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Resolving verbal reduplication paradoxes in Malawian Tonga

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Abstract

The paper describes three verbal reduplication paradoxes in Malawian Tonga, a southern Bantu language spoken in the northern part of Malawi. The reduplicant (RED) is either total or partial and is either prefixed or suffixed to the base. The problem of whether the relevant level of prosodic (reduplicative) stem analysis is the syllable or the mora and thus whether the minimal size of RED should be two syllables or two moras is considered. The paper argues that this language offers three possibilities for reduplication, namely partial prefixal reduplication, total suffixal reduplication, and partial suffixal reduplication. Thus, reduplication in the language is optionally prefixal or suffixal, although the latter appears to be the default. The paper also argues that the relevant unit of prosodic stem analysis is typically the syllable and that reduplicative prosodic stems, like the base stem, are therefore required to be minimally bisyllabic, as in many other Bantu languages.

Keywords: Bantu, Malawian Tonga, phonology, reduplication, minimality

1. Introduction

This paper seeks to further understanding of the process of verbal reduplication in Malawian Tonga (popularly known as "ciTonga" by its speakers), an understudied southern Bantu language spoken in the northern part of Malawi.[1] The small number of available works (Mkochi 2009, 2014; Mtenje 2006) on verbal reduplication (to denote 'doing something repeatedly') in this language have been characterised by three paradoxes: firstly, ciTonga behaves like many other Bantu languages in the sense that it copies the whole of an inflected verb stem (the base stem) (e.g. *βeleβet-a=βeleβeet-a* 'speak repeatedly') (Mtenje 2006). On the other hand, I present some data in Mkochi (2014) which indicate that, in addition to total reduplication, there is also an option of partial prefixal reduplication in the same language (e.g. *βele=βeleβeet-a* or *βeleβe=βeleβeet-a*).

The second paradox is that the reduplicant (RED) is presented by Mtenje (2006) as being suffixed to the base, as evidenced by the optional deletion of the initial vowel of vowel-initial verb stems when such stems are reduplicated. On the other hand, relying on partial reduplication

[1] Malawian Tonga is not mutually intelligible with Zambian Tonga.

as my evidence, I argue in Mkochi (2014) that RED in this language is actually prefixed to the base stem.

Thirdly, both Mtenje (2006) and I (Mkochi 2014) agree that RED has a stem status in this language and that reduplication involves the compounding of two stems (the RED stem and the base stem). We also both argue that ciTonga requires the phonological reduplicative stem to be minimally bimoraic (e.g. *koo* 'catch'). The paradox arises from evidence that indicates that the required minimal size of stems (including REDs) in ciTonga is two syllables (i.e. stems must be bisyllabic). For example, monosyllabic verb stems such as *lya* 'eat' prefix an epenthetic vowel /i/ to the stem to make it minimally bisyllabic (*ii.lya*).

In the present paper, I present additional data that indicate that ciTonga offers three possibilities for reduplication, namely (i) partial prefixal reduplication, (ii) total suffixal reduplication, and (iii) partial suffixal reduplication. Thus, reduplication in the language is optionally prefixal or suffixal, although the latter appears to be the default. Another crucial claim I make is that the relevant unit of prosodic stem analysis in this language is, strictly speaking, the syllable and not the mora, and that reduplicative prosodic stems are therefore required to be minimally bisyllabic. Surface monosyllabic, albeit bimoraic, reduplicative stems in this language (e.g. *koo*) and ones that motivate Mtenje's (2006) and Mkochi's (2009, 2014) moraic analysis of the facts are shown to underlyingly possess a CVC root and an inflectional final vowel (CVC-V), which usually conditions a CV.CV output form (cf. Downing 2005, 2006b). I base some of my arguments on phonological processes such as tonal non-transfer and stem-final LV deletion (where L = liquid, V = vowel). The RED in ciTonga copies only the segmental material from the base stem; it does not copy the high tone. The CV.CV output form fails to occur when the final consonant of the root is a liquid, which usually gets deleted. The deletion of the liquid and the onsetless final vowel results in subminimal (monosyllabic) prosodic stems (e.g. /*kol-a*/ ~ [*koo*] 'catch').

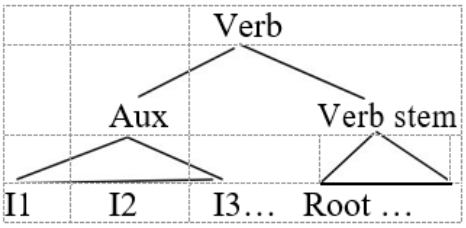
2. The reduplicative verb complex as a compound stem

Earlier approaches to the Bantu languages assumed that there was no significant structure in so far as the verb was concerned; a common assumption in the description of languages with rich morphology (Lounsbury 1953; Young and Morgan 1980:107; and Simpson and Withgott 1986). In this view, word formation is regarded as a process of stringing morphemes together (Longacre 1960:63). For instance, each of the positions in the sequence in the template in (1) can be filled by a certain class of morpheme in ciTonga, namely subject marker (SM), tense/aspect/mood, object marker (OM), a root, one or more derivational suffixes (extensions), and a terminal inflectional final vowel (mainly /a/).

(1) Verb >> SM (Tense) (OM) Root (Ext*) Term

According to Myers (1998), linguists posited such simple structures because they did not find any evidence of constituency within the word. Since Barrett-Keach (1980, 1986), however, there has been overwhelming evidence for such constituent structure in the Bantu verb. Following Barrett-Keach's (1980) work on Swahili, summarised in Barrett-Keach (1986), Myers (1998) argues that the (inflected) verb in Bantu languages is divided into two major constituents: a verb stem headed by the verb root and a constituent consisting entirely of bound inflectional markers, as in (2) below:

(2)

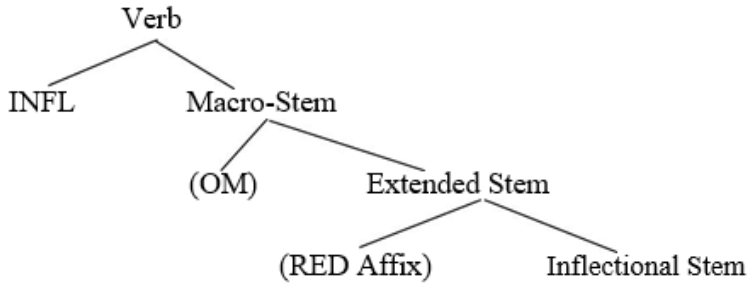


The constituent "Aux" is so called because it fits Steel et al.'s (1981) description of this category; i.e. it consists of a fixed sequence of closed-class items, including those marking tense and/or modality. Myers (1998) thus calls word-internal Aux the "inflectional stem". According to Myers, such a view of the verb converges with proposals made for other highly inflected languages in a variety of language families, such as Navajo, Sekani, the Papuan language Nimboran, and Korean (McDonough 1990; Helpern 1992; Inkelas 1993; and Kim 1992, respectively), where constituency has been argued for and the inflected verb is seen as a compound structure consisting of two stems, one verbal and the other inflectional.

