

TONAL PHENOMENA IN KISHAMBAA\*

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This paper presents a descriptive study of tonal problems of KiShambaa, a Bantu language of Tanzania. I show here that tonal downstep is not conditioned by a L tone, but occurs regularly between any two H tone autosegments. In the first six sections, I discuss general tonal problems, and in the last three sections, I discuss morphologically governed alternations.

1. Introduction

In 1911, K. Roehl presented a tone-marked grammar of the Bantu language KiShambaa (Shambala), making that language one of the first Bantu languages to have published tonal material. Despite the fact that the study of Shambaa tone had an early birth, very little material has been published leading to a general overview of tonal processes in Shambaa. Van Spaandonck [1967] discusses a tone spreading rule, and Kähler-Meyer [1962] concentrates, for the most part, on the relation between synchronic noun stems and their assumed historical antecedents. Meeussen [1955] discusses a tonal irregularity of the language and relates it historically to vowel length. Nurse [1979], in his sketch of Shambaa, marks tone where known, but does not elaborate on general tonal processes; his study is nevertheless the most useful in surveying verbal constructions. To my knowledge, there is no study which attempts

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\*Data for this paper was collected during 1981 from David Mndolwa, a native speaker of KiShambaa from Tanga. I owe thanks to him for these data and to Mary Odden for reading and commenting on an earlier draft of this paper. H tone will be transcribed with an acute accent and L with none. Downstep will be marked with an exclamation mark (!), nw will be used to represent ɲw, and gh for the fricative ɣ. Finally, (vf) will be used to indicate that the verb tense is part of the verb-focusing system, and (nf) to indicate that the verb is part of the noun-focusing system.

to give a general overview of the synchronic tonal system. It is therefore my aim in this paper to provide an account of certain tonal problems in Shambaa and at the same time to provide additional data which are not readily available in the published sources.

The data in this paper come from David Mndolwa, a native speaker of the eastern dialect of the language. The language he speaks is different in many ways from that represented in Roehl [1911], the most striking difference between the two dialects or stages of the language being that Roehl's language retains Class 11 (|u-) as a class distinct from Class 14 (u-), whereas in the present language, the two classes have fallen together completely into Class 14 (u-). In tonal matters, there do not seem to be any major differences between the two languages, at least judging from the forms Roehl provides.

## 2. Phonetic Problems

KiShambaa may be analyzed as having two underlying tones, H and L, somewhat complicated by the existence of tonal downstep. H tones downdrift, so that the pitch level of a H tone after a L tone is lower than a H tone in utterance-initial position. So, the final H tone in á-ta-já 'he's eating (vf)' is lower than the initial H tone. It should also be noted that the level of a H tone in the sequence LH is generally the same as the level of the final H in the sequence HLH. Thus, in comparison to the H tone of the noun tági 'egg', the H tone of the noun ma-tági 'eggs' is lower; that H tone is as low as the final H tone in á-ta-já. In Shambaa, it can therefore be said that H tone drifts down from its ideal ceiling after any L tone; it is not necessary to actually set that ceiling phonetically.<sup>1</sup>

The language also has phonemic downstep, which may occur in a number of environments, including within lexical stems, between morphemes, and across

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<sup>1</sup>In some languages, such as Shona and Shambaa, no actual highest H is required for a H to downdrift after a L. On the other hand, in other languages, such as Kenyang, it is necessary for the ceiling to be phonetically set for H tone, so that in Kenyang, the H of LH is the same pitch level as the H of HH; only in the sequence HLH does downdrifting occur.

words.

- (1) ngó<sup>!</sup>tó                    'sheep'  
      mwé-m-<sup>!</sup>tí                'at the tree'  
      ázakómá<sup>!</sup>nyóká        'he killed a snake'

The source of downstep will prove to be rather interesting, since I shall show that it is not necessarily caused by L tones and thus does not result from downdrifting in the classical sense. However, I will eventually show that both downdrift and downstep can be handled by the same rule within a metrical theory of tone features.

It should also be noted that the penultimate syllable of a word is stressed, realized phonetically as a lengthening of the penultimate vowel (but with no perceivable changes in pitch). A lengthened penultimate vowel is shorter than a long vowel, so the unstressed long vowel in ku-kááng-íy-a 'to fry for' is longer than the stressed vowel í. A stressed long vowel becomes even longer, so that the penultimate vowel in áá-ghóók-a 'he is standing' is longer than the unstressed vowel áá.

Lastly, when vowels are adjacent, there is no hiatus between the vowels, so that there is no audible break between the vowels o and e in u-ghoe 'rope'. The sequence VV, as in áa-kóm-á 'he killed' has a clear falling tone, rather than having a discrete H tone followed by a discrete L tone. I shall therefore treat all vowel sequences as diphthongs, i.e. as members of the same syllable. This decision will be supported further when I discuss the Rise Simplification rule.

### 3. H tone spreading

The first rule to be discussed is one which spreads a H tone from left to right. This rule operates both within words and across words; I shall first discuss the external application of this rule. In the following examples, the righthand environment contains a single prefix followed by a monosyllabic L toned stem. When the preceding word ends in a H tone, that H tone spreads onto the prefix of the following word.

- (2) ma-we                    'stones'  
      i-nu                    'this (Cl.9)'  
      ní má-we                'they are stones'

This Spreading rule will also apply to the initial stem vowel if that is not word-final, as the following examples show.

- |     |                         |                   |
|-----|-------------------------|-------------------|
| (3) | nombe                   | 'cow'             |
|     | fígho                   | 'kidney'          |
|     | a-kóm-fyé <u>nó</u> mbe | 'he killed a cow' |
|     | a-j-fyé fígho           | 'he ate a kidney' |

With a longer combination of prefixes and L toned stem vowels, the H tone at the left edge of the sequence will pass through each prefix, up through the stem vowels to the penultimate vowel. The Spreading process stops at the final vowel.

- (4)    za-wa-ghanga                    'of the doctors'  
        na-ghembe                    'with a hoe'  
        ku-ghosho-a                    'to do'  
        m-kíá wá-gómbe                    'tail of the cow'  
        nyumbá zá-wá-ghángá                    'house of the doctors'  
        ní-im-íyé ná-ghémbe                    'I cultivated with a hoe'  
        ní kú-ghóshó-a                    'it is to do'  
        \*ní kú-ghóshó-á

There are two ways that one could go about describing this process of H tone spreading. First, one could formulate the rule segmentally to change each L tone feature of the vowel to a H tone, as (5) does.

- $$(5) \quad L \rightarrow H/H \quad V$$

Alternatively, one could formulate the rule as an autosegmental process associating the lefthand H tone onto a vowel (simultaneously disassociating the L tone) as in (6), where T means "any tone".

- (6)  $\begin{array}{ccc} H & L & T \\ & \vdots & \\ & V & \end{array}$

Of interest in deciding between these analyses is the fact that Spreading may apply to a L tone which stands immediately before a H tone, and when it does, the underlying sequence HLH surfaces as HH<sup>1</sup>H.

- (7) mā-kúí 'dogs'  
 nyumbá 'house'  
 ní-on-íyě má-kúí 'I saw dogs'  
 ní-on-íyě nyú-mbá 'I saw the house'

Under the autosegmental approach characterized by (6), the change of HLH to HH<sup>!</sup>H can be predicted if the disassociated L tone produced by that rule is retained in such a way that it triggers application of the downdrifting rule to the final H tone. Thus, if (8) is the output of Spreading (and the input to downdrifting), the expected pitch-lowering of H after L (albeit a disassociated L) is totally normal.

