

STUDIES IN BANTU TONOLOGY

EDITED BY LARRY M. HYMAN

SOUTHERN CALIFORNIA OCCASIONAL PAPERS IN LINGUISTICS NO. 3
DECEMBER 1976

PUBLISHED BY THE DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

STUDIES IN BANTU TONOLOGY
 Southern California Occasional Papers
 in Linguistics No. 3, December 1976
 Edited by Larry M. Hyman

TABLE OF CONTENTS

NOUN CLASSES AND TONE IN NGIE

BY

JEAN-MARIE HOMBERT

DEPARTMENT OF LINGUISTICS
 UNIVERSITY OF CALIFORNIA
 LOS ANGELES, CALIFORNIA 90024

Published by the Department of Linguistics
 University of Southern California
 Los Angeles, California 90007

| | |
|--|-----|
| Preface | v |
| 1. <u>Grassfields Bantu</u> | |
| Jean-Marie Hombert, NOUN CLASSES AND TONE IN NGIE | 3 |
| Tah Asongwed and Larry M. Hyman, MORPHOTONOLOGY OF THE NGAMAMBO NOUN | 23 |
| Larry M. Hyman and Maurice Tadadjeu, FLOATING TONES IN MBAM-NKAM | 57 |
| 2. <u>Narrow Bantu</u> | |
| Baruch Elimelech, NOUN TONOLOGY IN KOMBE | 113 |
| Linda Arvanites, KIMBUNDU TONES: TONE PATTERNS IN TWO CONTEXTS | 131 |
| Ian Maddieson, TONE REVERSAL IN CILUBA--A NEW THEORY | 141 |
| Alexandre Kimenyi, TONE ANTICIPATION IN KINYARWANDA | 167 |
| Ernest Rugwa Byarushengo, Larry M. Hyman, and Sarah Tenenbaum, TONE, ACCENT, AND ASSERTION IN HAYA | 183 |
| Lawrence Johnson, DEVOICING, TONE, AND STRESS IN RUNYANKORE | 207 |
| Jeremy Chagas, THE TONAL STRUCTURE OF ÓLUSAMIA | 217 |
| Herman Batibo, A NEW APPROACH TO SUKUMA TONE | 241 |
| Lee Trithart, DESYLLABIFIED NOUN CLASS PREFIXES AND DEPRESSOR CONSONANTS IN CHICHEWA | 259 |
| Tina L. Bennett, TONALLY IRREGULAR VERBS IN CHISHONA | 287 |
| Bibliography of Bantu Tone Studies | 321 |

PREFACE

The thirteen papers collected in this volume represent various aspects of the study of tone in Bantu. Except for the Asongwed and Hyman and the Batibo papers, these studies were carried out as part of a Seminar in Comparative Bantu Tonology offered at the University of Southern California during the 1975-1976 academic year. During the course of the seminar, participants worked closely with language consultants whose collaboration is gratefully acknowledged in the individual articles. The remaining two studies were indirectly inspired by this effort and are therefore also included in this collection. Together, the fourteen authors have covered much of the Bantu zone (both Grassfields and Narrow) and have addressed themselves to both noun and verb tonology as well as the relationship of tone to other parts of Bantu phonology and grammar (depressor consonants, noun classes, accent, left- and right-dislocation, etc.). In addition, the bibliography included at the end of the volume will, it is hoped, provide a further contribution to the growing field of Bantu tonology.

I would like to thank all of the twenty or more participants in the seminar for contributing to its success and for providing a stimulating environment in which this work could be carried out. I would like to particularly thank Prof. William E. Welmers of the University of California at Los Angeles, whose active participation most greatly benefited our cause. Finally, I would like to thank Dean David H. Malone of the Division of Humanities at U.S.C. for his constant encouragement and support.

Research leading to this publication, as well as partial printing costs, have been supported in part by a National Science Foundation grant no. SOC 75-16487.

NOTE. Wherever possible in this volume, H(igh) tone is marked by an acute accent and L(ow) tone by the absence of a tone mark. The grave accent is used in potentially confusing cases or particularly complex descriptions only. Language names have been left to the discretion of the individual authors (i.e. with vs. without the prefix, e.g. Haya vs. Kinya-rwanda).

