

A MORPHO-TONOLOGICAL DESCRIPTION OF IKALANGA INFINITIVE VERBS

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Abstract:

In order to explain how tone works in Ikalanga infinitives, this description uses data collected from native speakers and glossaries, verified with the help of dictionary data from other languages. The authors preferred to diversify the data sample in such a way as to include infinitive verbs representing several morphological types so that their description may not be skewed.

The presentation therefore contains two major parts: (1) the morphological part which explains the structure of infinitive verbs and provides details on the syllabic configuration of the components on which tones are anchored and (2) the tonological part which attempts to derive tonal patterns into which several Ikalanga infinitive verbs that share a common behaviour fall. The presentation adheres to Autosegmental Phonology according to which phonological representation is multi-tiered. In this framework, tones appear on an autonomous tier and are not necessarily affected by changes occurring on other tiers though they may be linked to elements on the other tiers by association lines.

This study ends with proposing a mixed approach that combines tone and accent to explain some strange behaviours unaccounted for by an exclusively tonal approach. Such a mixed approach uses dynamic tonic accents which act like magnets. They move around to decisive positions which attract H-tones that are essential in determining the tonal pattern of words as they have the ability to spread from left to right to contiguous unaccented positions.

Key words: dynamic Tonic accent, tone, HL melody, tonal pattern, root, stem, extension, syllabic configuration, pitch-accent languages

1. Introduction

Many languages of the world indicate change in meaning or the grammatical function of words by adding a variety of affixes to them. However, this is not the unique way in which the meaning and function of words can be changed. In addition to this practice, African languages, like many other languages of the world (e.g. Japanese and several Asian languages), use variation in pitch height or tone to induce similar effects. Such variations are so abstract and elusive that they make this area of linguistics unpopular among recent researchers. Failing to make sense of these pitch changes, some people even go so far as to portray this aspect of African languages as totally chaotic.

The present paper attempt to contribute towards an understanding of how tone works in Ikalanga infinitive verbs. Towards this end, the Morphology of Ikalanga simple/plain infinitive verbs as well as their derived or extended forms will be described because morphology plays a major role in the assignment of tone.

Though starting with a purely tonal approach, the description presented proceeds to show how Autosegmental Phonology explains tones before agreeing with Heny (1971) that, some so-called Bantu languages are in fact pitch-accent languages. This is captured by adopting a mixed approach combining tone and accent to explain some strange behaviours unaccounted for by an exclusively tonal approach.

2. The Morphology of Ikalanga Infinitive Verbs

As in other Bantu languages, the structure of infinitives in Ikalanga includes the following basic elements: the Infinitive Marker /ku-/ , the Root and the Final Vowel or the Vowel Suffix /-a/. While the Infinitive Marker is consistent with the **CV** syllabic configuration, the Root comes in a variety of forms: (i) the commonest type of roots have the **CVC** syllabic pattern (e.g. /-von-/ “see”, /-bhik-/ “cook”, /-lov-/ “beat”, /-sek-/ “laugh”). Some other types of roots are of (ii) the **C** form (e.g. /-ḍ-/ “love”, /-tj-/ “fear”, /-p-/ “give”); (iii) the **CV** form (e.g. /-fiu-/ “hear”, /-gu-/ “fight”, /ngu-/ “drink”); and (iv) the **VC** form (e.g. /-il-/ “avoid”, /-end-/ “go”).

In infinitive verbs with CV roots, the final V is realized as a glide when it is followed by a vowel of a different quality. As it will be explained later, Ikalanga has more low tones than high tones. Therefore, for the sake of economy low tones will not be marked in the Ikalanga examples given below.

(1) e.g.

- | | | |
|----|--------------------------------|--------------|
| a) | kufiwá | to hear |
| b) | kuthwá | to vomit |
| c) | kung'wá | to drink |
| d) | kutshwá [kuts ^h wá] | to burn |
| e) | kudwa | to come from |
| f) | kushwa | to be fine |
| g) | kugwa | to fight |

In derived forms, the root is often lengthened by one or many extensions occurring before the Final Vowel. The commonest Ikalanga verb extensions include the following:

- 1) The causative /-is-/ (or sometimes /-es-/ by nasal harmony when the root contains a second degree vowel like [ɛ]/[ɔ]).

The causative generally means that the subject provokes, initiates or facilitates (in some way) the action of the verb. This extension is illustrated below in (2).

(2) e.g.