- (8)     L         H   L   H  
          / \     / \   |  
 ní-on-íyě   nyumba

On the other hand, with the feature-changing rule (5), it is necessary to assume that the downdrifting rule applies before Spreading, in order that the observed drop in pitch between the penultimate and the final syllables be generated. If Spreading applies before the rule which determines pitch levels for H tones, it will prove impossible to predict lowering of the pitch level of the final H tone in (8).

In its external manifestations, this rule applies, as far as I have been able to determine, with little concern for syntactic boundaries, so that anywhere the structural description of the rule is satisfied, the rule applies. Thus, Spreading applies between verb and direct object, direct object and indirect object, or copula and noun.

- (9) ní-m-nkh-íyě ńómbe nwáná 'I gave the child a cow'  
 ní-m-nkh-íyě 'nwáná ńómbe id.  
 ní tú<sup>!</sup>ní (/ní tuní/) 'it's a knife'

However, there are two general exceptions to the claim that Spreading is syntactically general. First, whenever there is an audible pause between two words, Spreading cannot propagate across that pause. More significantly, this rule also does not apply across the lefthand syntactic bracket separating the verb phrase from the subject noun phrase.

- (10) ni-m-nkh-íyé 'nwáná, ñombe 'I gave the child a cow'  
 \*ni-m-nkh-íyé 'nwáná, ñómbé  
 nwáná [<sub>VP</sub> a-té-dík-a ] 'the child cooked (vf)'  
 \*nwáná [<sub>VP</sub> á'-té-dík-a ]  
 wáná [<sub>VP</sub> wa-dik-íyé nyáma ] 'the children cooked meat'  
 \*wáná [<sub>VP</sub> wá-dí'-k-íyé nyáma ]

Therefore, Spreading must have a syntactic limit on its application preventing the rule from propagating across a VP bracket.

Internal to a word, the Spreading rule can also be motivated, especially within verbs. So, looking at the H toned verb stems in (11), we see that the root-initial lexical H tone spreads throughout the stem up to the penultimate vowel; as discussed before, Spreading does not apply to the word-final vowel.

- (11) ku-kááng-a 'to fry'  
 ku-táhík-a 'to vomit'  
 ku-fúmbátísh-a 'to tie a load securely on the head'  
 ku-fúmbátísh-íy-a 'to tie securely with'  
 ku-fúmbátísh-íy-án-a 'to tie securely for each other'

There is another tonal process with a similar effect, which spreads a H tone onto the final vowel in a CV(C)-V stem.<sup>2</sup> As seen in (12), a H toned verb with the stem shape CV(C)-V has a H tone on the final vowel, as well as on the root-initial vowel.

- (12) ku-fú-á 'to wash'  
 ku-kóm-á 'to kill'  
 ku-kú-á 'to grow'

In contrast, the final vowel -a is L toned in (11) and in L toned CV(C)-V verbs.

- (13) ku-dik-a 'to cook'  
 ku-hand-a 'to plant'  
 ku-to-a 'to beat'

<sup>2</sup>In Kishambaa, and in Bantu in general, the root (-fu-) must be distinguished on various grounds from the stem (-fu-a, fumbatish-a). The final vowel of the stem (-a or -e) is a morpheme, determined by morpho-syntactic considerations, such as "subjunctive", "perfective", etc.

This rule differs from the Spreading rule in that Spreading will not apply to a word-final vowel. I therefore assume the following rule applies to change the final L tone to a H tone.

(14) TONE COPY



Tone Copy will apply before Spreading in order to account for the fact that a penultimate H tone which derives from Spreading does not copy onto the final vowel in *ku-táhík-a*.

There are a number of exceptions to the Tone Copy rule. For example, as observed by Meeussen [1955] and Kähler-Meyer [1962], a number of verb stems of the synchronic shape CVC-V derive from CVVC-V stems. In the synchronic grammar, the simplest account of these verbs is that they are lexical exceptions to Tone Copy.

- (15) *ku-lál-a* 'to sleep'  
*ku-tágh-a* 'to buy'  
*ku-vyál-a* 'to give birth'  
*ku-shúk-a* 'to hate'

These stems provide additional evidence that the Tone Copy rule is independent of Spreading. Although the stems in (15) are exceptions to Tone Copy, they are unexceptional with regard to Spreading.

- (16) *ku-tágh-íy-a* 'to buy for'  
*ku-tágh-íy-án-a* 'to buy for each other'  
*ku-shúk-án-a* 'to hate each other'  
*ku-shúk-íghw-a* 'to be hated'

The Spreading rule applies inside of verbs in a number of environments other than the aforementioned cases where the lexical H tone of the root spreads throughout the verb stem. The presence of a H toned subject prefix, tense-aspect prefix, or object prefix in a verb conditions application of Spreading throughout the stem.

- (17) *ku-shunth-a* 'to wash'  
*ku-chí-shúnth-a* 'to wash it (Cl.7)'

|                          |                                 |
|--------------------------|---------------------------------|
| ku-ghosho-a              | 'to do'                         |
| ku-ví-ghóshó-a           | 'to do them (Cl.8)'             |
| ku-ghosho-a-ghosho-a     | 'to do repeatedly'              |
| ku-chí-ghóshó-á-ghóshó-a | 'to do it (Cl.7) repeatedly'    |
| ni-za-dik-a              | 'I have cooked'                 |
| ni-za-chí-dík-a          | 'I have cooked it (Cl.7)'       |
| ni-té-dík-a              | 'I have cooked (vf)'            |
| ni-té-ghóshó-a           | 'I have done (vf)'              |
| u-ni-ghosho-e-a u-ghoe   | 'you are making me a rope (nf)' |
| á-ní-ghóshó-é-a u-ghoe   | 'he is making me a rope (nf)'   |
| u-ngé-ghóshó-a           | 'you should have done'          |
| ní-ghóshó-e              | 'I should do'                   |

Spreading can be seen to apply to a L toned object prefix as well (and subsequently to all of the nonfinal L tones of the following root if they, too, are L toned).

|                       |                               |
|-----------------------|-------------------------------|
| (18) ku-ni-ghosho-e-a | 'to do for me'                |
| ku-ku-ghosho-e-a      | 'to do for you'               |
| u-ngé-ní-ghóshó-é-e   | 'you should have done for me' |
| ni-ngé-kú-ghóshó-é-e  | 'I should have done for you'  |

Apart from the general restriction that Spreading does not apply to a word-final vowel, the rule must apparently also be restricted morphologically so that it cannot take certain tense-aspect prefixes as input for the rule (although such a prefix may trigger application of Spreading to a following vowel). Thus, in the examples below, a H toned subject prefix does not spread its H tone onto the tense-aspect prefixes -fa-, -ha- and -za-, although the subject prefix does participate in Spreading in verb roots and object prefixes.

|                  |                            |
|------------------|----------------------------|
| (19) ní-fa-dik-a | 'I'm cooking (vf)'         |
| ní-fa-ghosho-a   | 'I'm doing (vf)'           |
| á-za-dik-a       | 'he has cooked (complete)' |
| á-ha-ku-dik-iy-a | 'he just cooks for you'    |

One might approach these facts with the assumption that tense-aspect prefixes never undergo Spreading and reformulate the rule with a categorical



restriction to that effect. Another approach would be to assume that these specific prefixes are exceptions to the most general formulation of rule (6). These prefixes may have originally been compound Verb + Verb constructions and were thus word-final (viz. ní-ta # díka ), so that the restriction on Spreading is at least explainable diachronically. Synchronically, there is little evidence for a word boundary after these prefixes.<sup>3</sup>

Evidence which would clearly decide in favor of one of these hypotheses would be the existence or nonexistence of other tense-aspect prefixes which undergo Spreading. There is, in fact, some evidence, albeit not incontrovertible, that some tense-aspect prefixes do undergo Spreading. The prefix -a- "present" has a L tone, and after a L toned subject prefix, it remains L toned. However, after a H toned subject prefix, the vowel -a- takes a H tone, which spreads throughout the verb stem.

