

Cyclicity in Bantu: evidence from Chichewa¹

Francis Moto

Introduction

Recent accounts of Bantu tonal systems indicate that the following characteristics tend to permeate Bantu tonal phonology: (1) verbal forms tend to exhibit no lexical contrasts, (2) morphological factors which may include tense, object markers and clitics are primarily responsible for high tone assignment mainly in verbal forms, (3) in some instances high tone assignment involves the counting of mora, (4) while in other circumstances tonal mobility may be restricted, there are cases where tones travel considerable distances.

My concern in this paper is to demonstrate how the tonal behaviour of reduplicated forms in Chichewa can be simply handled by drawing on the insights made available by autosegmental phonology, lexical phonology and underspecification theory. I wish to suggest, using evidence from tone assignment that is induced by high-tone prefixes at stratum II of the Bantu lexicon, that phonological activity at this stratum is interspersed with morphological operations. The present work differs from earlier analyses in that it does not resort to complicating underlying representations through the inclusion of tone melodies underlyingly.

Theoretical framework

Autosegmental phonology addresses issues of phonological representation, specifically those of tone, harmony and syllable facts, which forced reconsideration of the representational aspects of the theory of generative phonology as articulated by Chomsky and Halle (1968). Lexical phonology, on the other hand, addresses issues concerned with derivational aspects of generative phonology. The central claim is that morphological operations take place in tandem with the application of phonological rules, with the additional crucial tenet that there is an interspersing of morphological and phonological rules during the derivation of complex words.

In addition, lexical phonology also recognises two types of rule application, viz. lexical and post lexical. The main assumption of the theory of underspecification is the claim that redundant values should be discarded from underlying representations. These discarded values are filled in by default rules in the course of the derivation. Put simply, the claim is that all underlying lexical entries should be minimally redundant.

Basic notes on Chichewa tone

Let us turn our attention to tone assignment in Chichewa. I have stated earlier on that this discussion centres around tone assignment that is induced by high tone prefixes. This observation carries with it the implication that there exist other tonal types of prefixes in Chichewa and that they are something else, obviously not high. Consider 1(a) and 1(b) below.

1a high-toned tense marker prefixes

- | | |
|----------------------------|------------|
| (i) infinitive/progressive | ku |
| (ii) present habitual | ma |
| (iii) future | dza |
| (iv) simple past | na |
| (v) past continuous | nka |

1b toneless tense markers (TM) (where it is morphologically null and is marked \emptyset)

- (i) \emptyset imperative
- (ii) \emptyset immediate past

Examples of 1(a) and 1(b) are given in 1(c) and 1(d) respectively. The acute accent [´] indicates a high-toned syllable and low tones remain unmarked.

1c	(i) ku-dy-á	to eat
	(ii) ku-mw-á	to drink
	(ii) ndí-ma-ón-a	I look
	(v) ndí-dzá-dy-a	I will eat
	(vi) ndf-dzá-mw-a	I will drink
	(vii) ndi-ná-dy-a	I ate
	(viii) ndi-ná-mw-a	I drank
	(ix) ndi-nká-dy-a	I used to eat
	(xi) ndi-nká-mw-a	I used to drink
1d	(i) i-dya	eat
	(ii) i-mwa	drink
	(iii) a-dy-a	they have eaten
	(iv) a-mw-a	they have drunk

What is happening above, that some morphological elements retain their tonal property while others pass them on to neighbouring tone-bearing units (TBU), is not an exclusive tonal property of Chichewa. On the domain of tone Odden (1994) observes that: '... Sometimes tones have a quite small sphere of influence and do not assimilate or dissimilate surrounding tones, suggesting a restriction of tone to the tone-bearing unit. Yet other times tones may assimilate or dissimilate a tone in a neighbouring syllable or more, perhaps reflecting a group of syllables into a higher level of tonal organisation such as the tonal foot, which would be the phonological bearer of tonal distinctions. Tones may also have quite unrestricted domains of influence, thus we may find assimilation of tone throughout a word, or dissimilation of tones across great distances ...' (Odden, 1994: 31). Chichewa has abundant examples that exemplify the observations Odden makes.

Relatively recent studies in Chichewa tonal phonology have largely classified Chichewa words and morphemes into those that are inherently high-toned and those that are toneless and get their surface tones by a default fill-in-rule or some other language-specific rule. The examples in (3) show low-toned verbs where as those in (4) indicate high-toned verbs.