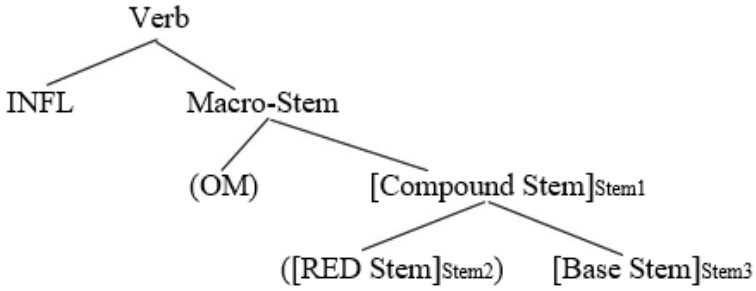
Where reduplication is involved, it has been argued that the RED + base complex forms a single constituent. There are two basic proposals for labelling this constituent, depending on the morphological category – affix vs. stem – assigned to the RED morpheme. For example, Odden (1996a, b) assumes that the RED morpheme is an affix, forming an extended stem constituent with its base, the inflectional (or derivational) stem, as shown in (3a).[2] Myers and Carleton (1996) similarly assume that the RED morpheme is an affix in Yao, but they are not as explicit in labelling the constituent containing the RED and the base verb stem. The alternative proposal, found in e.g. Downing (2000), Hyman, Inkelas and Sibanda (1999), Inkelas and Zoll (1999, 2000), and Myers and Carleton (1996), is that RED is a verb stem and forms a compound stem with the base stem, as shown in (3b).

[2] There is evidence in many Bantu languages that the macrostem domain (which comprises the OM and the compound stem) plays a crucial role in phonological processes such as the realisation of high tones in verbs. Hyman and Mtenje (1994) and Mtenje (2001), for example, provide examples of Chichewa high tones in the tenses where the presence or absence of high tones on the final or penultimate vowel depends on phonological factors that occur outside of the stem itself – in particular, whether the OM is itself preceded by a high tone that has been assigned by a tense marker placing H to its right (e.g. the infinitive) or by a prelinked H. I will not discuss the role of the OM in ciTonga, as this is beyond the scope of this paper.

(3a) Affixal structure for reduplicated Bantu verb stems (Downing 2003, adapted from Odden 1996b:113)

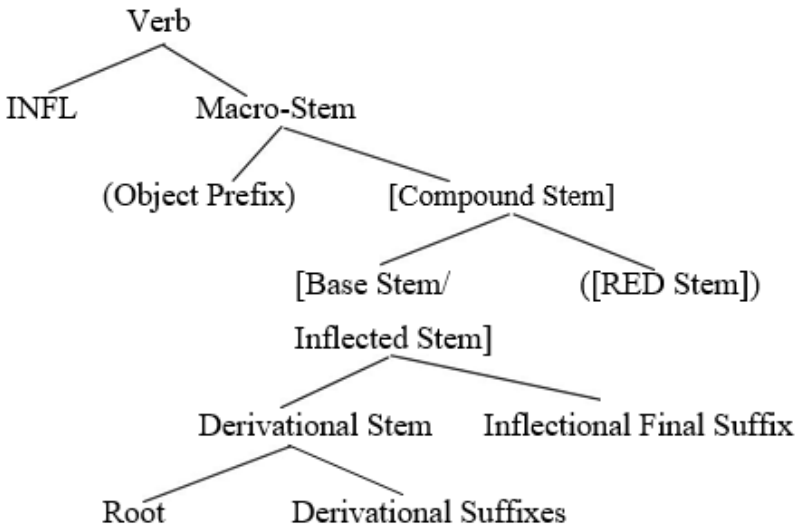


(3b) Compound structure for reduplicated Bantu verb stems (Downing 2003, adapted from Myers and Carleton 1996:50)



Downing (2003) argues that there is a body of independent evidence from a number of Bantu languages showing that RED is always best analysed as a verb stem forming a compound with the base, rather than as an affix. Downing (1999, 2000) shows that the size of RED is more consistent with that of stems than affixes. For instance, Bantu verb stems are typically minimally bisyllabic. Similarly, RED is minimally bisyllabic in most Bantu languages, even in cases of partial reduplication, and may be several syllables long in languages where total verb stem reduplication is found. In contrast, affixes generally contain at most a single syllable, with a few exceptional bisyllabic forms (see e.g. Doke 1954, 1982; Hyman 1993; and Meeussen 1967 for discussions of Bantu verbal morphology). This size difference is typical of affixes vs. stems: cross-linguistically, affix-like REDs tend to be monosyllabic, while root- or stem-like REDs are longer (McCarthy and Prince 1994). This scenario, as we are going to see in the following sections, is applicable to ciTonga. In the present paper, I assume the verb complex in (4) below.

(4) Bantu verb structure (adapted from Hyman 2009a and Downing and Kadenge 2015):



RED is shown as following the base here because I am going to argue that suffixal reduplication is the default. The relative positions of RED and the base would have to be reversed in cases where RED appears to be prefixed to the base (cf. Downing 2003).

I am a native speaker of Malawian Tonga and thus the primary source of most of the data. I have also relied on my fellow native speakers' intuition where my own intuition was hazy. Secondary sources are acknowledged when used. The dialect I discuss is that of the Mpamba area in the Nkhata Bay District of Malawi. The paper is organised as follows: section 2 discusses the structure of the verb in Bantu languages and the type of verb complex I have adopted for this paper. Section 3 presents the paradoxes, and in section 4 I attempt to resolve them. Section 5 presents a note on vowel-lengthening in ciTonga and section 6 concludes the paper.

3. The paradoxes

3.1 Total vs. partial reduplication and prefixation vs. suffixation

The most conventional form of verbal reduplication in ciTonga is first presented by Mtenje (2006), who makes a number of claims about it. To begin with, Mtenje observes that verbal reduplication in this language behaves as in many other Bantu languages in the sense that it copies an inflected verb stem (the base stem) and attaches it to the base stem as a suffix, as shown in the citation forms in (5) below. RED is underlined, and a hyphen represents a morpheme boundary. The equals sign (=) is used to indicate the boundary between RED and its base stem, from which it copies segmental material.