- | | |
|--------------|--|
| a) kulimisa | to cause to plough/help to plough |
| b) kubhikisa | to cause to cook/help cook |
| c) kuvumbisa | to cause to build |
| d) kubhayisa | to cause to slaughter |
| e) kung'wisa | to cause to drink |
| f) kulóvesa | to help to beat |
| g) kuvokesa | to cause to thank |
| h) kusekesa | to cause to laugh |
| i) kuposesa | to cause to throw |
| j) kufudza | to cause to graze (from /ku-ful-(i)s-a/ by imbrication) |
| k) kupedza | to cause to finish (from /ku-pel-(i)s-a/ by imbrication) |
| l) kulidza | to cause to cry (from /ku-lil-(i)s-a/ by imbrication) |
| m) kukodza | to cause to be fat (from /ku-kol-(e)s-a by imbrication) |

The change in the quality of the vowel of the causative suffix in the examples with /-es-/ is due to vowel harmony. According to this process the [i] vowel of the extension /-is-/ becomes [ɛ] when the verb root to which it is attached contains a second degree vowel (i.e. [ɛ] or [ɔ]). According to Mathangwane (1999: 73), most verb roots which have a final lateral consonant have a different form of the causative. It should be noted that in these verb roots, the root-final lateral changes into the palato-alveolar affricate [dz] due to imbrication. Instead of positing the existence of two parallel causatives (namely /-is-/ and /-i-/), as in Mathangwane (1999), Lukusa (1993.a, 1993.b, and 2011) proposes the following more plausible explanation supported by the process of imbrication which applies to many Bantu languages. By the process of imbrication of extensions, the number of syllables in some verbs is reduced through the application of two phonological rules including first deletion of the initial vowel of the causative extension –is- / -es-. This creates contact between the final [l] of the root and the [s] of the causative and results in coalescence between these two consonants, producing an intermediary consonant [dz], as illustrated in examples (2.j to m) which are repeated in (3) below for the sake of convenience.

(3) Examples of imbrication of extensions

- | | | | |
|--------------------|---|-------------|--------------------|
| a) /ku-ful-(i)s-a/ | → | [ku-fudz-a] | to cause to graze |
| b) /ku-pel-(i)s-a/ | → | [ku-pedz-a] | to cause to finish |
| c) /ku-lil-(i)s-a/ | → | [ku-lidz-a] | to cause to cry |

d) /ku-kol-(i)s-a → [kukɔdza] to cause to be fat

Imbrication of extensions is a very common process in Bantu languages and should not divert us much from our present pursuit.

2) The passive /-iw-/ (or /-w-)

Contrary to the active voice in which the subject is the real performer of the action of the verb, a passive verb is headed by a subject which rather undergoes the action conveyed by the verb. As in many Bantu languages, the two forms of the passive suffixes include the short form –w- and the long form –iw-. As in the case of the causative, these duplicate passive forms could be reduced to one by postulating that the shorter of these obviously related forms is a mere result of imbrication in which the [i] vowel of the full extension is deleted as explained earlier. It has been observed in many Bantu languages that monosyllabic stems always take the longer passive form –iw- as in:

(4) e.g.

- | | | | | |
|----|----------|---|-------------|--------------|
| a) | ku-ɖá | > | ku-ɖ-iw-a | to be loved |
| b) | ku-fiw-á | > | ku-fiw-iw-a | to be heard |
| c) | ku-tj-á | > | ku-tj-iw-a | to be feared |
| d) | ku-p-á | > | ku-p-iw-a | to be given |
| e) | ku-mb-á | > | ku-mb-iw-a | to be sung |

A different picture emerges when polysyllabic verb stems are passivized. Two groups of verbs are observed here: one which allows both the short and the long forms and another which only takes the long form of the passive suffix.

(5) e.g. Verbs which take both the short and the long passive form

- | | | | | | | |
|----|-----------|---|-------------|---|--------------|-----------------------|
| a) | ku-lind-a | > | ku-lind-w-a | / | ku-lind-iw-a | to be watched over |
| b) | ku-suk-a | > | ku-suk-w-a | / | ku-suk-iw-a | to be washed |
| c) | ku-bhik-a | > | ku-bhik-w-a | / | ku-bhik-iw-a | to be cooked |
| d) | ku-lis-a | > | ku-lis-w-a | / | ku-lis-iw-a | to be looked after |
| e) | ku-long-a | > | ku-long-w-a | / | ku-long-iw-a | to be put in/inserted |

Contrary to the preceding group, the examples in the following group of verbs can only take the long passive form –iw-.