- |                    |                   |
|--------------------|-------------------|
| (20) na-a-dík-a    | 'I cook'          |
| na-a-ku-ghosho-e-a | 'I do for you'    |
| á-á-dík-a          | 'he cooks'        |
| á-á-kú-ghóshó-é-a  | 'he does for you' |

The data in (20) would thus constitute an argument that Spreading does in fact apply to tense-aspect prefixes, and that the prefixes -ha-, -za-, and -ta- are anomalous exceptions. The alternative would be to treat the prefixes -ha- et al. as regular and invoke some exceptional rule which applies only to the prefix -a- above. The former solution would seem preferable on theoretical grounds, since that solution only requires that certain morphemes be marked as exceptions to an independently motivated rule, whereas the latter solution requires the addition of an idiosyncratic rule applying to a single prefix.

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<sup>3</sup>The vowel -a- in these prefixes varies according to tense with -e- , so that the prefix -ta- in ní-ta-dík-a 'I'm cooking (vf)' has the past-tense form -te- as in ní-té-dík-a 'I was cooking (vf)'. It is only in this way that these prefixes act as though they were followed by a word boundary. But even with that word boundary, the vowel change a/e is still only diachronically understandable, not synchronically predictable.

There are other data which lend support to the claim that Spreading applies to tense-aspect prefixes. The progressive prefix *-ki-* always bears a H tone and is always immediately preceded by a H toned subject prefix.

- (21) *ú-kí-dí-k-a* 'if you cook'  
*née ú-kí-dí-k-a* 'you were cooking'  
*née ní-kí-ghóshó-a* 'I was doing'  
*née á-kí-ghóshó-a* 'he was doing'

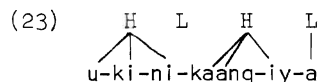
It is impossible for the prefix *-ki-* to be preceded by a L toned prefix, so there is no direct evidence that this prefix must have an underlying L tone which is changed to a H tone by Spreading. There are, nevertheless, reasons to believe that this prefix takes its H tone from Spreading. As I shall argue later, there is a downstep rule which introduces a downstep between H tone autosegments, so that when a H toned prefix is placed before another H tone, the second H tone is downstepped. If the prefix *-ki-* had an underlying H tone, we would expect there to be a downstep between the subject prefix and the prefix *-ki-*, i.e. incorrect *\*ní'-kí-dí-k-a*. In fact, the only way for there to be two H tones next to each other without an intervening downstep is for the second H tone to be the first H tone, spread onto the following vowel by Spreading or Tone Copy. It can thus be seen that there are reasons for believing that Spreading does apply to tense-aspect prefixes and that the prefixes *-ha-*, *-za-*, and *-ta-* are lexical exceptions to Spreading.

I have shown earlier that when Spreading applies between words to the tone sequence HLH, the surface pattern HH<sup>!</sup>H results. The same change of HLH to HH<sup>!</sup>H is found within words when Spreading applies. In the examples below, a L toned object prefix has its tone raised after a H toned prefix when it stands before a H toned verb stem as well as before a L toned verb stem.

- (22) *ní-té-kú-!kááng-íy-a* 'I fried for you (vf)'  
*a-té-ní-!ón-á* 'he saw me (vf)'  
*á-kú-!kááng-íy-a nyama* 'he's frying you meat'  
*á-á-kú-!kááng-íy-a* 'he's frying for you'  
*née ú-kí-ní-!kááng-íy-a* 'you were cooking for me'

As pointed out in the discussion of Spreading across word boundaries, the change of HLH to HH<sup>!</sup>H could be explained in one of two ways. Either the

downdrifting rule applies before Spreading, or else the floating L tone seen in (23) triggers downdrifting, which then applies after Spreading.



A third possibility is available, which I shall discuss below.

#### 4. Downstepping

It is a general fact of Shambaa grammar that whenever two independent H tones are brought together, a downstep appears between the two, independent of the application of Spreading or the presence of any underlying L tones. It can be seen in the examples in (24) that a downstep develops every time a H tone final word is followed by a H tone initial word.

|      |   |                          |
|------|---|--------------------------|
| (24) | nwáná   | 'child'                  |
|      | dú  | 'only'                   |
|      | kúi   | 'dog'                    |
|      | ngó <sup>!</sup> tó   | 'sheep'                  |
|      | f-za-fá   | 'it died (Cl.9)'         |
|      | nwáná <sup>!</sup> dú                                       | 'only a child'           |
|      | á-za-kóm-á <sup>!</sup> dú <sup>!</sup> ngó <sup>!</sup> tó | 'he just killed a sheep' |
|      | á-za-kóm-á <sup>!</sup> ngó <sup>!</sup> tó                 | 'he killed a sheep'      |
|      | ngó <sup>!</sup> tó <sup>!</sup> f-za-fá                    | 'the sheep died'         |
|      | ní <sup>!</sup> kúi   | 'it is a dog'            |

Thus, between words, a H tone is downstepped after both H tones and L tones. Without going into great detail about the correct formulation of the downstepping rule, one might account for these data by inserting a downstep between H tones in separate words, as in (25).<sup>4</sup>

(25)  $\emptyset \rightarrow \text{!}/\text{H\#}\_\text{H}$

But this process is in fact more general; it also applies inside of words. So, when a H toned object prefix stands after a H toned subject pre-

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<sup>4</sup>One might still wish to connect downstep with downdrift here by claiming that all of these words begin with a floating L tone. Of course, this would mean that every word which begins with a H tone 'actually' begins with a floating L tone. But even that solution will not work—in isolation, these initial H tones are not downdrifted (see section 2).

fix, a downstep appears between the two H tones.

- (26) á-<sup>!</sup>wá-ghóshó-é-a u-ghoe 'he's making them a rope'  
 /á-wá-ghoshoea/  
 á-á-<sup>!</sup>wá-ghóshó-é-a 'he's doing for them'  
 ú-<sup>!</sup>wá-lól-e 'you should look at them'

Similarly, when a H toned tense-aspect prefix precedes a H toned root or a H toned object prefix, the two underlying H tones are separated by a surface downstep.

- (27) a-té-<sup>!</sup>kóm-á 'he killed (vf)'  
 ní-té-<sup>!</sup>wá-dfík-íy-a 'I cooked for them (vf)'  
 ná-<sup>!</sup>á-<sup>!</sup>kááng-a 'I had fried'  
 a-ngé-<sup>!</sup>já 'he should have cooked'  
 a-ngé-<sup>!</sup>wá-dfík-íy-a 'he should have cooked for them'

The change of (28a) to (28b) can be accounted for very easily by generalising the Downstep rule (25) to apply between any two H tone autosegments, internally or externally.