1. INTRODUCTION

Ngie¹ is a language spoken in the following villages of the Bamenda area in Western Cameroon: Andek, Teze, Etui, Abebung, Ebang, Angong, Anjei, Tinechong, and Ungom.² The dialect described here is spoken in Teze.³ Williamson (1971:278) lists Ngie among the unclassified languages of the Mamfe Bantu subgroup of Bantoid. More recent work by the Grassfields Bantu Working Group (Hyman and Voorhoeve 1977) and especially by Stallcup (1977, in preparation) provides additional data allowing a more accurate classification of Ngie. Stallcup classifies Ngie as one of the Momo languages of Western Grassfields. The classification proposed by the Grassfields Bantu Working Group is represented in Figure 1.

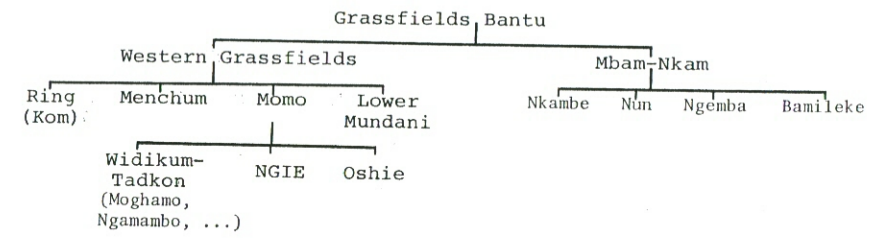


FIGURE 1. Genetic Classification of Ngie

In this paper I shall be mainly concerned with the tone system of bisyllabic nouns. In order to facilitate our understanding of this complex tone system which exhibits 10 contrastive patterns on bisyllabic words, a description of the noun classes will be provided first. It will be shown that these 10 patterns have developed historically from a two-tone system.

2. NOUN CLASSES

The noun classes of Ngie are listed in Table I. As is the case in most Grassfields Bantu languages, noun classes cannot be identified from prefixes alone in Ngie. The pronoun 'my' is used in Table I in order to differentiate all the noun classes. As can be seen from these forms, only four prefixes are found in Ngie: i-, a-, u-, and $\emptyset-$ (the latter is restricted to classes 1, 2, 9, and 10). It is interesting to point out that the initial vowel of

TABLE I. Noun Classes in Ngie

| Class | Prefix | Example | 'my' |
|-------|--------|---------|-------------------------------------|
| 1. | T- | Ttà | 'friend' òngù |
| | ā- | ābù | 'lady' |
| | ū- | ūfón | 'chief' |
| | ∅- | wâ | 'person' [also analyzeable as w-â] |
| 2. | T- | Ttâ | 'friends' òmbūŋ |
| | ā- | ābù | 'ladies' |
| | ū- | ūfón | 'chiefs' |
| | ∅- | bâ | 'persons' [also analyzeable as b-â] |
| 3. | ū- | ūkón | 'bed' òngū |
| 4. | T- | Tkón | 'beds' ìpT |
| 5. | T- | Tkón | 'bean' ìpT |
| 6. | ā- | ākón | 'beans' ìpǒ |
| 7. | ā- | āwú | 'bone' ìpǒ |
| 8. | ū- | ūwú | 'bones' òmbū |
| | ∅- | | |
| 9. | ì- | ìbē | 'dog' ìpǒ |
| | ∅- | bē | 'dog' |
| 10. | ì- | ìbē | 'dogs' ìtTŋ |
| | ∅- | bē | 'dogs' |
| 13. | T- | Tkf | 'floors' ìtTŋ |
| 19. | ū- | ūbâ | 'knife' òfūŋ |
| 6a. | ū- | ūné | 'water' òmbūŋ |

of the concord is either [i] or [o]. In both cases, this vowel is realized as intermediate in quality between the high vowels [i] and [u] and the higher-mid vowels [e] and [o].

The noun classes represented in Table I can be grouped by pairs to constitute the following genders in Table II.

TABLE II. Genders in Ngie

| | | | |
|-----|------|------|-------|
| 1/2 | 5/6 | 7/8 | 19/13 |
| 3/4 | 5/13 | 9/10 | 6a |

A few nouns do not have singular or plural forms and thus constitute single class genders such as 6a, 1, 13. Representative nouns from each gender are provided in Appendix A.⁵

Gender 1/2. Most of the nouns contained in this gender are human. In most cases the singular form is identical to the plural form. (When singular and plural forms are identical, only one of them is given in Appendix A.) The tone of the prefix can be either L (low) or M (mid). It is interesting to notice that even in cases where the prefix of the singular form is different from the prefix of the plural form, the tone is not changed.