(6) e.g. Verbs which can only take the long passive form

- | | | | | |
|----|-----------|---|--------------|--|
| a) | ku-feph-a | > | ku-feph-iw-a | to be blown out/be helped to blow the nose |
| b) | ku-kov-a | > | ku-kov-iw-a | to be given away |
| c) | ku-kusw-a | > | ku-kusw-iw-a | to be sharpened |
| d) | ku-nazw-a | > | ku-nazw-iw-a | to be licked |
| e) | ku-fiw-a | > | ku-fiw-iw-a | to be heard |
| f) | ku-ngw-a | > | ku-ngw-iw-a | to be drunk |

The common characteristic of the verb stems in (6) is that they all end in a labial or labialized consonant. It is clearly the presence of this final labial or labialized consonant of the root which motivates retention of the initial [i] of the passive /-iw-/ so as to conform to the Bantu CV-CV syllable configuration by preventing a sequence of two labial consonants. This sequence would be particularly difficult to pronounce in examples (6c to f).

According to Mathangwane (1999), this prohibition is also common to a number of other Southern Bantu languages which, like Ikalanga, have been found not to allow sequences of a labial and the labio-velar glide [w].

3) The applicative /-il-/ (or /-el-/ by vowel harmony)

The applicative indicates what the subject does in relation to the object of the sentence. It can assume many roles such as the locative (i.e. *do some action at, in, on, etc.*), the benefactive (i.e. *do for*), the instrumental (i.e. *do with*), etc. The applicative/applied /-il-/ is sometimes realized as [-el-] when vowel harmony applies.

(7) e.g.

a) ku-bhik-a	>	ku-bhik-il-a	to cook for
b) ku-lóv-a	>	ku-lóv-él-a	to beat for
c) ku-vón-a	>	ku-vón-él-a	to see for

4) The reciprocal /-an-/

As in many Bantu languages, the reciprocal suffix is realized by the extension /-an-/ in Ikalanga, as shown in the examples below. It has the implication that the action of the verb is done to the object by the subject and vice versa or that two subjects help each other perform the action of the verb.

(8) e.g.

a) ku-lóv-a	>	ku-lóv-án-a	to beat each other
b) ku-ḡ-a	>	ku-ḡ-an-án-a	to love each other
c) ku-vón-a	>	ku-vón-án-a	to see each other

It should be noticed that in (8.b), the reciprocal extension /-an-/ has been reduplicated. This reduplication adds no new meaning to the reciprocal form and can only be accounted for as part of the lexicalization process in the formation of this word to compensate for the shortness of the stem by making it disyllabic (like other stems) with an additional dummy /-an-/ formative. This is similar to the addition of the dummy formative /-esh-/ in the Čilubà¹ verb /ku-p-esh-angan-a/ “to give e.o.” or the addition of a dummy /-an-/ to form the Swahili verb /ku-on-ek-an-a/ “be visible”.

Some of the reciprocal verbs in Ikalanga take the causative /-is-/ extension while others take /-y-/. The data used in this paper show that there is no clear derivational rule for the usage of one or the

¹ Čilubà is a Bantu language from the DRC. It is labelled in Guthrie’s (1948) classification as L.31

other form, but what is evident is that verbs that already contain a causative extension also take the reciprocal extension /-an-/. The examples that follow illustrate the above point.

(9) e.g.

a) katshana	hit each other	>	katshanya	cause to hit each other
b) vónana	see each other	>	vónanisa	cause to see each other
c) wanana	like each other	>	wananisa/wananya ²	cause to like each other

Because /-is-/ is a transitivizing extension, the reciprocal extension /-an-/ can be added to it since it requires a transitive input.

(10) e.g.

a) kulimisa	>	kulimisana	to help e.o. plough/help to plough
b) kubhikisa	>	kubhikisana	to help e.o. cook/help cook
c) kuvumbisa	>	kuvumbisana	to help e.o. build
d) kubhayisa	>	kubhayisana	to help e.o. slaughter
e) kung'wisa	>	kung'wisana	to help e.o. drink
f) kulóvesa	>	kulóvésana	to help e.o. beat s.o.
g) kuvokesa	>	kuvokesana	to help e.o. thank
h) kusekesa	>	kusekesana	to help e.o. laugh
i) kuposesa	>	kuposésana	to help throw
j) kufudza	>	kufudzana	to help graze from /ku-ful-(i)s-an-a/ by imbrication
k) kupedza	>	kupedzana	to help finish from /ku-pel-(i)s-an-a/ by imbrication
l) kulidza	>	kulidzana	to help cry/from ku-lil-(i)s-an-a/ by imbrication
m) kukodza	>	kukodzana	to cause others to be fat / from ku-kol-(e)-s-an-a by imbrication

5) The Neuter /-ik-/ (or /-ek-/ by vowel harmony)

The neuter or middle voice implies that the action of the verb is performed without necessarily involving an external agent. The subject undergoes the action of the verb (in some way) without a clear indication of the performer. Such verbs are sometimes considered to be in the stative voice since they describe the state of the subject.