- (28) a.  $\begin{array}{ccccc} & L & & H & & H \\ & | & & | & & / \backslash \\ a & - & te & - & kom & - & a \end{array}$   
 b.  $\begin{array}{ccccc} & L & & H & & H \\ & | & & | & & / \backslash \\ a & - & te & - & kom & - & a \end{array}$

The Downstep rule can actually be generalised in two ways. First, it can be generalised so that it applies within words as well as between words. Following the suggestions made in Odden [1981] regarding boundaries and phrase-level rules, I will assume that the Downstepping rule applies at all syntactic levels and that the word boundary should therefore be removed. Secondly, the Downstepping rule can be generalised so that it accounts for phonetic downdrifting as well as downstepping simply by eliminating the lefthand H tone environment.

Clements [1981] proposes a metrical theory of tone register which assigns metrical tree structure to tonal autosegments and allows downdrift and downstep (inter alia; see Odden [1982a]) to be read off of labeled trees. The rule which Clements proposes for the classical downdrifting process can be

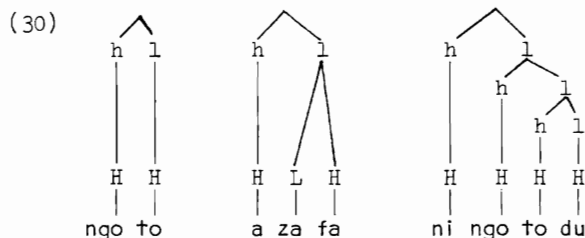
modified for Shambaa so that the rule applies not just to a H tone after a L, but to any H tone. Thus, the rules for constructing tone-register trees in Shambaa will be those in (29).

(29) Every H tone forms the right branch of a maximal n-ary branching tree.

Any remaining tones are gathered into an n-ary branching tree.

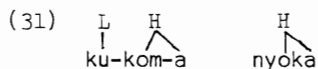
Sequences of trees constructed by these rules are gathered into right-branching binary trees labeled [h,l].

With this tree-construction rule, the forms ngó'tó 'sheep', ázafá 'he has died' and ní'ngó'tó 'dú' 'it is only a sheep' will have the tree structures in (30).



The capital letters *H*, *L* stand for tonal autosegments and the small letters *h*, *l* stand for the labels of the tone-register tree. These trees are interpreted as follows: starting at the top, the tone-register of the sequence dominated by *h* is higher than the sequence dominated by *l*. Thus, the H tone of *du* above is at the lowest level because it is dominated by the greatest number of *l*'s.

I will assume here that when a word has two consecutive phonetic H tones with no intervening downstep as in *ku-kóm-á* 'to kill' or *nyóká* 'snake' there is a single H tone autosegment associated with multiple vowels. That is, I assume the following representations for *ku-kóm-á* and *nyóká*.



In the case of verbs it is quite easy to justify the representation in (31), since it clearly derives from application of Tone Copy (or Spreading in the case of the multiple H tones of *ku-táhík-a* 'to vomit'). I assume that

the noun *nyóká* has the underlying form *nyóka*<sup>5</sup> and that it too undergoes Tone Copy, although there are no morphologically-induced alternations in tone for this noun as there are for verbs. Still, there are very few nouns with the tonal shape HL (including *kúi* 'dog' and *twíga* 'giraffe'), and I treat these nouns as exceptions to Tone Copy (as the verbal stems *-lál-* 'sleep' and *-tágh-* 'buy' are). Notice that if the nouns *kúi* and *twíga* are not treated as exceptions to Tone Copy, Tone Copy must be complicated anyway so that it applies only to verbs; otherwise, we would indeed expect all HL nouns to undergo Tone Copy. So, apart from any considerations of downstepping, it is still necessary to treat HL nouns as exceptions to Tone Copy.

Given this revised account of downstepping and downdrifting, we may reconsider just what the facts of downstepping show about the formulation of Spreading. I argued earlier that the best way to account for the fact that HLH becomes HH<sup>1</sup>H by application of Spreading is to treat Spreading as a rule disassociating a L tone and spreading the association of a H tone from the left. It was argued that the resultant floating L tone was needed to trigger the downdrifting rule. But, since we know that a downstep is also brought about between any two independent H tones, the floating L is not needed to trigger the downdrifting rule. Rather, a downstep is automatically predicted by applying the tree-construction rule (29) to the configuration in (32), which derives from underlying *ní ma-kúi* 'they are dogs' by Spreading.

(32)

$$\begin{array}{c} \text{H} \quad \quad \text{H} \text{ L} \\ \diagdown \quad \diagup \\ \text{ní} \text{ ma-ku } \text{i} \end{array}$$

But this configuration is possible only if the Spreading rule is in fact a rule spreading the association of a H tone rather than a rule changing a L feature value to a H feature value. So, the analysis of Spreading as a spreading of one H tone to many vowels is vindicated, albeit for a different reason than was proposed earlier.

---

<sup>5</sup>Note that there is an underlying contrast between two adjacent H tones in *ngó'tó* and one H in *nyóká* (/ngótó/ versus /nyóka/). The Obligatory Contour Principle (OCP) proposed in Leben [1978] predicts that such a contrast would be impossible, since the two adjacent identical H tones of /ngótó/ should be reduced to one. This tonal contrast in KiShambaa thus refutes the OCP, even as revised in Odden [1980], where it is proposed that the OCP is

5. Tone Absorption

As I have just argued, whenever two H tones come together within or between words, a downstep appears between the tones. The rule is easiest to demonstrate when each H tone stands in a separate morpheme, and in the above examples, the rule was motivated with various combinations of object prefix, subject prefix, H toned verb root, and tense-aspect prefix. Lacking in these combinations was a H toned verb root and a H toned object prefix. Indeed, as predicted, when a H toned object prefix stands before a monosyllabic H toned root, the two independent H tone autosegments are separated by a downstep, as predicted.

- (33)    nǐ- kǐ -'chǐ -'já                    'I was eating it (Cl.7)'  
           I -Prog-it(7)-eat  
           a - ngé -'chǐ -'já                    'he should have eaten it (Cl.7)'  
           he-should-it(7)-eat  
           ku-chǐ -'já                            'to eat it (Cl.7)'  
           to-it(7)-eat  
           nǐ- té - 'f -'nywá                    'I drank it (Cl.9)'  
           I -past-it(9)-drink

However, if a H toned object prefix stands before a H toned verb stem of two or more syllables, no downstep appears between the two underlying H tone autosegments.

- (34)    nǐ-kǐ-'chǐ-kóm-á                    'I was killing it (Cl.7)'  
           a-ngé-'chǐ-kóm-á                    'he should have killed it (Cl.7)'  
           ku-wá-kóm-á                            'to kill them'  
           nǐ-té-'f-kááng-fy-a                    'I fried with it (Cl.9)'

These data represent the only case where two distinct underlying H tone autosegments can be brought together without a downstep appearing between them.

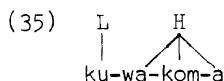
One approach to this problem would be to place some sort of restriction on the rule constructing the tone-register trees discussed in (29). Those rules might be restricted so that the H tone of the object prefix does not form a right branch if it is followed by the H tone of a verb root, providing

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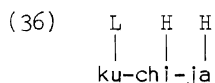
only valid for lexical entries. We can now see that the OCP is not even universally valid for the lexicon.

that the verb root is not monosyllabic. However, I can see no way to state this "generalisation" in the tree-construction rule with less than brute force.