Gender 3/4. The prefix always carries M tone. There is only one exception: ùnàŋ° 'bamboo'. This gender is very regular as far as prefixes are concerned (sg. u-, pl. i-). They clearly correspond to Proto-Bantu (PB) mu-/mi-.

Gender 5/6. The prefixes of this gender are also very regular (sg. i-, pl. a-), corresponding to PB (L)i-/ma- and Proto-Benue-Congo (PBC) li-/a-.

Gender 5/13. Both singular and plural forms carry a i- prefix. The only difference between class 13 and class 10 is in the tone of the prefix. Class 13 has a M tone prefix as opposed to a L tone prefix for class 10. Stallcup (1977) found that in another dialect of Ngie, the concords were different for these two classes ('my' was realized etìŋ for class 10 vs. etigŋ for class 13). Five nouns do not have a M tone prefix: ìbâ 'liver', ìčǒ 'landslide', ìpǐ 'anus', ìfǎ 'face', and ìkǐ 'pipe'. Note that three of these nouns have a rising (R) tone in the second syllable. We shall come

back to this point in section 3.2.

Gender 7/8. From its content, this class corresponds to PB ki-/bi and PBC ki-/bi-. Although the change from bi or bi to u is reasonable through the labialization caused by the consonant on the vowel, the change ki > a, attested in much of Grassfields Bantu, is much more difficult to explain by natural sound changes. Most of the nouns of this gender have a M tone prefix; however, four exceptions are found: àsè 'soap', àtùŋ 'grasshopper', àbè 'monkey', and àndù 'gorilla'.

Gender 9/10. In both singular and plural forms the prefix is i-. All the prefixes in this gender have L tone. Thus, it is impossible to make a singular/plural distinction in citation forms. However, one of my language assistants pointed out that it is possible (although it is not normally used?) to indicate the plural form by a slight lowering of the vowel quality of the plural prefix. This may or may not reflect an earlier distinction. Such a distinction between vowel qualities of class markers for classes 9 and 10 has been reconstructed for PB and is still found in certain Cross-River languages (de Wolf 1971:168). However, in these latter cases the vowel quality is higher for the plural class than for the singular class.

A number of 9/10 nouns can be uttered without any prefix, for example: injim or hjim 'back', ingwè or hgwè 'pig', ibè or bè 'dog', inî or ri 'animal', isú or sú 'fish'. Stallcup (1977) gives these nouns without a prefix for the singular form. If the addition of a prefix is an innovation, this may explain why some of these nouns exhibit a different tonal development from other nouns which had a prefix at an earlier stage. This point will also be considered in section 3.2.

Gender 19/13. Two nouns in this gender have an a- prefix for both singular and plural: àjì 'fly' and ànà 'ant'. They are listed in this gender because of their concord (òfūŋ/itīŋ 'my'). /f/ is found quite often in Grassfields Bantu as the consonantal concord of the class corresponding to PB 19 (see Hyman and Voorhoeve 1977). Four nouns with the regular u-/i- prefix alternation have a L tone prefix: ùnòŋ 'pipe (to carry water)', ùnèn 'bird',

ùtāp 'branch', and ùtqĩ 'twig (of tree)'. Considering the number of exceptions, it is not completely obvious that the regular prefix carries M tone. I will attempt to account for these exceptions when considering the historical development of the various tone patterns in section 3.2.

Gender 6a. This one class gender contains liquids such as oil, water, wine. Note that 6a is different from class 6 (the plural of class 5).

It is becoming clearer and clearer that an important problem connected with noun classes in Ngie is the tone of the prefix. Although there are a number of exceptions especially in genders 1/2, 7/8, and 19/13, the present investigation of the Ngie noun class system leads one to believe that prefix tones were once completely predictable. Since the tone of the prefix is in part dependent on the tone of the stem, I will first describe the tone patterns of bisyllabic Ngie nouns before considering the relationship between noun classes and the tone of prefixes.

3. THE TONE SYSTEM

We will limit our investigation of Ngie tones to bisyllabic nouns in isolation and in the associative construction.

3.1. Nouns in Isolation

Most Ngie nouns have the following shape: $V_1-C_1(G)V_2(C_2)$. The first vowel, the prefix, can either be i-, a-, or u-, and can have either L or M tone. The second vowel can have one of the following six tone patterns: L [] (low, with downgliding before pause), L° [] (low level), M [-] (mid), H [] (high), F [] (falling), and R [] (rising). Out of the twelve theoretically possible combinations, ten are found, as seen in Table III.⁶ The two patterns which are lacking are M-L° (mid followed by level-low) and M-R (mid followed by rising tone).