(11) e.g.

a) kuvona	to see	>	kuvoneka	to be visible/appear
b) kuvuna	to break	>	kuvunika	to be broken/breakable/to get shattered
c) kukanga	to fry	>	kukangika	to be fried/friable

² This example clearly shows that it makes more sense to believe that /-is-/ is the only causative extension in Ikalanga and that the application of imbrication is rather optional in this case because the reduced form *wananya* is the output of imbrication and *wananisa* is the alternative without imbrication application.

6) The Reversive /-ul-/ and the Reiterative or the Frequentative /-ulul-/

While the reiterative or the frequentative implies the repetition or frequent occurrence of the action meant by the simple form from which it is derived, the reversive form shows the undoing or the reversal of the action denoted by the original simple verb root.

(12) e.g.

a)	ku-lim-ulul-a	to plough again	from	ku-lim-a	to cultivate
b)	ku-tham-ulul-a	to remake	from	ku-tham-a	to make
c)	ku-tjiny-ulul-a	to re-do	from	ku-tjiny-a	to do
d)	ku-bhik-ulul-a	to re-cook	from	ku-bhik-a	to cook
e)	ku-sung-unul-a	to untie	from	ku-sung-a	to tie
f)	ku-fum-ul-a	to uncover	from	*fumu(ideophone)	open
g)	ku-zhul-a	to open	from	*zhala > zhalila	to close

Scarcity of examples of reversive verbs with /-ul-/ (e.g. 12.f & g), the fact that the meaning of /-ul-/ is being taken up by /-ulul-/ (see 12.e) and the fossilization of /-ul-/ in some verb roots (e.g. *zhul-a* open) seem to suggest that the reversive /ul-/ is disappearing in Ikalanga while it still stands apart and is very much productive in other Bantu languages (e.g. Čilubà) alongside /-ulul-/.

(13) Examples of reversive and reiterative forms in Čilubà

Underived	Gloss	Reversive	Gloss	Reiterative/Frequentative	Gloss
ku-kang-a	to close/fry	ku-kang-ul-a	to open	ku-kang-ulul-a	to fry again
ku-jik-a	to block	ku-jik-ul-a	to unblock	ku-jik-ulul-a	to unblock permanently
ku-suk-a	to rinse the mouth	ku-suk-ul-a	to wash	ku-suk-ulul-a	to wash again & again
mu-seng-a	powder	ku-seng-ul-a	to pulverize	ku-seng-ulul-a	to sieve
ku-jing-a	to roll	ku-jing-ul-a	to turn (eyes)	ku-jing-ulul-a	to unroll (from a spool)
ku-di-a	to eat			ku-dy-ulul-a	to ruminate
ku-keb-a	to search			ku-keb-ulul-a	to research
ku-bal-a	to count/read			ku-bal-ulul-a	to count/read again&again

6) Multiple extensions

Some verbs show instances of duplicated and multiple extensions. In such cases, the duplicated extension or the multiple extensions may generate a totally new meaning or composite meanings resulting from the meanings of the combined extensions. According to Chebanne and Schmidt (2010), it is possible to have duplication of the applicative which combines the directional and the benefactive roles. The possibility of their co-occurrence is determined by the semantics of the verb stem as in the examples that follow.

a) komono	/ko-mon- o /	to see
b) kokondo	/ko-kond- o /	to lose weight/become thin/slim
c) komele	/ko-mel- e /	to drink
d) kokende	/ko-kend- e /	to go

*In Swahili*⁵:

e) kuheshimu	/ku-heshim- u /	to respect/honour
f) kuhesabu	/ku-hesab- u /	to count
g) kuhimidi	/ku-himid- i /	to thank/praise/extol
h) kuthubutu	/ku-thubut- u /	to venture/dare
i) kuhadithi	/ku-hadith- i /	to narrate

Based on the syntactic behaviour of the derivatives produced by their addition, extensions can be described as (i) valency-reducing, (ii) valency-maintaining or (iii) valency-increasing. This is illustrated below with conjugated verbs so as to show the potential number of NPs that a verb can accommodate.

The passive and the reciprocal are typical *valency-reducing extensions* since they promote the object of the original underived form to the rank of subject, and leave the object position empty, making thus the resulting verb intransitive.

(17) e.g. valency-reducing extensions /-(i)w-/ and /-an-/

- a) Mwana unoja shadza (the child is eating porridge) > Shadza lonoji**wa** nge mwana (the porridge is eaten by the child)
- b) Nkadzi unobona nlume (the woman sees the man) > Nkadzi ne nlume banobona**na** (the woman and the man see e.o.)