(5a) Reduplication of a verb stem (Mtenje 2006)

Base stem	**Reduplication**	**English gloss for reduplicated verb**
viin-a	*vin-a=viin-a*	'dance repeatedly'
luut-a	*lut-a=luut-a*	'go repeatedly'
zumbuuw-a	*zumbuw-a=zumbuuw-a*	'reveal repeatedly'
sambiizy-a	*sambizy-a=sambiizy-a*	'teach repeatedly'
leleesy-a	*lelesy-a=leleesy-a*	'look/see repeatedly'

(5b) Reduplication of a verb root plus an extension and a final vowel (Mtenje 2006)

Base stem	**Reduplication**	**Meaning of reduplicated verb**
vin-iisy-a	*vin-isy-a=vin-iisy-a*	'make to dance repeatedly'
lut-ii-ya	*lut-i-ya=lut-ii-ya*	'go for repeatedly'
zumbuw-iisy-a	*zumbuw-isy-a =zumbuw-iisy-a*	'cause to reveal often'

Another fact presented by Mtenje (2006), one that is not disputed here, is that, as in many other Bantu languages, reduplication in ciTonga does not copy material dominated by the INFL and OM nodes. This is seen in (6) below, where the infinitive prefix *ku-*, which comes under INFL, and the object markers *-mu-* 'him/her' and *-βa-* 'them', which appear under OM, are not part of RED. The symbol "[" demarcates the boundary between the verb stem to the right and the pre-stem affixes.

(6) RED does not copy INFL and OM (Mtenje 2006)

Verb	**Reduplication**	**Meaning of reduplicated verb**
ku-[víin-a	*ku-[vín-á=viin-a*	'to dance repeatedly'
ku-[zúmbuuw-a	*ku-[zúmbúw-á=zumbuuw-a*	'to reveal often'
ku-mu-[vw-íiy-a	*ku-mu-[vw-íy-á=vw-iiy-a*	'to obey him often'
ku-βa-[sámbiizy-a	*ku-βa-[sámbízy-á=sambiizy-a*	'to teach them repeatedly'

Mtenje also argues that reduplication in ciTonga involves suffixation and not prefixation. Evidence comes from the reduplication of vowel-initial verb stems like *end-eesy-a* 'drive', *omb-eesy-a* 'cause to hit', and *es-eésy-a* 'try hard'. Using the infinitive marker *ku-*, Mtenje shows that RED is attached to the right of the base. According to Mtenje, there are two options for reduplicating vowel-initial verb stems, namely reduplicating the whole inflected verb stem (7a) or part of it (7b).

(7) Reduplication of vowel-initial verb stems

(7a)	*kw-end-ésy-á=kw-end-eesy-a*	'to drive a lot'
	kw-omb-ésy-á=kw-omb-eesy-a	'to cause to hit a lot'
	kw-es-ésy-á=kw-es-eesy-a	'to try hard a lot'
(7b)	*kw-end-ésy-á=ndeesya*	
	kw-omb-ésy-á=mbeesya	
	kw-es-ésy-á=seesya	

Mtenje argues that in the latter cases, which involve reduplicating part of the base stem, the second portion of the reduplicated form is a truncated part of the base stem (without the initial vowel). Now, he contends, if reduplication were prefixation, requiring the attachment of RED to the left of the base, we would ordinarily expect all the segments of the base to appear as part of the output of reduplication, but this is not the case. Mtenje thus concludes that it is therefore difficult, under a prefixation analysis, to account for the loss of the base's initial vowels in the truncated reduplicated form given here. Mtenje's (2006) argument is supported by others such as Downing and Kadenge (2015), who observe that it is common for onsetless (stem-)initial vowels to fail to reduplicate, both in Bantu languages and cross-linguistically (see also Downing 1998a, b).

In Mkochi (2014), however, I dispute these claims. I observe that spoken ciTonga has a pattern in which RED copies only part of the base stem. This partial reduplication, which appears to be optional, indicates that RED may be prefixed to the base, as given in (8) below. Note that when the stem has more than two syllables, two or more syllables can be copied, but the minimum number of syllables that can be copied is always two. This tendency is unlike partial reduplication patterns in many Bantu languages, where RED copies only two initial syllables from the base stem.

(8) Optional "partial reduplication" indicates that RED is prefixed to the base

Unreduplicated verb	**Partial reduplication**
(a) *ndi-ŋgu-[léleesy-a* 'I looked'	*ndi-ŋgu-[lélé=leleesy-a*
(b) *mb-a-ku-[βélέβeet-a* '	*mb-a-ku-[βélέβé=βeleβeet-a*
'they are talkative'	*mb-a-ku-[βélé=βeleβet-a*
(c) *t-a-[βélέβét-ésy-án-aaŋg-a*	*t-a-[βélέβétésyáná=βeleβet-esy-an-aaŋg-a*
'we used to talk to each other'	*t-a-[βélέβétésyá=βeleβet-esy-an-aaŋg-a*
	t-a-[βélέβété=βeleβet-esy-an-aaŋg-a
	t-a-[βélέβé=βeleβet-esy-an-aaŋg-a
	t-a-[βélé=βeleβet-esy-an-aaŋg-a

It should be noted that the partial reduplication discussed in this section cannot be attributed to fast speech in this language, since speakers make partial copies of the 'base' even when they are speaking slowly.

3.2 The minimal size of RED: Bimoraic vs. bisyllabic

I am going to start this section by defining the terms "prosodic stem" and "prosodic word", to which I am going to refer in my discussion. It has been argued in various works that phonological processes cannot refer directly to morphosyntactic categories like stem and word; rather, they can only refer to prosodic constituents (Inkelas 1989, 1993; Nespor and Vogel 1986; and Selkirk 1986). In what is termed the "indirect reference hypothesis", therefore, the distinction between stem- and word-level domains is most directly formalised as a distinction between prosodic stem and prosodic word. Both the prosodic stem and prosodic word have been argued to be phonological domains in a variety of Bantu languages (e.g. Downing 1999; Downing and Kadenge 2015). Thus, prosodic word and prosodic stem "are coextensive with the corresponding morphological constituents: MWord and MStem". In other words, "prosodic constituents 'match' morphosyntactic constituents" (Downing and Kadenge 2015:292) .[3]

The best evidence for the constituent status of the prosodic stem and word in Bantu languages is the fact that prosodic and morphological constituents may be misaligned (Downing 1998a, b, 1999, 2006b; Downing and Kadenge 2015; Inkelas 1989, 1993; Mkochi 2014; Mtenje 2006; Nespor and Vogel 1986; Selkirk 1986, 2011).[4] For example, the phonological requirement that the minimal prosodic stem/word be minimally bisyllabic causes a mismatch between the prosodic stem and the morphological stem (including the RED stem) in ciTonga. For example, as in many other Bantu languages, vowels are inserted as prefixes to satisfy a prosodic stem minimality requirement when the bisyllabic minimality condition is not satisfied. This is shown in (9) below, where the monosyllabic verb roots *-za* 'come', *-lya* 'eat', *-fwa* 'die', *-mwa* 'drink', and - *mba* 'sing' all surface with an inserted vowel /i/ when they are in citation form (Mtenje 2006).[5] A period (.) indicates a syllable boundary.

