and that this is as a result of certain phonological constraints which forbid LV in word/stem-final positions (in the case of examples in (3) above) as well as another constraint that bans onsetless syllables in the initial position of the verb stem (in the case of some elderly speech styles). The paper is recast within Optimality Theory as argued for by Prince and Smolensky (1993/2004), McCarthy and Prince (1993b) and extended by others (e.g. Downing, 2006b).

I am a native speaker of ci Tonga and thus a primary source of the data. I also relied on recordings of my fellow native speakers where my own intuition was fuzzy. The dialect I am going to discuss is that of Mpamba area in Nkhata Bay District. The paper is organized as follows: In Section 2 I sketch, briefly, the tenets of Optimality Theory (OT) and Downing's (2006b) sub-theory of morpho-prosody correlation called Morpheme-Based Templates Theory (MBT) which are used to make sense of the data in this paper. Section 3 presents the arguments for the syllable as a level of analysis in ciTonga. Sections 4 & 5 present generalizations and constraints, respectively. Section 6 presents tableaux to illustrate the interaction of the relevant Optimality Theory constraints. Section 7 concludes the paper.

2. Optimality theory and the Morpheme-Based Templates Theory

Optimality Theory represents a distinguished phase in phonological thinking usually called the phase of Constraints or Principles (Prince and Smolensky, 1993; McCarthy and Prince, 1993a & b). It embodies a conception of the notions of underlying and surface structures in derivational theories, but it discards a belief that a set of serially ordered rules apply one after another in order to derive a correct output. Classical OT recognizes only two stages namely, the input and the phonological output. A crucial conception about OT is that the relation between an input and an output is governed by the interaction

of violable universal constraints on output well-formedness. Constraints interact at the output level, although some constraints (faithfulness constraints) can refer to the input level. The constraint set is universal. Variation between languages or dialects comes about because of differences in ranking of the constraints. Candidates which violate high-ranking constraints are disqualified and those which satisfy them are optimal (see Yip, 2002 and Bensoukas, 2004, for slightly better summaries).

There are two types of constraints namely, **markedness** and **faithfulness** constraints. Markedness constraints evaluate the featural, segmental and prosodic well-formedness of output forms. Faithfulness constraints evaluate the extent to which input and output forms correspond. Thus, phonological processes such as insertion, deletion, featural change or change of association lines in autosegmental representations will be penalized by faithfulness constraints. Markedness and faithfulness constraints have conflicting requirements of well-formedness. The former demands forms to surface in their unmarked structure while the latter "prohibits differences between input and output" structures (McCarthy, 2008: 13).

Within Optimality Theory, issues which concern the nature of correlation between morphological words and phonological words, especially prosodic morphemes, such as minimal prosodic words and reduplicative prosodic stems, have been approached through what is called Generalized Templates Theory (GTT). According to GTT, the constant size of prosodic morphemes is caused by general theoretical principles correlating particular morphological categories such as stem, root and affix with particular prosodic constituents and from a constraint grammar defining the canonical shapes as unmarked. The theory predicts that all prosodic morphemes of the same morphological category will have identical constraints defining their canonical shape. For example, it is typical for affixes to be monosyllabic or monomoraic, and for stems to be disyllabic. Two competing versions of GTT have emerged namely, the Prosodic Hierarchy-Based Generalized Templates Theory (PBT) (McCarthy & Prince, 1994a, 1994b, 1995a, 1995b, 1998, 1999; Urbanczyk, 1996, 2000/2006) and more recently the Morpheme-Based Generalized Templates Theory (Downing, 2006b).

For this paper, I am going to account for the facts using Downing's Morpheme-Based Templates Theory (MBT) since it accounts for the facts in Bantu languages slightly better than does the Prosodic Hierarchy-Based Generalized Templates Theory. Downing (2006b) finds PBT to be problematic because some of its claims are not supported by the facts on the ground. For instance, Downing finds that contrary to what PBT claims, templates for root-and-pattern morphology do not match stress Feet; minimal words in many languages are not minimal stress Feet; all words are not subjected to the same minimality condition; truncations are not identical to minimal words; not all stems are prosodic words or stress Feet; and that not all stress domains are Prosodic Words.