The applicative and the causative are generally *valency-increasing* in that they enable transitive verbs to become ditransitive by adding one more object.

(18) e.g. valency-increasing /-il-/ and /-is-/

- a) Ngwana unoja shadza (the child is eating porridge) > Nkadzi unoj**isa** ngwana shadza (the woman is making the child eat porridge)
- b) Nkadzi unobhika shadza (the woman is cooking porridge) > Nkadzi unobhik**ila** ngwana shadza (the woman is cooking porridge for the child)

⁴ This is a language spoken in D.R. Congo, Congo Brazzaville, Angola and Central Africa.

⁵ This is a language spoken in D.R. Congo, many East-African countries and some islands of the Indian ocean.

Notice however that the reversive, the reiterative or the frequentative is valency-maintaining because it preserves the valency of the verb root from which it is derived.

(19) e.g. valency-maintaining extension

- a) ku-sung-a mbudzi to tie the goat > ku-sung-unul-a mbudzi to untie the goat
 b) ku-lim-a nnda to plough the field > ku-lim-ulul-a nnda to plough again the field

Let us now turn to the tonal behaviour of the Ikalanga infinitive verbs by taking into consideration the verbal morphology described in the foregoing section.

3. Ikalanga Verbal Tonology

3.1 Ikalanga Tone Levels

There are two tone levels in Ikalanga: a High tone (H) and a Low tone (L). However, these two tone levels may combine to form contour tones which may be: falling (HL, marked with a circumflex e.g. â in kúkângá (fry,) rising (LH, marked with a reversed circumflex e.g. ǎ as in kumíldzǎna [kumíldzǎ:na] (lift each other).

(20) e.g. H and L Tones

- a) kutóla to take
 b) kuzíva to know
 c) kubháta to hold
 d) kuŋgína to get inside

To illustrate how tones in Ikalanga are a direct replication of those of Common Bantu, the examples below are given alongside similar words from Čilubà, which is usually described as a tone reversal system.

(21) e.g. Contour Tones

Ikalanga	Gloss	Čilubà
<i>- Falling Contour:</i>		
a) kúsŭka	to wash	kúsúká (wash inside e.g.of the mouth/bottle)
b) kuvôna	to see	kúmòná
c) kut ^h ŭma	to sew	kúfùmá
d) kúkângá	to fry	kúkà:ngá
e) kukwívá	to steal	kwí:bá
f) kuwômá	to dry	kú:má

Though very rare in infinitive verbs, rising contour tones can be found in Ikalanga.

(22) e.g.

- *Rising Contour*:

kumílídžǎna [kumílídžǎ:na] to lift e.o. from kumílídza

Contrary to a tone reversal language like Čilubà, Ikalanga tones are a direct replication of those of Common Bantu, i.e. where Ikalanga and most Bantu languages have high tones, Čilubà has low tones and vice versa.

(23) e.g.

<i>Ikalanga</i>	<i>Gloss</i>	<i>Čilubà</i>
a) kúsùkà	to wash	kúsúká (e.g. the mouth/a bottle)
b) kùvónánà	to see e.o.	kúmòná:ngáná
c) kùvòná	to see	kúmòná
d) kùđánánà	to love e.o.	kúná:ngá:ngáná
e) kùfá	to die	kúfwà
f) kùfwá	to hear	kú:mvwá
g) kùjá [kùdžá]	to eat	kúdyà
h) kùkwívá	to steal	kwí:bá
i) kùmá	to wait/stand up/stop	kwí:máná
j) kùng'wá	to drink	kúnwà
k) kùpá	to give	kúpà
l) kùt ^h ùmà	to sew	kúfùmá
m) kut ^h wá	to vomit	kútwì:lá (spit)
n) kùvàngá	to mix	kúvwà:ngákájá
o) kùwómá	to dry	kú:má
p) kùbhà:yà	to slaughter	kúshíbéyá (kill)
q) kùbhikà [kubika]	to cook	kwí:píká
r) kùvóná [kuβona]	to see	kúmòná
s) kùđúsà	to remove	kú:múshá
t) kùdwà	to come from	kúlwá
u) kùènda	to go	kwé:ndá (walk/march)
v) kúkàngá	to fry	kúkà:ngá
w) kùlilà	to cry	kúdlá
x) kùlimà	to plough	kúdí má
y) kùlòngá	to put	kúló:ngá (lay/place)
z) kùlùkà	to plait	kúlúká
aa) kùmbà	to sing	kwí:mbá
bb) kùnyà	to excrete	kúnyí:ná
cc) kùràgà [kuraxa]	to kick	kútàhá
dd) kùsèkà	to laugh	kúséká
ee) kùtòlà	to take	kútwà:lá
ff) kùwómá	to dry	kú:má
gg) kùzhà [kuza]	to come	kwí:yá

hh) kùzhùlà [kuʒula] to open kú:nzúlúlá

3.2 Tone Notation in Ikalanga Infinitives

For the sake of economy, the notation of tones in the foregoing examples can be simplified by marking high tones and contour tones only because they are fewer, just as in Čilubà (a tone reversal system) only the low tones which are not numerous will be marked as follows.