The phonetic shapes of the ten tone patterns are presented in Figure 2. These curves were obtained by measuring the fundamental frequencies (F_0) values (averaged over two glottal periods) at the beginning, the middle, and the end of the two vowels of each word presented in Table III. Each point represents the average of five

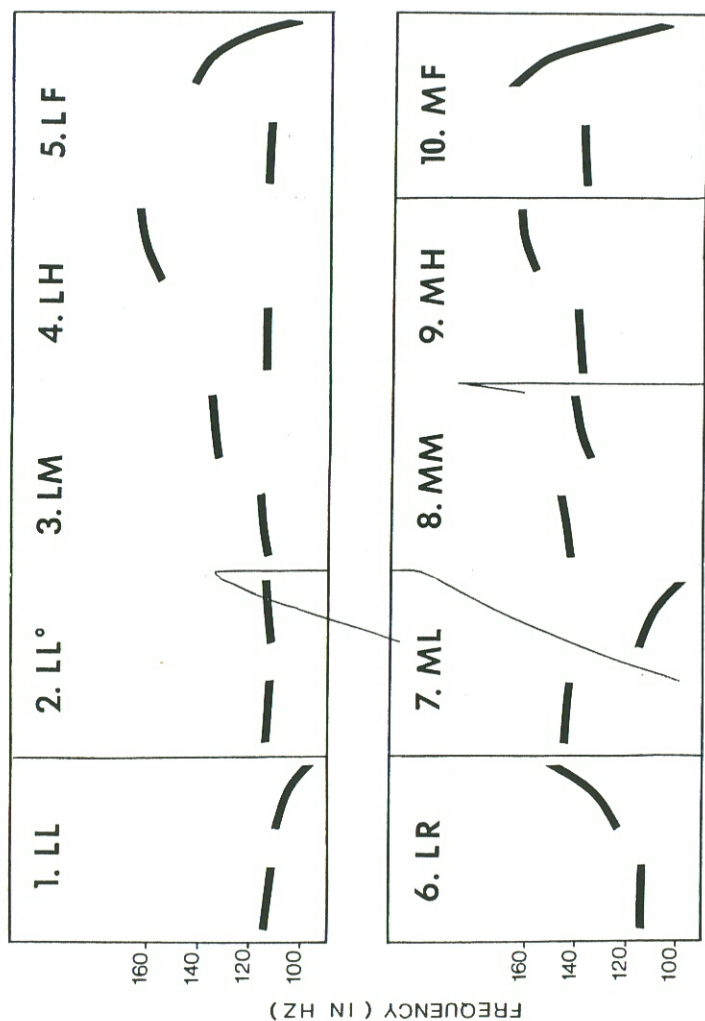


FIGURE 2. Phonetic shapes of Ngie tone patterns

TABLE III. Tone Patterns of Ngie Nouns in Isolation

| | | | | | | | |
|----|------|--------|----------|-----|-----|--------|--------------|
| 1. | L-L | ɔ̀bɔ̀ | 'liver' | 6. | L-R | ɔ̀pɔ̀ | 'anus' |
| 2. | L-L° | àbɔ̀° | 'monkey' | 7. | M-L | ɔ̀fɔ̀ŋ | 'leopard' |
| 3. | L-M | ɔ̀bɔ̀ | 'dog' | 8. | M-M | ɔ̀bɔ̀ | 'kolanut' |
| 4. | L-H | ɔ̀bɛ́t | 'war' | 9. | M-H | ɔ̀bɛ́t | 'excrements' |
| 5. | L-F | ɔ̀pɔ̀ | 'animal' | 10. | M-F | ɔ̀fɔ̀ŋ | 'chief' |

repetitions of each word read by one speaker. Measurements were made directly on the digitized waveform (sampled at 10 KHz). Since vowel quality and consonantal environment affect the F_0 of a given vowel, we should be careful in comparing any two of these ten lexical items. As can be seen from Figure 2, a number of facts concerning the phonetic shapes of the tones are obscured by our tone marks. Especially two points should be noticed: 1) tone pattern 8, which is transcribed as M-M, is in fact realized as M-'M (mid followed by a lower-mid); 2) if we compare tone patterns 5 and 10, we can see that the F tone starts higher when preceded by M than when preceded by L. With respect to the first point, I have found two exceptional nouns, $\bar{a}n\bar{o}m$ 'man' and $\bar{a}y\bar{e}$ 'woman', which are realized as true M-M, rather than M followed by 'M. Finally, it should be noted that verb tones permit different patterns from those reported for nouns, e.g. 'M-'M, M-R.