As the name suggests, in Morpheme-Based Templates, the motivation for canonical shape is independent of the Prosodic Hierarchy. MBT builds on Dresher and van der Hulst's (1998) proposal that canonical morpheme shape follows from a correlation between morphological complexity and phonological complexity: "Lexical morphemes meet minimality requirements, not because they contain a stress Foot, but rather because they are heads and license complex phonological structure" (Downing, 2006b: 111). The central claim of Downing's morpheme-based GTT (MBT) is that "the basic morphology-prosody correlation is between a single morpheme and a single syllable". This line of thinking, she argues, is found in OT literature dealing with the correlation between morphological structure and prosodic constituents, namely that the minimal morphology-prosody correlation is between a single morpheme and a single syllable (Feng, 2004; McCarthy & Prince, 1994b; Russel 1997; and Urbanczyk, 1996).

Since stems are constituents minimally consisting of two morphemes (Root+fv), it is expected of them to have two syllables, one for each morpheme. This is predicted by the MORPHEME-SYLLABLE CORRELATION principle. The constraint PROSODICSTEM formalizes this disyllabic minimality requirement on Prosodic Stem, the morpho-prosodic constituent which corresponds to the morphological Stem.

3. The arguments

3.1 Deletion of initial vowel in vowel-initial stems

Like in many Bantu languages, the reduplicant in ciTonga is usually a verb stem (see Mtenje, 2006). That is, reduplication in this language does not usually copy material from the prefix string (e.g. subject agreement marker, object agreement marker and tense markers). This fact is illustrated in (6) below.

(6) *RED copies the verb stem*

ndi-ŋgu-[βeléβeet-a	'I spoke'
1st per.sing-past-speak	
ndi-ŋgu-βeléβét-á-<u>βeleβeet-a</u>	'I spoke repeatedly'
1st pers.sing.-past-speak-RED	

Thus, the size of the reduplicant (underlined) matches with the base (the morphological stem). Mtenje (2006), however, reports a case of mismatch between the base morphological stem and the RED when a vowel-initial verb stem is involved. He observes that when some vowel-initial verb stems are reduplicated, the reduplicant leaves out the initial vowels of the stems as shown in (7) below.

(7) *RED elides initial vowel of vowel-initial verb stems (Mtenje 2006)*

kw-[endeesja	'to drive'
kw-endesja-<u>ndeesja</u>	'to drive repeatedly'
kw-[ombeesja	'to cause to smatch'
kw-ombesja-<u>mbeesja</u>	'to cause to smatch repeatedly'
kw-[eseesja	'to try'
kw-esesja-<u>seesja</u>	'to try hard'

Mtenje's analysis is that deletion of initial vowels in vowel-initial stems is motivated by the need to ensure that reduplicative stems begin with a full onset. The point I want to add is that further data indicates that elision of initial vowels of vowel-initial stems is a common tendency amongst ciTonga speakers, especially the elderly ones. For instance, all of the vowel-initial stems/words in (7) above can surface as acceptable prosodic stems/words in some elderly

speech styles even when their initial vowels are deleted as illustrated in (8) below.

(8) *Elision of initial vowels in vowel-initial stems is normal*

Input form	*Output*	*English gloss*	
[endeesja	[ndeesja	drive	RED: ndesja-ndeesja
[ombeesja	[mbeesja	smatch	
[eseesja	[seesja	try hard	

Thus, both the base and the RED can omit the initial vowel in reduplication forms (e.g. *ndesja-ndeesja* 'drive a lot'). My suggestion therefore is that some (elderly) speakers try to avoid onsetless syllables in stem-initial positions. Thus, prefixing of [i] before monosyllabic verbs in most elderly speech style seems to be avoided for the same reason: Doing so would violate one of the strong principles in this speech style, the "No onsetless syllables in stem-initial positions". What we get as a result of this are sub-minimal stems in the output (e.g. *ljaa* 'eat', *mwaa* 'drink').