(24) e.g.

<i>Ikalanga</i>	<i>Gloss</i>	<i>Čilubà</i>	
a) kubhaya	to slaughter	kushibeya	(kill)
b) kubhika	to cook	kwi:pika	
c) kuvôna	to see	kumôna	
d) kuvónána	to see e.o.	kumôna:ngana	
e) kuḍánána	to love each other	kuna:nga:ngana	
f) kuḍusa	to remove	ku:músha	
g) kudwa	to come from	kulwa	
h) kuenda	to go	kwe:nda	(walk/march)
i) kufá	to die	kufwà	
j) kuḥwá	to hear	ku:mvwa	
k) kujá [kudʒá]	to eat	kudyà	
l) kukâṅgá	to fry	kukà:nga	
m) kukwîvâ	to steal	kwi:ba	
n) kulila	to cry	kudila	
o) kulima	to plough	kudima	
p) kulonga	to put	kulo:nga	(lay/place)
q) kuluka	to plait	kuluka	
r) kumá	to wait/stand up/stop	kwi:mana	
s) kumba	to sing	kwi:mba	
t) kung'wá	to drink	kunwà	
u) kunya	to excrete	kunyi:na	
v) kupá	to give	kupà	
w) kuraga [kuraxa]	to kick	kutàha	
x) kuseka	to laugh	kuseka	
y) kúsûka	to wash	kusuka	(e.g. the mouth)
z) kut ^h ûma	to sew	kufûma	
aa) kut ^h wá	to vomit	kutwì:la	(spit)
bb) kutóla	to take	kutwà:la	
cc) kuvâṅgá	to mix	kuvwà:ngakaja	
dd) kuwómá	to dry	ku:ma	
ee) kuzha [kuʒa]	to come	kwi:ya	
ff) kuzhula [kuʒula]	to open	ku:nzulula	

Notice that though contour tones exist in Čilubà, they are not found in infinitive verbs as they are in Ikalanga.

3.3 The Autosegmental Approach

In agreement with the Obligatory Contour Principle (OCP), identical successive tones are realized as a single tone.

(25) e.g.

a)

LLL			L
			↙
kulila	to cry	should be better marked as	kulila

b)

LL L			L
			↙
kulima	to plough	should be better marked as	kulima

c)

L L L			L
			↙
kuloŋga	to put	should be better marked as	kuloŋga

d)

LL L			L
			↘
kuluka	to plait	should be better marked as	kuluka

e)

L H H L			L H L
			↘
kuvónána	to see e.o.	should be better marked as	kuvónána

f)

L H H L			L H L
			↘
kuḡánána	to love each other	should be better marked as	kuḡánána

g)

L H H L			LH L
			↘
kulóúíwa	to be beaten	should be better marked as	kulóúíwa

h)

LH HL			LH L
			↘
kulóvéla	to be beaten for	should be better marked as	kulóvéla

i)

LH H HL
 | | | |
 kulóvésána

to help to beat e.o. should be better marked as

L H L
 | | |
 kulóvésána

Tones are first mapped onto the words in agreement with the Association Conventions (according to which *when unassociated vowels and tones appear on the same side of an association line, they will be automatically associated in a one-to one fashion, radiating from the association line.* (Goldsmith, 1990: 14)). Then, following the Association Principles as indicated in the foregoing representation, tones are associated to the segmental tier by association lines. *In the examples above, discontinuous lines show that H tones spread from left to right.*

For a phonological representation to be well-formed, *Association lines should not cross.* This is in agreement with the Well-formedness Condition suggested in Pulleyblank (1983: 11).

Carefully observing the correct Autosegmental Phonological Representation on the right side in the examples in (24) above and considering the data used in this paper leads into making the following important remarks on the tonology of Ikalanga infinitives. Their tonal melodies can be either (i) thoroughly Low-pitched or L-toned or (ii) they can include one to two pitch falls.

3.4 From a Purely Tonal Approach to a Mixed Approach

The remarks made in the foregoing paragraph lead into proposing a mixed approach combining tone and accent to explain some strange behaviours unaccounted for by an exclusively tonal approach.