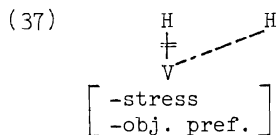
The second approach, the one which I will take here, is to assume that no downstep appears between the H tones in question because on the surface the two H tones have in fact been merged, so that they are represented as a single H tone autosegment associated with two vowels. That is, I assume that the form ku-wá-kóm-á has the representation in (35), in which no downstep could appear.



In contrast, ku-chí-'já would have the representation in (36).



The question now arises with this approach how the contrasting structures in (35) and (36) arise from underlying forms in which the object prefix and verb root clearly have separate H tones. To achieve the proper contrasts, we require the addition of a H tone Absorption rule such as (37) which eliminates the H tone of the object prefix and assigns it the H tone of the verb root, providing that the object prefix is unstressed.



The Tone Absorption approach has the advantage that it is more easily statable than a restriction on the downdrifting rule, and indeed it is not clear that appropriate restrictions on downdrifting can be concocted. The Tone Absorption hypothesis also predicts that the tone of the underlying H toned object prefix will share the fate of the underlying H tone of the verb root. Thus, any rule which lowers the H tone of the verb root should also lower the absorbed H tone of the object prefix. This prediction will be verified in the last section, where I discuss a Lowering rule, which indeed lowers the H tone of both the root and the object prefix in precisely the environments



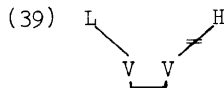
where Tone Absorption applies.

#### 6. Rise Simplification

As observed in the first section, vowel sequences are not separated by any hiatus, so that the sequence *ai* sounds more like a monosyllabic diphthong than a sequence of separate vowels. As was also observed earlier, when vowels combine to form a single syllable, level H, level L, H-to-L falling, and H-to-<sup>!</sup>H falling tones are possible. Conspicuously missing in this inventory are rising tones--there are virtually none in the language. This phonetic gap can be explained by a rule changing rising tones to level L tones. Such a rule can be easily motivated by phonological alternations. For example, there are a number of verb stems which are H toned and vowel-initial. When no prefix precedes the stem, as in the imperative, the initial vowel has a H tone, as expected. When the verb is preceded by the L toned infinitive prefix, the prefix vowel appears as *w*, with compensatory lengthening of the following vowel. But that vowel does not have the predicted rising tone (the L component from the infinitive prefix and the H component from the verb root); rather, it has a level L tone. Yet, the final vowel of the infinitive is H toned, indicating that the lexical H tone is not lost totally.

|            |           |
|------------|-----------|
| (38) ón-á  | 'see!'    |
| ímb-á      | 'sing!'   |
| ínkh-á     | 'give!'   |
| ít-á       | 'go!'     |
| kw-oon-á   | 'to see'  |
| kw-iimb-á  | 'to sing' |
| kw-iínkh-á | 'to give' |
| kw-iit-á   | 'to go'   |

Assuming a rule to simplify rising tones to level L tones, the expected forms \*kwoóná and \*kwiítá can be changed to the correct phonetic forms by applying (39).



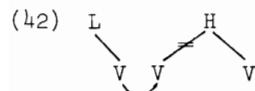
Additional motivation comes from verbal forms where a L toned prefix stands before a H toned vowel initial root, as shown in (40).

|      |                 |               |                     |
|------|-----------------|---------------|---------------------|
| (40) | ku-kw-oon-á     | /ku-ku-ón-á/  | 'to see you'        |
|      | ku-ni-on-á      | /ku-ni-ón-á/  | 'to see me'         |
|      | ku-mw-oon-á     | /ku-mu-ón-á/  | 'to see him'        |
|      | ku-tí-ón-á      | /ku-tí-ón-á/  | 'to see us'         |
|      | á-ta-inkh-á     | /á-ta-ínkh-á/ | 'he's giving (vf)'  |
|      | á-ta-imb-á      | /á-ta-ímb-á/  | 'he's singing (vf)' |
|      | ni-on-íyé nyáma | /ni-ón-íyé/   | 'I saw meat'        |

The Rise Simplification rule does not simplify every rising tone; for example, certain vowel-initial verbs are exceptions to Tone Copy and also retain their root-initial H tone in (41), yielding a rising tone on the surface.

|      |          |            |
|------|----------|------------|
| (41) | kw-oót-a | 'to dream' |
|      | kw-íík-a | 'to put'   |
|      | kw-eét-a | 'to bring' |
|      | ku-úz-a  | 'to ask'   |

This connection between failure of Tone Copy and failure of Rise Simplification can be explained by revising Rise Simplification, so that it can only apply to a H tone which is associated with at least one vowel after it, as specified in (42).



The Rise Simplification rule can also help us to understand the (otherwise inexplicable) behavior of the completive prefix -i-. As seen in (43), the prefix is phonetically L toned after a L toned subject prefix.

|      |                 |                    |
|------|-----------------|--------------------|
| (43) | ni-i-kááng-e    | 'I've fried'       |
|      | ni-i-kóm-íyé    | 'I've killed'      |
|      | ni-i-wá-kóm-íye | 'I've killed them' |

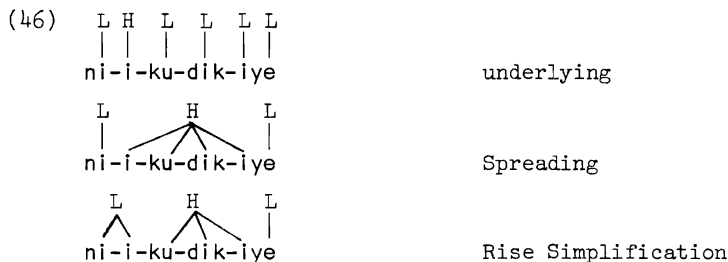
However, this prefix is anomalous in that a L toned verb after it has a phonetic H tone (spread throughout all of the nonfinal vowels of the stem), without any apparent cause.

|      |               |               |
|------|---------------|---------------|
| (44) | ni-i-ghóshó-e | 'I've done'   |
|      | ni-i-dík-íye  | 'I've cooked' |
|      | ni-i-ghúúk-e  | 'I've run'    |

Moreover, a L toned object prefix is also H toned after the completive prefix -i- .

- (45) ni-i-kú-dík-fye 'I've cooked for you'  
 ni-i-kú-ón-fye 'I've seen you'

Now the H tone of the object prefix and the root could be explained by applying Spreading, if there were a H toned prefix before the stem. But how is this relevant to the phonetically L toned prefix -i- ? If the prefix is basically H toned, it may both condition Spreading and then itself undergo Rise Simplification. Assuming that the prefix -i- has an underlying H tone, the derivation of the phonetic form ni-i-kú-dík-fye from underlying ni-f-ku-dik-ye is given in (46).



If this analysis of the completive prefix were correct, then when the prefix -f- is preceded by a H toned subject prefix, Rise Simplification will be inapplicable and, because of the downdrifting rule, the tones of the subject prefix and the completive prefix should be separated by a downstep. This prediction is verified in (47).

- (47) á-<sup>!</sup>f-dík-fye 'he has cooked'  
 á-<sup>!</sup>f-kóm-fye 'he has killed'  
 á-<sup>!</sup>f-<sup>!</sup>wá-kóm-fye 'he has killed them'

## 7. Focus Retraction

Up to this point, I have discussed the general tonological principles of Shambaa, which apply to all categories of words. There is a tonal rule which is limited in its application to one verb tense, the present noun-focal tense. As seen below, the final vowel of the H toned verb stem is, in bisyllabic stems, phonetically L toned (where, due to the Tone Copy rule, we would expect it to be H toned).