(9) The minimal word is bisyllabic (Mtenje 2006)

ii.za 'come'
ii.lya 'eat'
ii.fwa 'die'
ii.mwa 'drink'
ii.mba 'sing'

[3] There are many arguments for distinguishing stem-level vs. word-level domains for phonological processes (e.g. Bermudez-Otero 2011, Downing and Kadenge 2015 and Kiparsky 2000). In this paper I do not delve into these issues, as they are beyond the scope of the paper.

[4] It should be emphasised that I use the terms "prosodic word" and "prosodic stem" by default because there has not been any formal motivation of such prosodic categories in ciTonga, and it is not in the best interest of this paper to provide such evidence. Here I do not review these works in detail, because the paper's goals can still be achieved without doing so.

[5] Mtenje (2006) argues further that there is independent evidence to show that these verbs are indeed monosyllabic. For instance, they can occur without the prefix /i/ as imperatives with the suffix *-ni* (marking the second person plural pronoun) as in *za-ni* 'you come', *rya-ni* 'you eat', *mwa-ni* 'you drink', *mba-ni* 'you sing', and *fwa-ni* 'you die'. Further evidence for the monosyllabicity of these verbs comes from the fact that they can take other types of prefixes, apart from the inserted vowel /i/, as seen in the following subjunctive forms (where the final vowel /e/ is the subjunctive vowel): *ti-mwe* 'we should drink', *zi-fwe* 'they should die', *u-rye* 'you should eat', *ti-fwe* 'we should die', etc.

According to Mtenje (2006), when reduplicating monosyllabic verbs, RED conforms to the minimality condition by maintaining the inserted vowel when RED is suffixed to the base, as shown in (10) below.

(10) RED is minimally bisyllabic (Mtenje 2006)

iza=<u>iiza</u>	'come a lot'
irya=<u>iirya</u>	'eat a lot'
ifwa=<u>iifwa</u>	'die a lot'
imwa=<u>iimwa</u>	'drink a lot'
imba=<u>iimba</u>	'sing a lot'

Thus, it is clear from the above data that prosodic stems (both RED and base stems) are required to have at least two syllables. What is puzzling, though, is the occurrence in the same language of RED stems and base stems that are monosyllabic (Mkochi 2009, 2014; Mtenje 2006). This is illustrated in (11).

(11) Surface monosyllabic verb stems in ciTonga (Mtenje 2006)

(a)	*too*	'take'
(b)	*koo*	'catch'
(c)	*mee*	'grow (of leaves/hair)'
(d)	*ku-[tóo*	'to take'
(e)	*ku-[kóo*	'to catch'
(f)	*ku-[mée*	'to grow (of leaves/hair)'

According to Mtenje (2006), and as I also observe in Mkochi (2009, 2014), the verbs in (11a-c) above can occur as independent citation forms, just like bisyllabic verb stems. This suggests that what counts prosodically for a verb (stem) to be well-formed, according to these cases, is for it to be minimally bimoraic. This is further supported by the fact that when these verbs are reduplicated, only the stem is involved, and any prefixes attached to them are left out, as seen in (12) below.

(12) Surface monosyllabic RED stems/words in ciTonga (Mtenje 2006)

ku-[tóo=<u>too</u> (sic)[6]	'to take repeatedly'
ku-[kóo=<u>koo</u> (sic)	'to catch repeatedly'
ku-[mée=<u>mee</u> (sic)	'to grow repeatedly'

Thus, it is concluded that the relevant unit for RED's prosodic well-formedness is the mora and not the syllable, and that RED, like the base stem, must therefore be minimally bimoraic and not necessarily bisyllabic. In the following section, I endeavour to resolve these paradoxes.

[6] The base is supposed to be a light syllable (e.g. *ku-to=<u>too</u>*).

4. Resolving the paradoxes

4.1 Tonal non-transfer

As Downing (2003) and many others observe, the defining trademark of the process of reduplication is that the base and the reduplicated portion of the word should have identical pronunciations (Wilbur 1973 cited in Downing 2003). Mismatches between RED and its base are found frequently, however, and analysing these mismatches has been an important area in phonological research since studies such as Marantz (1982). For example, RED can be constrained to have less marked prosodic or segmental structure than the base. This phenomenon is called the "emergence of the unmarked" (TETU) effect (Alderete et al. 1999; McCarthy and Prince 1995, 1999).

There are three common patterns of tonal correspondence in Bantu verbal reduplication. Two of the patterns show either a match between the tone of RED and the base (tonal transfer) or a markedness-motivated mismatch (TETU) familiar from other work on reduplication. The third pattern is the less familiar one: the entire RED + base complex forms a single domain for realisation of the base stem tone (Downing 2003). Downing (2003) shows that this three-way variation in tonal correspondence found in reduplicated verb stems follows if the reduplicative complex is a compound verb stem. All these patterns are then accounted for by constraints aligning verb stem tone to the constituents of a compound stem.

Literature on tonal transfer in Bantu reduplication has focused on two possibilities of realising the tone within the reduplicative complex. Either tone is identical in RED and base, or high tones are realised only on the base stem. Prosodic information in RED often corresponds as faithfully to the base as segmental information does (Akinlabi 1997; Clements 1985; Downing 2003; Inkelas and Zoll 1999, 2000; Mutaka and Hyman 1990; Myers and Carleton 1996; Steriade 1988; Walsh 1992). As Downing (2003) observes, however, tonal transfer appears to be rare in Bantu verbal reduplication. According to Hyman and Mtenje (1999), it is only found in Chichewa, as given in (13):

(13) Chichewa verbal reduplication (Myers and Carleton 1996:49)

Unreduplicated		**X 'repeatedly'**
tambalalá	'stretch out your legs'	*tambalalá=tambalalá*
phikitsá	'really cook'	*phikitsá=phikitsá*
ndi-ma-[sangalátsa	'I please' (habitual)	*ndi-ma-[sangalátsa=sangalátsa*
ti-[sangalátse	'let's please'	*ti-[sangalátse=sangalátse*

More common in Bantu verbal reduplication systems is the TETU pattern, which optimises tonal transfer. In this pattern, RED always has low (unmarked) tone, even if the corresponding base stem syllable has high tone (Akinlabi 1997; Alderete et al. 1999; Downing 2003; McCarthy and Prince 1995, 1999). An example of this pattern is provided by the KiHehe data in (14) below. In KiHehe, a high tone occurs on the stem-initial mora in unreduplicated verbs. In the corresponding reduplicated forms, the high tone is realised on the initial mora of the second half of the RED + base complex (Odden and Odden 1996). The first half bears a low (unmarked) tone:

(14) KiHehe verbal reduplication (Odden and Odden 1985, 1996)

Unreduplicated	**'X a bit'**	**Meaning of unreduplicated forms**
si-tu-[fúlugala	*si-tu-[fulugula=fúlugula*	'we won't be tired'
si-tu-[déeña	*si-tu-[deña=déeña*	'we won't cut'
si-tu-[fúuwa	*si-tu-[fuwa=fúuwa*	'we won't believe'

As Odden and Odden (1985) and McCarthy and Prince (1995:324-325) argue, the second half of the reduplicative complex is plausibly the base stem in KiHehe, as marked prosody, like high tones, occurs only in the second half.