And where do these monosyllabic words get their length? We all know that length, especially penultimate lengthening, in many Bantu words is post-lexical and it is a result of phonological phrasing (or phrasal stress) (Chichewa: Kanerva, 1990; Tumbuka: Downing, 2006a; Makonde: Kraal, 2005; Matengo: Yoneda, 2005; ciTonga: Mkochi, 2014; etc). Since these phrases are monosyllabic, length or phrasal stress has to be phrase-final (cf. Mkochi, 2014). We know that this length is a result of phonological phrasing because when they appear in non-phrase-final position, their vowels are short and penultimate vowel lengthening shifts to the phrase's new penultimate syllable. When reduplication is involved, the RED which is prefixed to the base is also just a light syllable. These facts are illustrated in (9) below[5].

(9) *Lengthening is a result of phonological phrasing*

ljaa	'eat'
lja ukóoŋgwa	'eat too much'
lja-ljaa	'eat all sorts of things'
mwaa	'drink'
mwa ukóoŋgwa	'drink too much'
mwa-mwaa	'drink all sorts of stuff'

To sum up, many elderly speakers of ciTonga have a tendency to delete onsetless syllables in stem-initial positions. Thus, they do not prefix the vowel [i] before monosyllabic verb stems as a way of getting the required second syllable of the prosodic stem. Their sub-minimal prosodic stems, it seems, therefore, stem from the need to satisfy a higher principle of "No onsetless syllables in stem-initial positions".

3.2 Final LV deletion

In this section, I am going to show that monosyllabic stems/words which appear in both the common and elderly speech styles are lexically disyllabic. The fact that these stems are lexically disyllabic can be drawn from their cognates in closely related and neighbouring languages such as Chichewa and Chitumbuka. In both these languages, these stems/words have a second LV (liquid & vowel) syllable as given in (10) below[6].

(10) *Monosyllabic words in ciTonga are disyllabic in neighbouring languages*

CiTonga	Chichewa	Chitumbuka	English gloss
too	too.la	tóo.la	take
koo	koo.la	kóo.la	catch
poo	poo.la	póo.la	get cold
pee	pee.la	pée.la	get subdued
mee	mee.la	mée.la	germinate

The fact that LV syllables are elided in stem-final positions is well documented in literature on ciTonga by Turner (1952) and myself (Mkochi, 2014). According to Turner (1952: i-ii), native speakers of ciTonga are rapid speakers and because of this they are fond of slurring (gliding) or deleting final syllables. Turner writes in an introduction to his *Tonga-Tumbuka-English Dictionary*:

> The Tonga column gives the words only when they are different from the Tumbuka – the words being in many cases the same. The Tonga folk, being rapid speakers, slur or elide the final syllable of many words: e.g. *kulira* becomes *kuliya*, *kukura* becomes *kukuwa*, *kutora* becomes *kuto'* – the accent in the last example remaining on the final syllable,

indicating that the terminal *-ra* has been elided. In further inflections of the verb, however, the elided syllable is first restored, then the final *-ra* is again elided, so that *kutorera* becomes *kutore'*.

I have transcribed Turner's data as in (11) below. The slur is indicated by the symbol (^{j}) or (^{w}).

(11) *Final syllable slur and deletion in ciTonga (Turner, 1952, transcribed)*

Chitumbuka	*CiTonga*	*English gloss*
ku-.[líi.l-a inf-cry-fv	ku-.[líi-.^{j}a	to cry
ku-kúul-a inf-grow up-fv	ku-.[kúu-.^{w}a	to grow up
ku-.[tóo.l-a inf-take-fv	ku-.[tóo	to take
ku-.[to.l-ée.l-a inf-take-appl-fv	ku-.[tó.l-ee	to take for

Turner makes a significant observation that final syllable slur and deletion are a common phenomenon in this language. However, his analysis that ciTonga speakers delete or slur final syllables because they are rapid speakers is not true because ciTonga speakers delete or slur final syllables even when they are at their slowest speech rate.

A crucial observation about final syllable deletion in ciTonga is made by myself in Mkochi (2007/08) where I observe that liquid onsets to light final syllables are deleted. I observe that liquids do appear everywhere, but not in the position before the final mora. A generalization I draw is that there is no liquid in the position before the final mora. In terms of OT, I suggest a constraint **No l (fin. μ)** which bans liquids from occurring before the final mora.