- (48) ni-kóm-a nyóká 'I'm killing a snake (nf)'  
 ni-ón-a nyóká 'I see a snake (nf)'  
 á-<sup>!</sup>ón-a nyóká 'he sees a snake (nf)'

The apparent failure of Tone Copy to apply could be handled in one of two ways. Either one could directly restrict the rule so that it simply does not apply in this tense, or else one could add another rule to the grammar lowering the final H tone. In (49), the only H tone of a monosyllabic root is deleted in word-final position in this tense.

- (49) á-ja nkhándé 'he's eating food (nf)'  
 á-<sup>!</sup>í-ja nkhándé 'he's eating the food (nf)'  
 á-<sup>!</sup>wá-ja wáná 'he's eating the children (nf)'

So, to accomodate the loss of the root H tone in (49), we need to formulate a final lowering rule; a restriction on Tone Copy is insufficient. However, more data show that the H tone in final position is not totally lost, since if a monosyllabic verb is preceded by a basically L toned prefix, such as the subject prefix ni- or the object prefix m-, that prefix takes the word-final root H tone.

- (50) ní-ja nkhándé 'I'm eating food (nf)'  
 ni-<sup>m</sup>-ja nwáná 'I'm eating the child (nf)'

These data then suggest that the rule lowering the final H tone in this tense will, if possible, preserve the final H tone by shifting it to the left.

- (51)  $\left( \begin{array}{c} L \\ \curvearrowright \\ V \end{array} \right) \begin{array}{c} H \\ + \\ V \end{array} \# \left[ \begin{array}{l} + \text{ present} \\ + \text{ n-focus} \end{array} \right]$

## 8. Imposed H Tone

The next categorially limited tonal alternation is found in a number of different morphological constructions, both nominal and verbal, and involves the addition of a string of H tones to the stem. I shall refer to this tonal pattern as the "imposed H" pattern. This pattern can be illustrated with examples of the perfective; it can be seen here that the stem-medial vowels of L toned roots bear H tone. These H tones are, so far, totally unpredictable, but worse yet, they cannot derive by applying Spreading to some H tone at the lefthand edge of the verb stem, since Spreading will not apply to a word-final

vowel, whereas these forms all have word-final H tones.

- |      |                          |                     |
|------|--------------------------|---------------------|
| (52) | ni-dík-íyé nyáma         | 'I cooked meat'     |
|      | ni-ku-ghoshó-é-yé ú-ghóe | 'I made you a rope' |
|      | ni-kááng-é nyáma         | 'I fried meat'      |
|      | ni-jí-yé nyáma           | 'I ate meat'        |

A similar pattern is encountered in the "way of doing" nominalisation formed by suffixing -ie to a stem and putting the resulting noun in Class 4 (with the prefix mi- ).

- |      |              |                   |
|------|--------------|-------------------|
| (53) | mi-kóm-éé    | 'way of killing'  |
|      | mi-zwík-íé   | 'way of dressing' |
|      | mi-tágh-íé   | 'way of buying'   |
|      | mi-kááng-íé  | 'way of frying'   |
|      | mi-ghoshó-éé | 'way of doing'    |

The imperative also uses this imposed H tone pattern.

- |      |             |                        |
|------|-------------|------------------------|
| (54) | ghoshó-á    | 'do!'                  |
|      | dík-á       | 'cook!'                |
|      | kóm-á       | 'kill!'                |
|      | tágh-á      | 'buy!'                 |
|      | kááng-á     | 'fry!'                 |
|      | fúmbátísh-á | 'tie a load securely!' |

The question then arises how this tone pattern is to be described. One thing is clear, namely that this tone pattern cannot follow automatically from rules already motivated (Spreading or Tone Copy), since otherwise, the stem tone patterns of the imperative and the infinitive would be identical, an incorrect result. We may therefore assume that associated with the imperative (and the other imposed H tone constructions) is a tone which is mapped onto the verb stem. There is no evidence in the grammar that the imposed pattern is the result of mapping two or more H tone autosegments (in addition to the lexical tone), so I assume that the imposed pattern is a reflection of a single H tone. The question then arises how and where this tone is associated with the stem.

One way to associate the imposed H tone with the stem vowels is to assume a rule which associates this tone with all vowels of the stem simultaneously;

such a rule might look like (55).

$$(55) \begin{bmatrix} T & H \\ | & | \\ V & V' * \end{bmatrix} \#$$

This rule has the merit of being straightforward, in that it gives the phonetic form directly. However, the rule also applies simultaneously to an unbounded string of vowels, and there is little evidence that linguistic theory needs to include such rules.

An alternative approach is to assume that the imposed H tone is mapped first onto the final stem vowel and is then spread backwards through the stem by the following rule.

$$(56) \begin{array}{c} \text{H} \\ \text{---} \\ \text{V}' \\ [+ \text{root}] \end{array}$$

Ordinarily, a verb root does not contain any H tone after the root-initial syllable. The Leftward Spreading rule will only apply to those syllables in the stem which have no underlying tones and not to the initial syllable which has the lexical tone of the root.

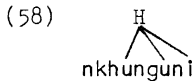
The only possible difficulty which might be anticipated with the Leftward Spreading analysis is that there might be nouns of the tonal shape LLH, where we might expect Leftward Spreading to have applied. As far as I know, there are no nouns with the stem tone pattern LLH, although further research may show that this pattern is possible. If such nouns do appear, the Leftward Spreading rule could still be maintained by assuming that in such nouns each syllable has an underlying tone, so that there are no toneless syllables for the final H tone to associate with.

Interestingly, there are a number of nouns with H tones on all syllables, including on the final syllable, which might be derived by applying Leftward Spreading to an underlying HLH pattern.

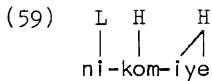
|      |           |          |
|------|-----------|----------|
| (57) | nthúmbíí  | 'monkey' |
|      | nkhámbákú | 'bull'   |
|      | nkhéngéwá | 'pigeon' |
|      | nkhúngúní | 'bedbug' |

If nkúngúní has the underlying form nkúngúní, Leftward Spreading would

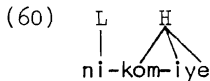
apply to give this noun the same pattern as that found in the nominalisation *mikáángíé*, which derives from underlying *mikáangié*. It will clearly be impossible to account for the final H tone in the nouns in (57) by applying the (Rightward) Spreading rule to an underlying form such as *nkhunguni*, since the final vowel could not take a H tone by Spreading. The only alternative to that outlined above is to represent these nouns as having a H tone lexically associated with all of the stem vowels; such representations as those in (58) are not otherwise needed in the lexicon.



One interesting problem with the imposed H tone pattern in H toned stems is the fact that, although the tone of the stem is apparently composed of two separate H tone autosegments (the root H tone and the imposed H tone), no downstep occurs where the two H tones meet. So, we would expect the mapping and Leftward Spreading rules to yield a structure like that in (59), to which downstepping should apply.



One explanation for the failure of a downstep to appear here is that the Tone Absorption rule (37) applies to convert (59) into (60).