Heny (1971) demonstrated that, some so-called Bantu languages are in fact pitch-accent languages. His revelation was based on an observation that in every major lexical item in Luganda, there is at most a single H to L sequence (i.e. pitch fall). In Ikalanga infinitives, it has been observed that the maximum number of pitch falls can go up to two per word. This, in other terms, amounts to saying that Ikalanga infinitives can be L-toned throughout, but they can as well include one or two HL sequences. The insight in this remark is that it is possible to predict tonal behaviour from one or two marks indicating the location of pitch drops. The asterisk [*] will be adopted later in this presentation as an indication that the following mora bears a tonic accent.

This location of pitch drop coincides with the position where the H of the HL sequence is anchored. This insight draws heavily from observations made earlier by phonologists like Heny (1971), Goldsmith (1984), as well as Hyman and Katamba (1992).

Such a mixed approach uses dynamic tonic accents which act like magnets. Even among derived forms from the same root, tonic accent is dynamic in that it does not necessarily stay on the same morpheme or syllable. It keeps moving around to decisive positions which attract H-tones that are

essential in determining the tonal pattern of words as they have the ability to spread from left to right to contiguous unaccented positions.

Therefore, instead of mapping tones, it is rather HL melodies that are mapped and their H tone is attracted by the accented positions that will be identified.

That means Ikalanga verbs like *kulila* (cry), *kulima* (plough), *kulonga* (put) and *kuluka* (plait) which are toneless have no tonic accent which can attract an HL melody. Hence, those verbs will be L toned by default.

Verbs like *kuvónána* (see e.o.), *kuḁánána* (love e.o.), *kulóvíwa* (be beaten), *kulóvéla* (be beaten for), and *kulóvéšana* (help to beat e.o.) have one tonic accent which attracts a single HL melody in which H will spread to the following syllable to the left, as indicated below.

(26) e.g.

a)

L H L	
\	
kuvónána	to see e.o.

b)

L H L	
\	
kuḁánána	to love each other

c)

L HH L		LH L
		\
kulóvíwa	to be beaten	is better marked as kulóvíwa

d)

LH HL		LH L
		\
kulóvéla	to be beaten for	is better marked as kulóvéla

e)

L H H H L		LH L
		\ \
Kulóvéšana	to help to beat e.o.	is better marked as kulóvéšana

Obviously, since the HL melodies are attracted by tonic accents, the remaining syllables of the infinitive marker on the left are L toned by default as seen in example (20) above.

4 Concluding remarks

In short, the mixed approach that has been proposed in this paper has shown that Ikalanga infinitive verbs follow three clearly different tonal patterns depending on the number of tonic accents they contain as summarized in the description below:

- i) Accentless verbs are thoroughly L-toned because they are not assigned any HL melody. They get automatically L-toned.

(27) e.g.

a) kuseka	to laugh
b) kusekana	to laugh at others
c) kusekesa	to make others laugh
d) kusekela	to laugh for so reason
e) kusekiwa	to be laughed at/become a laughing subject
f) kusekelana	to laugh for e.o. for some reason
g) kuluka	to plait
h) kulukana	to plait e.o.
i) kulima	to plough
j) kulimila	to plough for
k) kulimilana	to plough for others
l) kulimisa	to cause to plough/help to plough
m) kusuka	to wash
n) kusukilana	to wash for e.o.
o) kukumba	to visit
p) kukumbana	to visit e.o.
q) kubhika	to cook
r) kubhikila	to cook for/in/at
s) kubhikilana	to cook for e.o.
t) kubhikisa	to cause to cook/help cook
u) kubhikisana	to help e.o. to cook
v) kubhikiwa	to be cooked
w) kubhaya	to slaughter
x) kubhayiwa	to be slaughtered
y) kubhayisa	to cause to slaughter
z) kubhayila	to slaughter for
aa) kubhayilana	to slaughter for each other
bb) kuvoka	to cause to thank
cc) kuvokesa	to cause to thank
dd) kuvokewa	to be thanked
ee) kuvokana	to thank e.o.
ff) kuvokesana	to cause to thank e.o.

- ii) Verbs with one tonic accent get assigned one HL melody and this has two consequences in terms of pitch falls: if both H and L get associated, the verb has a falling melody. But in case the L tone fails to be associated, the verb will have a rising melody. Since the infinitive marking prefix /ku-/ is generally accentless in Ikalanga, the H tone of this melody is often attracted by the second syllable (i.e. the syllable after the infinitive marker /ku-/). This H tone

normally spreads to contiguous syllables before the FV. When it stops spreading or fails to spread, the L of the HL melody gets associated with the remaining position to the right.