(12) **No l (fin. μ)**

No liquid before final mora (Mkochi, 2007/08)

I also observe in Mkochi (2007/08) that a slur occurs only when the vowel of a syllable preceding the final syllable is a high vowel (e.g. input [*bi.kii.la* ⇒

[*bi.kii.^{y}a* ‘cook for’). My suggestion there is that once the liquid is deleted, the high vowel of a preceding syllable syllabifies in the onset of the following final syllable. In the forms where the final syllable is completely elided, I observe that all the preceding vowels there are [-high] (e.g. [*pe.mbee.la* ‘kindle for’ ⇒ [*pe.mbee*; vs. **pe.mbee.ya*). The analysis I make there is that non-high vowels, being more sonorous than high vowels, make bad onsets and as such they are not allowed in syllable margins in this language (cf. Zec, 2007). Thus, since the liquid of the final syllable is deleted, the final vowel [**-a**] is left stranded (onset-less). I argue there that a syllable without an onset violates the constraint **ONSET** which requires every syllable to have an onset. Since an onset cannot be obtained for the final syllable, the end result is that both the liquid and the low vowel of the final syllable are elided[7].

This description manages to capture some crucial facts about our monosyllabic verbs which are found in both common and elderly speech styles. They all have mid vowels which cannot be resyllabified to provide the much needed onset to the final vowel [a] when the undesirable liquid onset is elided. As a matter of further evidence, note that when these monosyllabic verbs are extended, the liquid consonant resurfaces as given in (13) below:

(13) *Liquid resurfaces in non-stem final positions*

koo	‘catch’
ko**l**eesj-a	‘cause to be caught’
mee	‘germinate’
me**l**aana	‘germinate on each other’

Just like with monosyllabic stems/words in elderly speech styles, the vowels of the monosyllabic verbs such as *koo* and *mee* seem to derive their length from phonological phrasing since they are short when they appear in non-phrase-final positions. And when reduplication is involved, the RED which I assume that it is prefixed to the base is also just a light syllable. These facts are illustrated in (14) below[8].

(14) *Lengthening is a result of phonological phrasing*

koo	'catch'
ko ukóoŋgwa	'catch a lot'
ko-koo	'catch all sorts of things'
mee	'germinate'
me ukóoŋgwa	'germinate a lot'
me-mee	'germinate anyhow'

To sum up, the monosyllabic verbs which are found in both the elderly and the common speech styles are lexically presented as being disyllabic. Their surfacing as subminimal forms can be clearly discerned from a constraint that forbids liquid onsets in positions before the stem/word-final moras as well as another constraint that forbids onsetless syllables. Thus, the bonafide size of the minimal word/stem in this language ought to be disyllabic and the level of analysis is undisputably the syllable. The following section outlines the relevant generalizations.

4. Generalizations

There are many generalizations which could be drawn from the preceding discussions. But for the present goals, an adequate grammar of ciTonga should be able to account for the following facts:

(a) Prosodic stems are minimally binary (at the level of the syllable).

(b) Prosodic stems have proper onset.

(c) Liquid onsets are not found in positions before final moras.

(d) Syllables have onsets

The following section suggests OT constraints which are responsible for the status quo.

5. OT constraints

I suggest the following (some are ad hoc) markedness constraints to be of use in accounting for the generalizations above.

(15) **PROSODICSTEM**

Prosodic stems are minimally binary (at the level of the syllable) (cf. Downing, 2006b).

This constraint is violated whenever there is an output stem that is monosyllabic.

(16) **STEMONSET**

Prosodic stems have proper onset (cf. Mtenje, 2006).

This constraint is violated whenever a prosodic stem begins with an onsetless syllable.

(17) ***Lμ#**

No liquid onset before final mora (cf. Mkochi, 2007/08).

This constraint functions like Mkochi's (2007/08) **No l (fin. μ)**. It is violated whenever a liquid onset appears before stem/word-final moras. Sometimes, satisfaction of this constraint is at the expense of stem/word minimality requirements since disyllabic words/stems can be rendered monosyllabic.

(18) **ONSET**

Syllables have onset (Kager, 1999, p. 93).