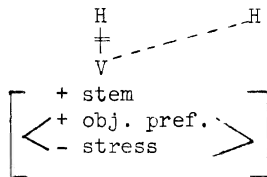


As discussed in the fifth section, Tone Absorption applies between the H tone of the object prefix and the H tone of the root. One might object to the position that this same rule can in fact apply within a root, since the rule was stated to apply to the tone of an object prefix. This then requires us to reevaluate the reasons for this specific restriction. Tone Absorption must be restricted so that the H tone of the subject prefix *á-* or the tense-aspect prefix *-té-* is not absorbed by the H tone of the root; instead, a downstep appears, as predicted.

- (61) *á-!kóm-a nyóka*            'he's killing a snake (nf)'  
       *a-té-!kóm-á*                'he killed (vf)'

However, it is common in many Bantu languages for the object prefix and the root to form a tighter phonological and morphological unit than, say, the subject prefix and the stem. For example, in the mora-counting verbal tone assignment rules in Kimatuumbi [Odden 1982b], the object prefix must be treated as part of the stem. So, if the object prefix in Shambaa is treated as part of the stem, the Tone Absorption rule can apply to both the object prefix and to the imposed H tone, since both are in the stem, whereas the subject prefix and the tense-aspect prefix are not in the stem. However, it is still necessary to differentiate between application of Tone Absorption to the imposed H tone and to the object prefix; the [-stress] condition is required for the application of the rule to the object prefix (ni-té-<sup>!</sup>chí-<sup>!</sup>já 'I ate it (vf)'), but not when the imposed H and the root H are combined in the imperative kóm-á 'kill!'

(62)



As I shall argue immediately below, there is also evidence that the root and imposed H tones fuse into a single tone; when one is lost, so is the other.

#### 9. Lowering

Shambaa has one rule that lowers tones. That rule only applies in the subjunctive, and apart from the phonological specification which identifies the last H tone in the stem, the rule has no phonological conditions. In the subjunctive, I shall show, the last H tone of the stem is lowered (and that H tone may, of course, be associated with a number of vowels). The motivation for this rule is, for the most part, that such a rule helps to explain apparent restrictions on Spreading and Tone Copy.

The tone pattern found in L toned verbs in the subjunctive is, at least for the data below, exactly what we would predict on the basis of the rule already motivated; the H tone of the subject prefix spreads throughout the stem to all of the vowels except the last one.



- (63) ní-dík-e                    'I should cook'  
       ní-ghóshó-e               'I should do'  
       ne ní-zúw-e               'I will skin (soon)'  
       sé 'ní-ghóshó-e           'I won't do (soon)'

Unexpectedly, the Tone Copy rule fails to apply in (C)VC-V H toned verbs in the subjunctive.

- (64) ní-kóm-e                   'I should kill'  
       ní-ón-e                    'I should see'  
       ne ní-ít-e                  'I will go (soon)'  
       sé 'ní-ít-e                  'I won't go (soon)'  
       néze ní-kóm-e              'I will kill (later)'

There are two ways that one could explain the fact that the root H tone has not spread to the final vowel by Tone Copy. One could either stipulate that the rule is blocked in the subjunctive, or else one could assume that the H tone of the stem *-kóm-* is lowered in the forms in (64) and that the root-internal H tone there derives by application of Spreading (conditioned by the H toned subject prefix). I shall refer to the former hypothesis as the Restriction hypothesis and the latter as the Lowering hypothesis. Under the Lowering hypothesis, a derivation such as (65) is assumed.

- (65)     H    H    L  
           |    |    |  
           ní-kóm-e                    underlying  
  
           H    L    L  
           |    |    |  
           ní-kóm-e                    Lowering  
  
           H            L  
           /            |  
           ní-kóm-e                    Spreading

The Lowering hypothesis also explains another anomaly of the forms in (64), namely that no downstep appears between the subject prefix and the root, so that *ú-kóm-e* 'you should kill' contrasts in this respect with *á-'kóm-a nyóká* 'he's killing a snake (nf)'. If the root-initial H tone in *ú-kóm-e* results from spreading the prefixal H tone to the root, no downstep would be expected. The Restriction hypothesis requires, on the other hand, the stipulation that downstepping fails to apply in the subjunctive, and in fact this

restriction cannot be maintained so generally, as we shall see below, with multiple examples of downstepped H tones in the subjunctive.

I therefore propose the following Lowering rule to account for lowering of the stem H tone in the subjunctive.

- (66)     H     → L/\_\_\_# subjunctive  
          [+root]

When a subjunctive verb has an object prefix, a different tone pattern is found. As seen below with L toned verbs, the initial stem vowel has a H tone (derived from a L tone by spreading the H tone of the object prefix, which may itself derive from spreading of the H of the subject prefix). However, all of the stem-medial vowels have L tones.

- (67)   néze ní-kú-lóí-e                    'I will see you'  
         néze ní-kú-ghósho-e-e            'I will do for you'  
         ní-kú-dík-iy-e                    'I should cook for you'  
         ne ní-!wá-dík-iy-e                'I will cook for them (soon)'  
         sé !ní-!wá-ghósho-e-e            'I will not do for them (soon)'

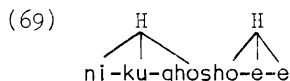
Since Spreading applies to both the L toned object prefix -ku- and the initial stem syllable, it would be impossible to maintain that Spreading does not apply in the subjunctive when an object prefix is present. Rather, the restriction on Spreading must be limited (directly or derivatively) so that only stem-internal application of Spreading is blocked. The rule might be directly restricted by reformulating Spreading so that it does not apply to a non-initial stem vowel in the subjunctive if an object prefix is present. But such a restriction would be quite cumbersome to actually state in the Spreading rule, and as we shall see, there is reason to believe that another explanation is available for this apparent restriction on Spreading.

We may hypothesize that when the subjunctive has an object prefix, the imposed H tone is added to the stem, so that the form ní-kú-ghósho-e-e has the following underlying form.

- (68)     H   L   L     H  
          |   |   |     ^  
          ní-kú-ghosho-e-e

One way to prevent the H tone of the subject prefix from spreading throughout the stem is to assume that Spreading applies to the above structure, and

yields (69).



After the Spreading rule applies, some rule will lower the final H tone which is associated with all of the non-initial stem vowels, giving the correct phonetic form ní-kú-ghósho-e-e 'I should do for you'. But we already have a rule which lowers a stem H tone in the subjunctive, Lowering (66). With the assumption that the imposed H tone is added to a subjunctive stem with an object prefix, there is an explanation for the apparent failure of Spreading to apply inside of these L toned verb stems.

In addition to explaining the blockage of Spreading inside of the stem, we can also see more directly that the Lowering rule does in fact totally eliminate the H tone of H toned verb roots. As seen below, when the H toned root is preceded by an object prefix, the entire root is L toned, and Spreading stops at the initial vowel of the verb.

|      |                       |                                  |
|------|-----------------------|----------------------------------|
| (70) | ní-kú-kaang-iy-e      | 'I should fry for you'           |
|      | ní-kú-kom-e           | 'I should kill for you'          |
|      | ne ní-kú-fumbatish-e  | 'I will tie you securely (soon)' |
|      | sé 'ní-kú-kom-e       | 'I will not kill you (soon)'     |
|      | séze ní-kú-kaang-iy-e | 'I won't fry for you'            |

How are we to explain the loss of the root H tone in (70), as well as the failure of Spreading to apply into the verb stem? Assuming as I have that the imposed H tone is added to the stem, the Tone Absorption rule should combine the root H tone and the imposed H tone into a single H. The Spreading rule will spread the H of the subject prefix to the object prefix, but no further. Then the Lowering rule applies to the stem H, giving the phonetic form, as shown in the derivation below.