- 3 (a) kom-a be sweet/nice
(b) pit-a go
(c) samal-a care
(d) langiz-a instruct/show
(e) fotokoz-a explain
(f) sangalal-a rejoice
- 4 (a) gon-á sleep/lie down
(b) kan-á refuse
(c) pamban-á pass/excel
(d) pwetek-á get hurt
(e) khululuk-á forgive
(f) bwadamuk-á boil

For the present discussion it is the examples in (3) which we are going to consider once high-toned prefixes are attached and the morphological process of reduplication has taken place. For ease of exposition there are examples of the reduplicated low-toned verbs in (5) below, while (6) shows the same form once some prefixes have been added.

- 5 (a) samalasangalala care frequently
(b) langizalangiza instruct frequently
(c) fotokozafotoza explain frequently
(d) sangalalasangalala rejoice frequently
(e) sangalatsiranasangalatsirana cause to rejoice for each other
- 6 (a) ndímasamálásamála I care frequently
(b) ndímalangízálángíza I instruct frequently
(c) ndímafotokozáfotokoza I explain frequently
(d) ndímasangalálásangalála I rejoice frequently
(e) ámasangalalitsiránásangalitsirána They cause to rejoice for each other

It should be noted here that reduplication in Chichewa, as in (most) other Bantu languages, often expresses frequency and the intensity of particular actions. As has been generally observed for Bantu languages, for example, in Clements (1986), Odden and Odden (1985), Mtenje (1986), Moto (1989) and Myers (1990) the base for reduplication in the verb is the stem. The reduplicating affix is also the stem with a minimum foot requirement. In the verb, the base is defined morphologically

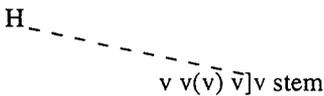
(rather than prosodically in terms of the foot) in order (a) to account for forms in which more than two syllables reduplicate and (b) to exclude prefixes. (7) gives the information that is referred in the duplication of the verb.

7 Reduplication in verbs

- case for reduplication: stem
- reduplicating suffix: stem (with minimum foot requirement)

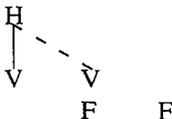
The tone facts of the examples in (6) are as follows: the subject marker (SM) has a high tone and another high tone occurs on the penultimate tone-bearing unit of the initial stem as well as the final vowel of the same stem. Another high tone occurs on the penultimate TBU of the forms. I stated in Moto (1989) that the high tone on the SM is currently a difficult one to account for and I will not attempt to do so here. I nevertheless proceed to observe that the high tone of the present habitual tense marker **ma** associates with the last vowel of the radical. The high tone following it results from a widespread tonal process in Chichewa which is said to double or spread on to a neighbouring TBU once certain conditions are satisfied. The high tone of the reduplicated suffix **samala** docks on **ma** as a result of tone transfer after the morphology provided the high toned habitual tense marker **ma** in an earlier morphological operation. The two rules which are responsible for the high tones on the radical and the one that follows it are given in (8) and (9) below.

8 End of radical association (ERA)



(the (v) indicates that there may be one or more TBUs intervening between the SM and the TBU on which the high tone docks)

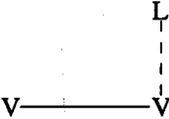
9 Tone doubling (TD)



The rule of TD in (9) says: spread a high tone onto the next syllable if a foot (two syllables) follows the high-tone receiving TBU.

The low tones that appear on the forms are supplied courtesy of the default rule given in (10) below, whereas the high on **ndi** is by association convention.

10 Low default (Def)



Let me observe here that without involving the notion of cyclicity, i.e. the interspersing of the phonology and morphological operations, and the ordering of reduplication after prefixation, it is not immediately clear how one could adequately account for the occurrence of the high tone on the penultimate TBUs of the reduplicated portions. Consider, for instance what would happen if prefixation preceded reduplication. The stem **langiza** would reduplicate to form **langizalangiza**. Prefixation would then apply providing the subject marker **ndi** and the high-toned habitual tense marker **ma**. The phonology would at that stage associate the high tone of **ma** with the last but one syllable of the stem **langiza** via the application of ERA. There is then the need to have a rule that would associate a high tone with the penultimate tone bearing unit of the reduplicated portion of the form. Such a rule, if at all it were to apply, would introduce an association line which would later make it impossible for the default rule to apply in order to supply the **la** of the reduplicated portion with a low tone. Such an occurrence is barred by the requirement that association lines should not cross.