This constraint is violated whenever there is an onsetless syllable in a string.

We also need faithfulness constraints to ensure that the output forms do not mismatch with the input forms, or, at least, that the mismatches are minimal. The MAX family of faithfulness (correspondence) theory limits abstractness by requiring every segment of the input to also occur in the output, while the DEP family requires every segment of the output to occur in the input. Thus, applicable to our analysis are the following faithfulness constraints:

(19) **DEP-IO** (McCarthy & Prince, 1995a)

Every segment of the output occurs in the input.

This constraint ensures that there is no segment epenthesis. It is violated whenever a segment such as [i] is inserted before monomoraic verbs to satisfy stem/word minimality requirements.

(20) **MAX-IO** (McCarthy & Prince 1995a)

Every segment of the input occurs in the output.

This constraint ensures that all input segments surface in the output form. It is violated when, for instance, input segments of the syllable LV in stem-final positions, and initial vowels of vowel-initial stems, are deleted.

In the following section I proceed to show how the relevant constraints interact in order to come up with a suitable prosodic word/stem in ciTonga.

6. Tableaux

The interaction of constraints and how an optimal candidate is arrived at is displayed in a figure called a *tableau*. The constraints head the columns, with the highest ranked on the left. The candidates begin the rows, and the violations are shown by asterisks below the relevant constraints. An exclamation mark against a violation mark (!) indicates that this is a fatal violation which completely rules out the candidate. Shaded cells indicate that they do not matter because a decision has already been made by a high-ranking constraint. The symbol ☞ shows the winner and solid lines between constraints indicate crucial rankings while dashed lines indicate that the ranking is not (or not yet) crucial.

The tableaux in (21-23) indicate the interaction of relevant constraints which results into the generation of the surface minimal prosodic stems/words in ciTonga. I omit (penultimate) vowel lengthening in the candidates because, as argued elsewhere, this is a post-lexical process and recognized here as simply a red herring (cf. Anyanwu, 2001).

(21) *Minimal stems are disyllabic in common speech styles*

PROSODICSTEM >>STEM-ONSET, DEP-IO

[-lja 'eat'	PRSTEM	STEMONS	DEP-IO
☞ (a) i.lja		*	*
(b) lja	*!		

Candidate (21a) is optimal because it satisfies the high-ranked constraint PROSODICSTEM which requires prosodic stems to have a minimum of two syllables. It violates the low-ranking constraints STEMONS and DEP-IO. STEM-ONS requires all prosodic stems to have a proper onset while DEP-IO militates against insertion of segments such as the vowel [i]. These violations can be tolerated. Candidate (21b), however, is disqualified because it violates PROSODICSTEM.

(22) *Sub-minimal stems/words in some elderly speech styles*

STEMONS >> PRSTEM

/-lja/ 'eat'	STEMONS	PRSTEM
☞ (a) lja		*
(b) i.lja	*!	

Candidate (22a) is optimal because it satisfies the high-ranking constraint STEMONS which requires prosodic stems to have a proper onset. It violates the low ranking constraint PRSTEM which requires prosodic stems to be minimally disyllabic in this language. This violation can be tolerated. On the other hand, candidate (22b) is disqualified because it violates the high-ranking STEMONS.

(23) *Liquid onset deletion results into sub-minimal stems/words*

**Lμ#, ONSET >> PRSTEM, MAX-IO*

/kola/ 'catch'	*Lμ#	ONSET	PRSTEM	MAX-IO
☞ (a) ko.			*	**
(b) ko.a		*!		*
(c) ko.la	*!			

Candidate (23a) is optimal as it satisfies both high-ranking constraints *Lμ# and ONSET. *Lμ# forbids liquid onsets before stem/word-final moras while the constraint ONSET requires every syllable to have an onset. It violates the low-ranking constraints PRSTEM and MAX-IO, but these violations can be tolerated. Candidate (23b) is ruled out for violating one of the high-ranking constraints, ONSET. Finally, candidate (23c) is disqualified because it violates the high-ranking constraint *Lμ#. The following section concludes the paper.