- (71)
- |  |                 |
|--|-----------------|
|  | underlying      |
|  | Leftward Spread |
|  | Absorption      |
|  | Spreading       |
|  | Lowering        |

Thus, the hypothesis that the subjunctive with object prefix has an imposed H tone explains the loss of the lexical H tone as well as the failure of Spreading to apply to any of the vowels of the verb root.

In the above examples, a L toned object prefix has been used. When the object prefix is H toned, we would expect that its tone would be absorbed into the root H tone (which also incorporates the root H tone and the imposed H tone). And, true to prediction, when an object prefix is H toned underlyingly, it undergoes Lowering along with the root and imposed H tones.

- (72)
- |                       |                              |
|-----------------------|------------------------------|
| né nɪ-wa-kaang-iy-e   | 'I will fry for them (soon)' |
| sé 'nɪ-chi-teiy-e     | 'I won't know it (soon)'     |
| séze nɪ-wa-kaang-iy-e | 'I won't fry for them'       |
| nɪ-wa-kom-e           | 'I should kill them'         |

We thus have the paradoxical situation that, when the underlying form has more H tones, there are fewer H tones on the surface.

Given the Tone Absorption rule as previously postulated, the fact that the H tone of the object prefix is lowered when the root H tone is lowered is automatically predicted, because the present analysis claims that the two H tones are the *same* H tone. In turn, these data give support to the claim that the Tone Absorption rule does combine the root H tone and the object prefix H tone; not only does downstepping fail to apply between the object prefix and the H toned verb root, but just in case the root H tone is lowered

(in the subjunctive), the H tone of the object prefix is also lowered.

Moreover, as predicted, when an object prefix is stressed in the subjunctive, it cannot undergo Tone Absorption, and therefore should not (and does not) undergo Lowering when the H tone of the verb root does.

- (73) ní-<sup>!</sup>chí-je 'I should eat it (Cl.7)'  
 ní-<sup>!</sup>chí-nywe 'I should drink it (Cl.7)'

The derivation of the form ní-<sup>!</sup>chí-je is given below.

- (74)     H     H     H  
           |     |     |  
           ni-chi-je     underlying  
           NA            Absorption  
           H     H     L  
           |     |     |  
           ni-chi-je     Lowering  
           ní-<sup>!</sup>chí-je     downdrifting

There is in fact more direct evidence that the imposed H tone is added in the subjunctive when an object prefix is present. The Lowering rule generally wipes out the imposed H tone, but, in the far-future positive form of the subjunctive in a H toned root, the Lowering rule exceptionally fails to apply. Note, in contrast, that Lowering applies to all L toned verbs, to all far-future negative verbs, and to all near-future positive verbs. In (75) we see that the final and medial vowels of the stem are H toned, just as typically happens with the imposed pattern in other tenses where Lowering does not apply.

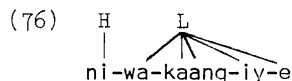
- (75) néze ní-kú-<sup>!</sup>kááng-íy-é 'I will fry for you'  
       néze ní-kú-<sup>!</sup>kóm-é 'I will kill for you'  
       néze ní-<sup>!</sup>wá-kááng-íy-é 'I will fry for them'  
       néze ní-<sup>!</sup>wá-kóm-é 'I will kill them'

So, just in case Lowering fails to apply, the entire stem is H toned, including the final vowel.

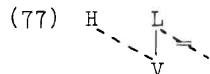
There is one remaining problem which requires discussion before leaving the tone of the subjunctive. I have just argued that the imposed H tone is added to stems with an object prefix, that Absorption applies before Lowering, and that Spreading applies before Lowering in order to explain the fact that none of the stem-medial vowels in ní-kú-kaang-iy-e 'I should fry for you'

have H tone. On the other hand, to explain the fact that Spreading does apply to the stem-medial vowels in ní-kááng-íy-e or ní-kóm-e, we have to assume that Spreading applies before Lowering. An ordering paradox appears to be at hand; when the imposed H tone is added to the stem, Spreading must precede Lowering, and when the imposed H tone is not added, Lowering precedes Spreading.

There is, fortunately, another explanation for why the stem-internal L tones in the form ní-kú-kaang-iy-e do not undergo Spreading. We may first assume that Spreading applies after Lowering (as it must for ní-kóm-e 'I should kill') and that the Spreading rule is restricted so that it only applies to a L tone associated with a single vowel; with this restriction, Spreading could not apply to ní-wa-kaang-iy-e, since the L tone is associated with multiple vowels, as shown in (76).



The only source for a L tone associated with multiple vowels is in fact from application of Lowering to the imposed H tone, and it is precisely in the case where imposed H tone is lowered that Spreading is violated on the surface. Thus, Spreading must be reformulated as in (77).



The apparent ordering paradox between Lowering and Spreading can therefore be resolved by ordering Lowering before Spreading, but also restricting Spreading so that it only applies to a L tone associated with a single vowel.

#### 10. Conclusions

I have surveyed a number of different tonal alternations in Shambaa, some of which cut across all categories, and some of which apply only in certain verb tenses. The discussions have been carried out within an autosegmental framework, and indeed, it is hard to see how some of these problems could be resolved in a segmental theory of tone—in particular, a segmental approach to tone could not provide any explanation of the limitation on Spreading seen above and could not handle downdrifting at all easily.

Beyond providing an example of how the autosegmental model can provide an enlightening account for Shambaa tone, this study also brings out facts of Shambaa which are of some comparative and historical interest. For example, I have argued here that Tone Copy and Tone Spreading must be accounted for by spreading the association of a H tone, since on general grounds, we would expect separate H tone autosegments to be separated on the surface by a downstep. So, Shambaa may furnish important evidence bearing on the original form of Spreading in other Bantu languages, where there may be no evidence to argue for a feature-changing versus association-spreading approach to Spreading.

The analysis given here for the imposed H tone in the subjunctive has comparative value as well. Meeussen (1976) reconstructs for Proto-Bantu a tone pattern for the subjunctive with object prefix where the final and medial vowels of the root have a H tone. No such surface pattern is seen in Shambaa *ní-wa-kaang-iy-e* 'I should fry for them', but as I have argued here, the underlying form *ní-wá-kááng-íy-é* is precisely what Meeussen reconstructs for Proto-Bantu.

Finally, this study gives us information about Shambaa which may be valuable in understanding the subgroupings within Bantu. In particular, the Tone Absorption rule is not limited to Shambaa, but also apparently is found in the neighboring language KiPare. However, in the southern dialect of KiPare, the surface evidence for Absorption is of a different character than in Shambaa; in KiPare, the Absorption rule is necessary to prevent the object prefix from lowering the H tone of the verb root (where, otherwise, a H tone immediately after a H tone is always lowered). Based only on surface data, one would not suspect that the two languages share the same rule.

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#### NOTES AND QUERIES

This section is for short remarks on articles dealing with African languages which have appeared in *Studies in African Linguistics* or elsewhere and for contributions which are too short to constitute full articles. These may be short descriptive or historical statements of interesting phenomena in African languages or theoretical comments utilizing African language data.

Contributions to "Notes and Queries" should be less than 1000 words, including examples. No footnotes should be used, but references may be listed at the end.