(28) e.g.



- | | |
|--------------------------------------|---|
| a) ku* <i>l</i> óvána | to beat each other |
| b) ku* <i>v</i> ónána | to see e.o. |
| c) ku* <i>v</i> ónéla | to see for another pers. |
| d) Ku* <i>v</i> ónélána | to see for e.o./see on one's behalf |
| e) Ku* <i>v</i> óníwa | to kubóníwa |
| f) ku* <i>l</i> íngána | to look at e.o. |
| g) ku* <i>l</i> ôva [kulô:va] | to beat |
| h) ku* <i>l</i> óvéla | to be beaten for |
| i) ku* <i>l</i> óvéla | to beat for |
| j) ku* <i>l</i> óvisána | to help to beat e.o. |
| k) ku* <i>l</i> óvíwa | to be beaten |
| l) ku* <i>m</i> ílídza | to lift |
| m) ku* <i>ng</i> 'wíla | to drink on one's behalf/drink in, at, or for |
| n) ku* <i>ng</i> 'wísa | to cause to drink |
| o) ku* <i>ng</i> 'wísána | to make e.o. drink |
| p) ku* <i>ng</i> 'wíwa | to be drunk |
| q) ku* <i>p</i> ána | to give e.o. |
| r) ku* <i>p</i> úvúla | to pierce |
| s) ku* <i>p</i> úvúlána | to pierce e.o. |
| t) ku* <i>s</i> évána | to gossip about each other |
| u) ku* <i>t</i> ^h úmílána | to sew for e.o. |
| v) ku* <i>t</i> ^h úsána | to help e.o. |
| w) ku* <i>t</i> óla | to cause to take |
| x) ku* <i>t</i> ólána | to cause to take e.o. |
| y) ku* <i>t</i> ólána | to take e.o. |
| z) ku* <i>t</i> óléla | to take for |

In the case of *kulôva* [kulô:va] (to beat), the H tone gets associated to the first mora and fails to spread to the second mora which, like the following FV will get L-toned by default.

In case the L tone remains unassociated, it finally deletes. Deletion is shown by circling the unassociated L tone. This generally happens to verbs with a monosyllabic stem.

29) e.g.



- | | |
|-------------------|---------|
| a) ku* <i>ɖ</i> á | to love |
| b) ku* <i>p</i> á | to give |

- c) ku*ng'wá to drink

Sometimes, association of the H tone of this single HL melody gets delayed and is realized further than the second syllable.

(30) e.g.

- | | | |
|----|--------------|--------------------|
| | H L | |
| | | |
| a) | kuḁa*nána | to love each other |
| b) | kuteŋge*lána | to buy for e.o. |
| c) | kuḁa*víla | to answer |
| d) | kuḁavi*lána | to answer for e.o. |

- iii) Verbs with two tonic accents have some peculiar signs: They often contain a falling contour tone in the penultimate position and include one pitch fall. (i.e. Once their pitch level rises, it doesn't fall again. The L of the second HL melody remains unassociated and finally deletes, as indicated below by circling.

(31) e.g.

- | | | | |
|----|------------|----------------------------|------------------|
| | H L H L | | |
| | ∨ | | |
| a) | ku*sê*↓vá | [kuseβa] | to gossip |
| b) | ku*thû*↓lá | | to hit |
| c) | ku*lô*vá | | to beat |
| d) | ku*kwî*↓vá | | to steal |
| e) | ku*vû*↓ná | | to break |
| f) | ku*vû*↓yá | | to come |
| g) | ku*kâ*↓ŋgá | | to fry |
| h) | ku*ŋgô*↓rá | | to roast |
| i) | ku*wô*↓má | | to dry |
| j) | ku*vâ*↓ŋgá | | to mix |
| k) | ku* lô*vá | to beat e.o. | but ku*Íována |
| l) | ku*vô*↓ná | to see e.o. | but ku*vónána |
| m) | ku*Íí*↓ŋgá | to look at e.o. | but ku*Ííŋgána |
| n) | ku*sê*↓vá | to gossip about each other | but ku*sévána |
| o) | ku*thû*↓má | to sew for e.o. | but ku*thúmílána |
| p) | ku*tê*↓ŋgá | to buy for e.o. | but kuteŋge*lána |

The downward arrows in the above examples show that the H-tone after the falling contour is down-stepped.

In some very 'rare' cases, verbs with two tonic accents get two pitch falls and are characterized by the presence of a weird rising contour tone.

(32) e.g. Rare verbs with two pitch falls

kumíldzǎna [ku*míldza*ána] 'to lift e.o.'
 kusísíthíla [ku*sísít^h*íla] 'to try for e.o.'

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