A similar scenario occurs in Shona total reduplication. High tones are only realised on the first half of the RED + base complex. The second half bears the unmarked tone. In the example in (15) below, only stems are given with the tone pattern they have when they follow *handáká*, meaning 'I didn't X'.

(15) Shona verbal reduplication: total reduplication (Hewitt 1992; Odden 1984:35)

Unreduplicated	**X frequently**	**Meaning of unreduplicated forms**
-bikísa	-bikísa=bikisa	'cause to cook'
-bikísíra	-bikísíra=bikisira	'cause to cook for'
-tóresá	-tóresá=toresa	'cause to take'

Thus, the first half of the reduplication complex in Shona is plausibly the base stem, as marked prosody such as high tones occurs only in the first half.

If this argument can be extended to ciTonga, we can conclude that reduplication in this language behaves as in Shona, because the high tone appears only on the first half of the (total suffixal) reduplication complex. Verb stems (bare stems) in this language are either low-toned completely or only bear one underlying high tone, as given in (16) and (17). The high tone usually surfaces on the penultimate syllable (Mtenje 1994/5, 2006).

(16) Lexically low-toned verbs (Mtenje 2006)

viin-a	'dance'
luut-a	'go'
sambiizy-a	'teach'
zumbuuw-a	'reveal'

(17) Lexically high-toned verbs (Mtenje 2006)

beéy-a	'belch'
k^{h}umbiíy-a	'admire'
sambiíy-a	'swim'
feluúk-a	'fail'
c^{h}imbiiy-a	'run'
tondeék-a	'fail'

Mtenje (2006) also shows that when these verbs appear in phrase-medial positions, the high tone surfaces on the final syllable of the verb and the penultimate syllable is short and low-toned, as seen in (18).

(18) High-toned verbs in phrase-medial position (Mtenje 2006)

bey-á ukóoŋgwa	'belch a lot'
k^{h}umbiy-á mu-nthikazi	'admire a woman'
sambiy-á ci-zuŋgu	'learn English'
tondek-á ma-yeeso	'fail exams'

According to Mtenje (2006), the verbs in (18) have one underlying tone, which is shifted and associated with the final syllable by rule. When the verbs are in isolation, another rule, High Tone Retraction, then disassociates the high tone from the final vowel and re-links it with the second mora of the long penult (after the application of penultimate vowel lengthening), thus accounting for the rising tones on the penultimate syllable. Mtenje also argues that if the verb is phrase-medial, as in (18) above, penultimate vowel lengthening fails to apply and the penultimate vowel is short. In this case, retraction does not apply (due to the shortness of the vowel), and the high tone is maintained on the final vowel of the verb.

Similarly, Mtenje (2006) observes that when the high-toned bare (unprefixed) forms are reduplicated, the high tone surfaces on the last tone-bearing unit of the base and RED remains low-toned completely, as given in (19) below.

(19) Tonal non-transfer in ciTonga verbal reduplication (cf. Mtenje 2006)

bey-á=beey-a	'belch a lot'
kh^{u}mbiy-á=k^{h}umbiiy-a	'admire a lot'
sambiy-á=sambiiy-a	'learn a lot'
feluk-á=feluuk-a	'fail a lot'
c^{h}imbiy-á=c^{h}imbiiy-a	'run a lot'

Mtenje's (2006) evidence of the optional deletion of RED's initial vowels when vowel-initial verb stems are reduplicated (e.g. *endesya=ndeesya* 'drive repeatedly') and of tonal non-transfer cases seems to support the claim that RED in this language follows the base stem. However, we must still account for optional partial reduplication, which led Mkochi (2014) to settle for the prefixation stance. Note that Mkochi's (2014) arguments for partial reduplication and prefixation relied on data where only stem-initial syllables were copied from the base. Partial prefixal reduplication is also supported by evidence of tonal non-transfer, as given in (20) below.

(20) Tonal non-transfer in partial prefixal reduplication

c^{h}imbi=c^{h}imbiíya	'run a lot'
tonde=tondeéka	'fail a lot'
k^{h}umbi=k^{h}umbiíya	'admire a lot'
sambi=sambiíya	'swim a lot'

The prefixal RED is completely toneless (or low-toned) in the forms in (20) above. My current position is that ciTonga offers three possibilities for reduplication, namely (i) partial prefixal reduplication, (ii) total suffixal reduplication, and (iii) partial suffixal reduplication (exemplified in (21) below), although the factors that govern the choice between these three strategies are not currently known. For the third option, I have observed that ciTonga speakers also have a tendency to copy any number of stem-final syllables, in which case reduplication seems to involve suffixation as well.

(21) RED may optionally be suffixed to the base?

leleesy-a 'look'	*lelesy-a=<u>leesya</u>*
lelesy-an-aaŋg-a 'be looking at each other'	*lelesy-an-aŋg-a=<u>syanaaŋga</u>* *lelesy-an-aŋg-a=<u>naaŋga</u>*
mb-a-ku-[βélέβeet-a 'they are talkative'	*mb-a-ku-[βélέβét-á=<u>leβeeta</u>* *mb-a-ku-[βélέβét-á=<u>βeeta</u>*
t-a-[βélέβét-ésy-án-aaŋg-a 'we used to talk to each other'	*t-a-[βélέβét-ésy-án-áŋg-á=<u>leβetesyanaaŋga</u>* *t-a-[βélέβét-ésy-án-áŋg-á=<u>βetesyanaaŋga</u>* *t-a-[βélέβét-ésy-án-áŋg-á=<u>tesyanaaŋga</u>* *t-a-[βélέβét-ésy-án-áŋg-á=<u>syanaaŋga</u>* *t-a-[βélέβét-ésy-án-áŋg-á=<u>naaŋga</u>*
t^{h}ambaliiy-a 'stretch one's legs'	*t^{h}ambaliy-a=<u>mbaliiya</u>* *t^{h}ambaliy-a=<u>liiya</u>*

Note that partial suffixal reduplication is also supported by evidence of tonal non-transfer, as shown in (22) below. The base tone is never copied by the suffixal RED. The fact that the reduction of either prefixal or suffixal RED does not go beyond two syllables is of theoretical importance. It indicates that the general stem minimality requirement of two syllables is not violated.

(22) Tonal non-transfer in partial suffixal reduplication

c^{h}imbiy-á=<u>mbiiya</u>	'run a lot'
tondek-á=<u>ndeeka</u>	'fail a lot'
k^{h}umbiy-á=<u>mbiiya</u>	'admire a lot'
sambiliy-á=<u>liiya</u>	'swim for a lot'

Note that the suffixal RED in the data in (22) above is also completely toneless (or low-toned). Thus, we can conclude that reduplication in ciTonga is optionally prefixal or suffixal. The suffixal strategy appears to be the default one, since it is available in both partial and total reduplication. This is the strategy on which this paper focuses.