Let us now consider the possibility that this complex tone system derives historically from a simple two tone system.

3.2. Origin of the Tone Patterns

We shall first examine the tonal correspondences which can be established between Ngie, Proto-Bantu, and Proto-Grassfields. The forms given in Table IV illustrate very clearly the following three sets of correspondences:⁷

- L-L, L-F, and M-F Ngie tone classes correspond to an earlier L-L sequence on the stem.
- L-L° and M-M Ngie tone classes correspond to an earlier L-H sequence on the stem.
- L-M and M-H in Ngie correspond to an earlier H-L sequence on the stem.

The corpus is too small and the correspondences too contradictory to allow any conclusion about the other three tone classes: L-H,

TABLE IV. Correspondences between Ngie, PG, and PB Tone Classes

| Tone Class | Ngie | Proto-Grassfields (after Hyman) | Proto-Bantu (after Guthrie) | Gloss |
|------------|-------|------------------------------------|--------------------------------|------------|
| L-L | ìnjìm | -jàm̀ | -yìmà | 'back' |
| | àjì | -jì(njì) | -gìngì | 'fly' |
| | ìbè | -bì | | 'liver' |
| | ìnjèk | | -ngkògò | 'sheep' |
| L-L° | ùnèḡ° | -lèḡ' | -dàngf | 'bamboo' |
| | ùnèn° | -nòn' | -nòní | 'bird' |
| L-M | ùtāp | -tām̀ | -tāpì | 'branch' |
| | ìsū? | | -cúpà | 'calabash' |
| | ìbè | -bá' | -búà | 'dog' |
| | ìbē | -bí' | -búdì | 'goat' |
| | ìbī | | -bídà | 'palmnut' |
| | ùḡwāḡ | -ḡwāḡ' | | 'salt' |
| L-H | ìjé | -jú' | -júkì | 'bee' |
| | ìsú | -sú' | -cú | 'fish' |
| | ìbét | -bét' | -bítá | 'war' |
| L-F | ìḡì | -ḡàm̀ | -yàmà | 'animal' |
| | ìḡḡ | -ḡòḡ' | | 'hair' |
| L-R | ìḡí | -ḡì | -ḡìò | 'anus' |
| | àtḡ | -túḡ' | -túé | 'ear' |
| | ìfḡ | -sú' | -cìó | 'face' |
| | ìkí | -kìḡ' | | 'pipe' |
| M-L | ḡfòḡ | -fún' | | 'leopard' |
| M-M | ùbūḡ | | -bòḡgò | 'brain' |
| | ḡbè | -bì' | -bìdú | 'kola' |
| | ḡtḡ | -tòḡ' | -tòdú | 'navel' |
| | ḡwḡ | -kòḡ' | -gòḡgá | 'spear' |
| | ùkḡ | -kùn' | -gùnndú | 'tail' |
| | ḡsḡ | -sòḡ' | -cùḡgá | 'tooth' |
| | | | | |
| M-H | ḡkḡ | -kúǹ | -kúndè | 'bean' |
| | āḡém | -lém̀ | | 'blood' |
| | ḡḡó | -ḡú' | -yútù | 'body' |
| | āwú | -kúp' | -kúpà | 'bone' |
| | ḡbán | -bfǹ | -béédè | 'breast' |
| | ḡwú | -kúò | -kúà | 'death' |
| | ḡyá | -fík̀ | -yíco | 'eye' |
| | ḡfúḡ | -fóm̀ | | 'fat' |
| | ūwéḡ | -kwfǹ | -kúnì | 'firewood' |
| | ātḡ | -tú' | -túè | 'head' |
| | ūḡm | -lúm̀ | -dúmè | 'husband' |
| | ūḡát | -vút' | -gútà | 'oil' |
| | ūjì | | -jfbì | 'thief' |
| | ādó? | | -dákà | 'throat' |
| | M-F | ḡbúm | -bùm̀ | -bùmò |
| ūfḡn | | -fòǹ | | 'chief' |
| ūčḡ | | -cù' | | 'mouth' |

L-R, and M-L.