It should be noted then that when the morphology makes available a high-toned prefix which the grammar specifies gets linked with the final TBU of the verb radical, the phonology applies to associate the prefixal high tone with the end of the verb radical by ERA. Reduplication then copies the shifted high tone and the high tone which was associated by ERA undergoes TD/spreading as indicated below in which the processes listed under morphology are morphological operations while those listed under phonology are phonological operations.

11 **Morphology**

Phonology

Prefixation
introduces high tone

High tone gets associated or linked
with final TBU of verbal radical by
ERA

Reduplication copies high tone
Associated by ERA

High tone associated by ERA under-
goes TD and a default rule supplies
low tones to TBUs not assigned high
tones

Over the page there is a sample derivation of **ndimalangízálángíza**. In the derivation the brackets indicate morphological boundaries and Cy and UR are shorthand symbols for cycle and underlying representation. The numbers stand for sequences of cycles starting with the stem of the verb and a dash indicates that no phonological activity takes place at that particular cycle.

12 H H
 [[ndi [ma [[langiz]a]]]] UR

Cy	Morphology Stratum I Radical [langiz] Stratum II Prefixation, FV and HTM	Phonology _____
----	---	----------------------------

1 H H
 [[ndi[ma[langiza]]]] _____

2 H H
 [[ndimalangiza]] ERA

3 H H
 [[ndimalangiza]] _____

4 H H
 [ndimalangiza] Association convention

Reduplication (sequencing)

 H H H
 [ndimalangizalangiza] TD

Post lexical

<p>H L L H L H L [ndimalangizalangiza] [ndímalangízalángíza] 'I instruct frequently'</p>	<p>Default Phonetic representation</p>
--	--

Conclusion

My concern in this paper was to demonstrate how the tonal behaviour of reduplicated forms in Chichewa can be simply handled by drawing on the insights made available by autosegmental phonology, lexical phonology and underspecification theory. I have suggested, using evidence from tone assignment that is induced by high tone prefixes at stratum II, that phonological activity at this stratum is interspersed with morphological operations. Like Mtenje (1988) I have demonstrated that both tonal and non-tonal material get transferred and have also indicated that the facts can receive illuminating treatment if, in accordance with Clements (1985), reduplication theory is extended to allow transfer in Chichewa and other Bantu languages, for example, as a process that preserves properties of the tonal tier in addition to the transferring of non-tonal material on to the skeletal tier. More importantly I have also pointed out that reduplication in Chichewa seems to lend further credence to a two-strata analysis of the lexicon in Bantu in which stratum II is cyclic in Chichewa.

Notes

- 1 This paper was first presented at the 1st World Congress of African Linguistics held at the university of Swaziland in Kwaluseni in July 1994. I am grateful to a *Journal of Humanities* anonymous reviewer for suggesting ways of improving the paper. Needless to mention that errors contained herein are totally my own responsibility.

References

- Chomsky, N. and Halle, M. 1968. *The Sound Pattern of English*. New York: Harper and Row.
- Clements, G. 1986. 'Verb stem reduplication and morphological reanalysis in Bantu'. Handout of a paper read at the 17th ACAL. Indiana University, 3 April, 1986.
- Moto, F. 1989. 'Phonology of the Bantu lexicon' (Ph.D. dissertation, University College London).

Mtenje, A. 1986. 'Issues in the non-linear phonology of Chichewa' (Ph.D. dissertation, University College London).

Mtenje, A. 1988. On tone and transfer in Chichewa reduplication. *Linguistics*. 125-155.

Myers, S.P. 1990. *Tone and the Structure of Words in Shona*. New York: Garland Publishing Inc.

Odden, D. and Odden, M. 1985. Ordered reduplication in Kihehe. *Linguistic Inquiry*, 16.3, 497-503.

Odden, D. 1994. Domains and level representation in tone. Paper presented at the 1st World Congress of African Linguistics. 18-22 July 1994, University of Swaziland, Kwaluseni.

DEPARTMENT OF AFRICAN LANGUAGES AND LINGUISTICS
CHANCELLOR COLLEGE
UNIVERSITY OF MALAWI
P. O. BOX 280
ZOMBA
MALAWI