I now turn to tonal non-transfer in tensed verbs. To begin with, Mtenje (2006) observes that the realisation of high tones in ciTonga tensed verbs, as in most Bantu languages, is conditioned by the tense-aspect morphology of the verb. That is, high tones are assigned to various domains

in the verb stem, depending on the tense and sometimes the object prefix of the verb. In tensed verbs, underlyingly low-toned stems like those given again in (23) below acquire high tones, which are assigned to certain positions in the verb stem by the tense prefix. Most tenses assign the high tone to the initial syllable of the verb stem. According to Mtenje (2006), when these verbs are reduplicated, as in (24), the second half of the compound stem (the RED), as in Shona, has no tone transferred to it (the data are mine).

(23) Low-toned verbs

viin-a	'dance'
thaaß-a	'run'
leleesy-a	'look'
lel-esy-aan-a	'look at each other'
ßeleßet-esy-aan-a	'cause each other to speak'

(24) Tensed verbs

	Unreduplicated		**'X repeatedly'**
(a)	*ndi-ŋgu-[víin-a*	'I danced'	*ndi-ŋgu-[vín-á=<u>viina</u>*
(b)	*ndi-ŋgu-[t^{h}áaβ-a*	'I ran'	*ndi-ŋgu-[t^{h}áβ-á=<u>t^{h}aaβa</u>*
(c)	*ndi-ŋgu-[léleesy-a*	'I looked'	*ndi-ŋgu-[lélésy-á=<u>leleesya</u>*
(d)	*ti-ŋgu-.[lelésy-aan-a*	'we looked at each other'	*ti-ŋgu-[lelésy-án-á =<u>lelesy-aan-a</u>*
(e)	*ti-ŋgu-[ßeléßét-ésy-aan-a*	'we caused each other to speak'	*ti-ŋgu-[ßeléßét-ésy-án-á =<u>ßeleßet-esy-aan-a</u>*

As shown in the unreduplicated forms in (24a-c) above, where the inflected verb stem has two or three syllables, the high tone is assigned to the stem-initial syllable. However, when the morphological stem has four or more syllables (24d-e), the high tone is realised on the second syllable of the stem. The tone then spreads rightwards, but it does not spread to the last two syllables (24e). When these verbs are reduplicated, the high tone spreads to the final syllable of the base, but it does not spill over to the second half of the reduplicative compound stem. Crucially, RED appears not to copy the tense-sponsored high tone from its base. This scenario is also forthcoming when partial suffixal reduplication is involved: tense-sponsored tone is never copied by the partial suffixal RED, as given in (25) below.

(25) Tense-sponsored tone in partial suffixal reduplication

ndi-ŋgu-[lélésy-á=<u>leesya</u>	'I looked a lot'
ti-ŋgu-[lelésy-án-á=<u>lesyaana</u> *ti-ŋgu-[lelésy-án-á=<u>syaana</u>*	'we looked at each other a lot'
ti-ngu-ßeléßét-ésy-án-á=<u>leßetesyaana</u> *ti-ngu-ßeléßét-ésy-án-á=<u>ßetesyaana</u>* *ti-ŋgu-ßeléßét-ésy-án-á=<u>tesyaana</u>* *ti-ŋgu-ßeléßét-ésy-án-á=<u>syaana</u>*	'we talked to each other a lot'

Thus, as in Shona, when the base is the first half in the compound, this tone is never copied by RED (totally or partially). Note, however, that when partial prefixal reduplication is involved, the tense-sponsored high tone is realised on RED and not on the base stem, as given in (26).

(26) Tense-sponsored tone in partial prefixal reduplication

(a)	*ndi-ŋgu-[léleesy-a* 'I looked'	*ndi-ŋgu-[lélé=leleesy-a*
(b)	*ndi-ŋgu-[βeléβeet-a* 'I spoke'	*ndi-ŋgu-[βéléβé=βeleβeet-a* *ndi-ŋgu-[βélé=βeleβet-a*
(c)	*ti-ŋgu-[βéléβét-ésy-án-a* 'we spoke to each other'	*ti-ŋgu-[βeléβétésyá=βeleβet-esy-aan-a* *ti-ŋgu-[βeléβété=βeleβet-esy-aan-a* *ti-ŋgu-[βéléβé=βeleβet-esy-aan-a* *ti-ŋgu-[βélé=βeleβet-esy-aan-a*

As the data in (26) above show, the high tone falls on the initial or second syllable of the RED, depending on prevailing conditions (such as the number of syllables in the RED stem). The presence of the high tone on the prefixal RED, instead of on the base, in the forms in (26) is an indication that tenses assign their tone to the first half of the compound verb stem. This explanation makes sense when we take into account the fact that this is a tense-sponsored high tone and not an underlying property of individual verb stems (as is the case with high-toned bare stems such as *c^{h}imbiíy-a* 'run').

4.2. Stem-final LV deletion

In this sub-section, I argue that the bimoraic verb stems used in Mtenje (2006) and Mkochi (2009, 2014) to argue that the mora is the level of prosodic stem analysis and that prosodic stems are thus required to be minimally bimoraic underlyingly have two morphemes which condition a bisyllabic output (see Downing 2005, 2006 on how morphology conditions prosodic forms). These morphemes are a CVC-root and an inflectional final vowel suffix (i.e. CVC-V input). The second CV sequence which fails to surface is actually a liquid and vowel sequence (LV). The first piece of evidence for this claim is the fact that when such verbs are extended, the liquid surfaces, as shown in (27) below. The forms in (27a-b) have been included to show that the /l/ belongs to the root and not to the reciprocal and causative suffixes *-an-* and *-esy-*, respectively.

(27) The deleted second CV most likely has a liquid consonant

	Basic verb	**Extended verb**	
(a)	*bik-a* 'cook'	*bik-aan-a*	'cook each other'
(b)	*lemb-a* 'write'	*lemb-eesy-a*	'cause to be written'
(c)	*too* 'take'	*tol-aan-a*	'take each other'
(d)	*koo* 'catch'	*kol-eesy-a*	'cause to be caught'
(e)	*poo* 'be cold'	*pol-eesy-a*	'cause to be cold'
(f)	*pee* 'be subdued'	*pel-aan-a*	'be subdued by each other'

Thus, chances are that the basic monosyllabic verb stems in (27c-d) above actually have the forms *tol-a*, *kol-a*, *pol-a*, *pel-a*, and *mel-a* in the underlying form, which are all CVC-V. A similar observation is made by Turner (1952), regarding what he calls the "elision" or "slurring" of the stem-final syllables. 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*[7]:

> 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'*.