7. Conclusion

Drawing evidence from an optional process of deletion of initial vowels in vowel-initial verb stems, and deletion of final syllables of LV (liquid plus vowel) type, I have argued in this paper that the real level of analysis in this language is the syllable and that the required size of the minimal prosodic stem/word is essentially disyllabic. Thus, the status of monosyllabic stems/words in this language is that they are sub-minimal and that they attain bimoraicity through a general process of phonological phrasing in Bantu languages. Minimally disyllabic stems satisfy the constraint PROSODICSTEM which requires prosodic stems to be minimally disyllabic (without an option of bimoraicity). Monosyllabic prosodic stems, however, violate this constraint. This violation, it has been argued, is triggered by the need to satisfy some high ranking constraints such as STEMONSET, *Lμ# and ONSET. STEMONSET allows only syllables which have onsets at stem-initial position (This constraint leads to deletion of vowels in vowel-initial stems). The constraint *Lμ#

disallows liquid consonants before stem-final moras while ONSET forbids syllables which have no onsets. The result of ranking the last two constraints (*Lμ# and ONSET) higher is deletion of LV syllables, which leaves lexically disyllabic verb stems/words monosyllabic at the surface level.

RED may involve prefixation in Malawian Tonga

ndi-ŋgu-[βeléβet-a	'I spoke'
ndi-ŋgu-<u>βelé-</u>[βeleβeet-a	'I spoke repeatedly'
ndi-ŋgu-<u>βeléβé</u>-[βeleβeet-a	'I spoke repeatedly'

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Notes

[1] Abbreviations: LV = light syllable with liquid onset, fv = final vowel, RED = reduplicative stem/reduplicant, 1st pers. sing. = first person singular pronoun, past = simple past tense, inf = infinitive marker, appl = applicative/dative marker, PL = penultimate vowel lengthening, '**.**' = syllable boundary, and μ = mora (a syllable with two moras is heavy/bimoraic).

[2] The terms common speech style and elderly speech style have been used in an ad hoc manner since there has been little or no significant research on ciTonga varieties.

[3]There is evidence to show that these verbs are indeed monomoraic. For instance, they can take other types of prefixes as in *kuú-mwa* 'to drink' *kuú-fwa* 'to die' and *kuú-ba* 'to steal' in which case the inserted vowel [i] disappears. [i] also disappears when an honorific /ni/ is suffixed to them, e.g. *swaa-ni*, *fwaa-ni*, etc. (see Mtenje 2006).

[4] I am using the term prosodic stem/word in an ad hoc manner and it can roughly be considered as a morphological stem, although mismatches can happen between the two due to some phonological requirements on output forms (prosodic stems). The term, however, has been independently motivated or suggested by different linguists working on different Bantu languages (e.g. Inkelas, 1989, 1993; Hyman, 1993; Hyman & Mtenje, 1999; Mchombo, 1993; Myers, 1987; Mutaka, 1994; Downing, 2006b; Downing & Kadenge, 2014, 2015).

[5] These observations sharply contrast with those presented by Mkochi (2009, 2014) who presents these monosyllabic verbs as being bimoraic in pre-phrase-final positions. Mkochi (2009, 2014) makes an error of judgement as my recordings and my own intuitions indicate that in natural settings these syllables are light in these positions. I

suspect that these syllables attain weight when emphasis is placed on them or when repetition, and not reduplication, is involved. Also note that Mkochi (2009, 2014) never made a recording of most of his data as he relied on his intuitions which may not be always accurate.

[6] The Chichewa and Chitumbuka data were verified with native speakers.

[7] It is also possible that the final vowel undergoes vowel coalescence.

[8] Similarly, this observation contradicts Mkochi (2009, 2014) who presents these verbs as having a long vowel in pre-phrase-final positions. See endnote 5 for details. Mtenje (2006) also suggests that reduplication in Malawian Tonga involves suffixation and not prefixation owing to this elision of the stem-initial vowel. However, I believe that reduplication in Malawian Tonga cannot be absolutely a suffixation process for the following reason. CiTonga speakers have a tendency to preserve only two or fewer syllables of the base and this reduced form falls on the left side of the normal verb stems as given below (see also Mkochi, 2014). This would point to the fact that reduplication in this language may also involve prefixation.