The similarity of ciTonga and Tumbuka cognates is hardly surprising, as the two languages are so similar that in colonial literature the former was regarded as a dialect of the latter (Bryan 1959:136-137; Tew 1950).[8] I have transcribed Turner's data in (28) below. The slur is indicated by a superscript glide symbol (^{y}) or (^{w}).

(28) Final syllable slur and deletion in ciTonga (Turner 1952, transcribed by author)

(a) Final syllable slur

Tumbuka	**ciTonga**	
ku-.líi.l-a	*ku-.líi-.^{y}a*	'to cry'
ku-.kúu.l-a	*ku-.kúu-.^{w}a*	'to grow up'

(b) Final syllable elision

Tumbuka	**ciTonga**	
ku-.tóo.l-a	*ku-.tóo*	'to take'
ku-.to.l-ée.l-a	*ku-.tó.l-ee*	'to take for'

Turner makes the 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 inaccurate, because ciTonga speakers delete or slur LV syllables even when they are at their slowest speech rate, and these words are included as dictionary entries as they are.[9]

[7] Note that Turner uses the retroflex /r/ while I use the lateral /l/, the two segments being used interchangeably in ciTonga and not resulting in a change in meaning. I have used /l/ throughout the paper in order to be in accordance with recent literature on ciTonga phonology and also for the sake of consistency.

[8] Bryan (1959) puts ciTonga under the Tumbuka Single Unit Group. Tew (1950) lists Tonga among the Tumbuka tribes. According to Tew, the Tonga people do not consider themselves to be Tumbuka, but they are linguistically akin.

[9] Given that Turner's description is more than 60 years old, it is also possible that what used to be variable deletion of /-la/ has since become a non-variable process. In that case, he would not be wrong and would merely be describing an earlier stage in the language's history.

One clear observation, however, is that liquid onsets to light final syllables are deleted. That is, liquids do appear everywhere, but not in the position before the final mora. Another crucial observation is that the slur (where only the liquid onset is deleted) occurs only when the penultimate vowel (V_1) is a high vowel. I give more data on final syllable slur in (29), where the slurring/gliding vowel is a high vowel /i/ or /u/. We know that the liquid has been deleted because when the word/stem is extended, the glide disappears and the liquid surfaces, since it is now no longer before the final mora.

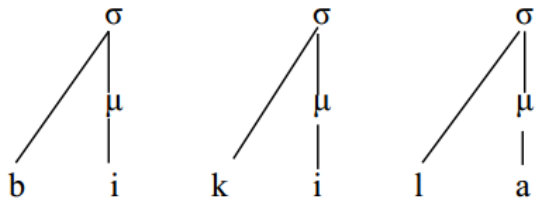
(29) The liquid is prohibited in positions before the final mora

Verb form	**Extended verb form**	**English gloss for reciprocal form**
bik-ii^{y}-a	*bik-il-aan-a*	'cook for each other'
suk-ii^{y}-a	*suk-il-aan-a*	'clean for each other'
laŋg-ii^{y}-a	*laŋg-il-aan-a*	'punish for each other'
puu^{w}-a	*pul-aan-a*	'pound each other'
zuu^{w}-a	*zul-aan-a*	'undress each other'

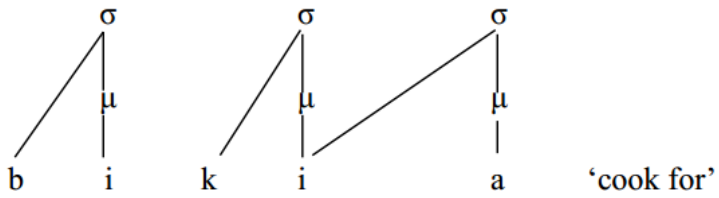
Thus, the inputs to verb forms in the first column are predicted to be /*bikil-a*/, /*sukil-a*/, /*langil-a*/, /*pul-a*/, etc. What needs to be explained is the source of the gliding/slur (^{y}) or (^{w}) in the data. I have argued in Mkochi (2007/8) that the barring of the liquid in the onset position of stem-/word-final mora leaves the final vowel without any onset. Thus, the stem-/word-final position, at some stage in the derivation, has two adjacent vowels (V1 and V2) created by the deletion of the liquid. To resolve this type of hiatus, high V1 is re-syllabified in the onset of the final syllable, as given in (30b) below.

(30) Syllabification of *bi.kii.ya* (Input: *bi.ki.la*)

(a) Input



(b) Output



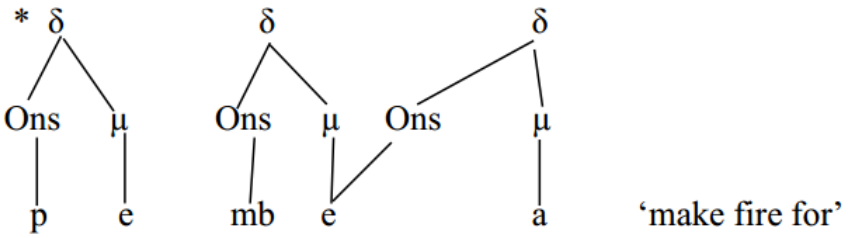
On the other hand, in the forms where the final syllable is completely elided, I observe that all the preceding vowels (V1s) are [-high]. I give more examples of this phenomenon in (31) below. I also give extended verb stems to show that there is a liquid that is deleted in stem-final light syllables.

(31) Stem-final LV deletion

Verb stem	**Extended stem**	**English gloss**
woc^{h}-ee	*wotc^{h}-el-aan-a*	'roast for each other with!'
pemb-ee	*pemb-el-aan-a*	'make fire for each other!'
lemb-ee	*lemb-el-aan-a*	'write for!'
lomb-ee	*lomb-el-aan-a*	'pray for!'
somp^{h}oo	*somp^{h}ol-aan-a*	'snatch!'

Thus, the inputs to the verb stems in the first column in (31) above are predicted to be /*wotc^{h}-el-a*/, /*pemb-el-a*/, etc. 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). Since the liquid of the final syllable is deleted, the final inflectional vowel [-a] is left stranded (onset-less) (e.g. *pembe-a*). It seems, therefore, that 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.[10] This claim is illustrated in (32) below.

(32) Mid vowels cannot be syllabified in the onset



As we can see, the output form in (32) above is not acceptable because ciTonga does not tolerate syllabification of mid-vowels in syllable-onset positions.

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

Deletion of liquid onsets before stem-final moras in South-East African Bantu languages is not a completely rare phenomenon. Similar cases have been reported in e.g. Swahili (Polomé 1967:75-76, 84), where liquid onsets to stem-final syllables are usually omitted only to surface when the root is extended, as given in (33) below.

(33) Liquid deletion in Swahili (Polomé 1967)

Unextended		**Extended**	
ja-a	'take'	*jal-i-a*	'be full up to'
to-a	'lay out'	*tol-e-a*	'spend on'
kata-a	'refuse'	*katal-i-a*	'refuse to'
chomo-a	'draw out'	*chomol-e-a*	'draw out for'
fungu-a	'unfasten'	*fungul-i-a*	'unfasten for'
ondo-a	'take away'	*ondol-e-a*	'deprive of'

In the following section, I discuss the source of lengthening in the minimally bimoraic verb forms that prompted a moraic analysis in previous analyses of stem/word minimality in ciTonga. I argue that the source of the length is actually a well-known phenomenon of phonological phrasing in many Bantu languages.

5. A note on vowel lengthening

The only evidence that Mtenje (2006) and Mkochi (2009, 2014) provide for the mora being the relevant unit for prosodic stem analysis and thus prosodic stems being required to be minimally bimoraic derives from the lengthening of monosyllabic verb stems such as *koo*, *too*, *mee*, *poo*, *pee*, etc. I have just argued above, however, that these verbs underlyingly have a CVC-V morpheme structure, which should condition a CV.CV output, and that they surface as monosyllables because the second conditioned syllable (LV) has failed to be realised due to certain phonological constraints that militate against light stem-final LV syllables.

The relevant question, then, should be: Which prosodic category insists on having two moras? My immediate answer is that it is the phonological phrase. Thus, while the phonological phrase is required to be minimally bimoraic, the prosodic word/stem is required to be minimally bisyllabic. It is therefore the minimal phonological phrase that has been frequently confused with the minimal prosodic word/stem in previous analyses of this language. This is not quite a new discovery. In many Bantu languages, penultimate lengthening (PL) of the vowel is viewed as a cue for phrasal stress (also referred to as "phonological phrasing") (Downing 2004, 2006a; Kanerva 1990).[11] In fact, this is not a word-level stress, and it is not yet clear if ciTonga has word-/stem-level stress. This is because lengthening usually shifts to the penultimate syllable of the rightmost word/stem in a phonological phrase, as shown in (34) below.

[11] The type of PL with which I am concerned in this case is what Hyman (2009b:195-196) describes as "typical" PL in many Bantu languages. This type of PL is believed to be an effect of stress, and typical examples are ones "which unambiguously involve the addition of a mora" as opposed to mere "phonetic lengthening" (Hyman 2009b:196).

(34) PL in ciTonga is phrase-penultimate

Phrase		**English gloss**
le.lee.sy-a		‘look’
le.le.sy-a	*vi-.βaa-.nt^{h}o*	‘look at bad people’
zu.mbuu.w-a		‘reveal’
zu.mbu.w-a	*ma-.yee.so*	‘reveal an exam’
sa.mbii.zy-a		‘teach’
sa.mbi.zy-a	*mu-.nt^{h}i.kaa.ze*	‘teach a woman’
βe.lee.ŋga		‘count’
βe.le.ŋga	*a-.nt^{h}u.luu.me*	‘count men’

Thus, as Hyman (2009b: 201) observes, the attraction of length is across words, and “we can hypothesize that penultimate prosody starts out as intonational and undergoes boundary narrowing”. The bimoraic forms *koo*, *too*, *mee*, etc. are therefore actually phrases, and as phrases they must have phrase stress, which is cued by vowel lengthening. The phrases that have phrase-final stress, as repeated in (35) below, violate the requirement that stress be placed on the penultimate syllable.

(35) Phrase-final stresses violate stress placement rules

Input	**Output**	**English gloss**
kol-a	*koo*	‘catch’
ndi-ŋgu-mu-[kol-a	*ndi-ŋgu-mu-[kóo*	‘I caught him’
mel-a	*mee*	‘grow’
ndi-ŋgu-mu-[mel-a	*ndi-ŋgu-mu-[mée*	‘I grew on him’
pendel-el-a	*pendel-ee*	‘become lame for’
wa-ŋgu-[pendel-e-la	*wa-ŋgu-[pendél-ee*	‘he became lame for’
gong’ol-a	*gong’oo*	‘hit’
ndi-ŋgu-mu-[goŋol-a	*ndi-ŋgu-mu-[góŋoo*	‘I hit him’

Note that even when these verbs are preceded by additional materials (such as prefixes), it is still the final syllable that lengthens and not the penultimate syllable. Thus, an explanation needs to be given as to why the final syllable is stressed here. This is however not easy. We can only speculate that both penultimate vowel lengthening and LV deletion are post-lexical rules, and that PL precedes LV deletion in their application. This type of analysis, however, is a controversial one, and it can have far-reaching consequences for non-derivational theories.

Finally, note that these heavy syllables become short when they appear in non-phrase-final positions, as shown in (36) below.

(36) Lengthening is a result of phonological phrasing

(a)	*koo*	'catch'
	ko ukóoŋgwa	'catch a lot'
	ko=koo	'catch all sorts of things'
	ko=ko pakaáte	'touch the middle part anyhow'
	ndi-ŋgu-mu-[kó uheéni	'I held him wrongly'
(b)	*mee*	'germinate'
	me ukóoŋgwa	'germinate a lot'
	me=mee	'germinate anyhow'
	me=me mumphépeete	'germinate in the sides a lot'
	vi-ŋgu-[mé uheéni	'they germinated badly'
(c)	*goŋoo*	'hit'
	goŋo ukóoŋgwa	'hit a lot'
	goŋo=goŋoo	'hit a lot'
	goŋo=goŋo ukóoŋgwa	'hit hard repeatedly'
	ndi-ŋgu-mu-[góŋó uheéni	'I hit him badly'

Thus, the final syllable is not lengthened in pre-phrase-final position (including that of RED in (36a-b)), confirming that phrasal stress is assigned to the rightmost word in a phrase. When the phrases are monosyllabic (e.g. *ko* 'catch', *to* 'take'), phrasal stress cued by lengthening is still assigned to them (e.g. *koo, too*).

6. Conclusion

The aim of this paper was to further understanding of the process of verbal reduplication in Malawian Tonga. Specifically, it sought to resolve verbal reduplication paradoxes where RED exhibits characteristics of being either total or partial and being prefixed or suffixed to the base. It also sought to resolve the issue of whether prosodic (reduplicative) stems fulfil minimality requirements by having two syllables or two moras; that is, whether the relevant level of prosodic stem analysis in ciTonga is the mora or the syllable. I have argued in this paper that this language offers three possibilities for reduplication, namely partial prefixal reduplication, total suffixal reduplication, and partial suffixal reduplication. Thus, reduplication in the language is optionally prefixal or suffixal, although the latter appears to be the default. Another crucial claim I have made is that the relevant unit of prosodic stem analysis in ciTonga is typically the syllable and not the mora as previously claimed (Mkochi 2014, Mtenje 2006), and that prosodic (reduplicative) stems, like the base stem, are therefore required to be minimally bisyllabic, as in many other Bantu languages.

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