In order to check the validity of the correspondences established on historical grounds and to try to get data suggesting the possible origin of the three tone classes L-H, L-R, and M-L, the noun-noun associative construction (N_1 of N_2) was investigated. In this construction N_1 keeps the same tone pattern as in citation forms, but the tone pattern of N_2 depends both on its citation tone class as well as the noun class of N_1 . If N_1 belongs to class 1 or 9, a floating L tone associative marker will be inserted between N_1 and N_2 . If N_1 belongs to any other noun class, a floating H tone will be inserted, which conditions a M tone on the first syllable of N_2 regardless of its original prefix tone. Table V provides data relevant for our purposes here. The noun *ìnjìm* 'back' is associated with the ten tone classes. Note that *ìnjìm* belongs to class 9 and consequently is followed by an associative floating L tone.

TABLE V. The Associative Construction

| | Tone Class | Phonetic Realization | Gloss |
|-----|------------|------------------------|-------------------|
| 1. | L-L | ìnjìm ìsòp [_ _ _ _] | 'back of slave' |
| 2. | L-L° | ìnjìm àbè° [_ _ _ _] | 'back of monkey' |
| 3. | L-M | ìnjìm ìbè [_ _ _ _] | 'back of dog' |
| 4. | L-H | ìnjìm ìsú [_ _ _ _] | 'back of fish' |
| 5. | L-F | ìnjìm ìḡì [_ _ _ _] | 'back of animal' |
| 6. | L-R | ìnjìm ìkí [_ _ _ _] | 'back of pipe' |
| 7. | M-L | ìnjìm ḡfòḡ [_ _ _ _] | 'back of leopard' |
| 8. | M-M | ìnjìm ìbè° [_ _ _ _] | 'back of kolanut' |
| 9. | M-H | ìnjìm ìḡḡ [_ _ _ _] | 'back of body' |
| 10. | M-F | ìnjìm ùfḡn [_ _ _ _] | 'back of chief' |

A number of interesting points can be seen in Table V.

(i) The tone pattern of N_1 is not affected by N_2 .

(ii) The correspondences established in comparing Ngie with PG and PB tone classes are validated in the sense that they exhibit a similar tonal behavior. Thus, numbers 1, 5, and 10 in Table V give the same tonal sequence although they have different tone pat-

terns in their citation forms. It has already been seen that these three tone classes correspond to L-L stems at an earlier stage. Similarly, numbers 2 and 8, on the one hand, and 3 and 9, on the other, have the same tonal behavior, corresponding to L-H and H-L stems, respectively.

(iii) A new fact that we could not obtain from the correspondences appears in the associative construction: numbers 4 and 6 (L-H and L-R) have the same tonal behavior in the associative construction. Therefore, I would like to speculate that both L-H and L-R derive from H-H stems. This speculation is based on the following considerations. First, H-H is the only historical tone class which has not been identified with a modern Ngie tone class. Second, *àtǝŋ* 'ear' and *ìbét* 'war' are reconstructed with H-H on the stem, and *ìndyí* 'cloth' should probably also be reconstructed with H-H. The reconstruction of *ìsú* 'fish' is not absolutely clear and here too a reconstruction with H-H cannot be ruled out. Finally, in a closely related language, Ngamambo (Asongwed and Hyman 1976), proto *L-H-H is realized L-R.

The tonal correspondences between the PB and the Ngie tone patterns including prefixes and stems are summarized in Table VI. It is assumed that all prefixes were L in PB.

TABLE VI. Correspondences between PB and Ngie Tone Patterns

| Ngie Reflexes | L-L-L | L-L-H | L-H-L | L-H-H |
|---------------|-------|-------|-------|-------|
| 1. L-L | x | | | |
| 2. L-L° | | x | | |
| 3. L-M | | | x | |
| 4. L-H | | | | x |
| 5. L-F | x | | | |
| 6. L-R | | | | x |
| 7. M-L | | | | |
| 8. M-M | | x | | |
| 9. M-H | | | x | |
| 10. M-F | x | | | |

Two questions can be raised at this point:

- a) why should these specific tone shapes derive from the proto tone patterns?
- b) why should two (and sometimes three) reflexes derive from a single proto tone pattern?

In order to answer these questions let us imagine the following historical sequence of events. First, the various stages involved in deriving bisyllabic patterns from trisyllabic proto forms are seen in Table VII (cf. Asongwed and Hyman 1976, Hyman and Tadadjeu 1976).

TABLE VII. Derivation of Bisyllabic Tone Patterns

| (a) | (b) | (c) | (d) | (e) |
|-------|--------------------|-----|------|-----|
| L-L-L | L- \overline{LL} | L-L | | |
| L-L-H | L- \overline{LH} | | L-L° | |
| L-H-L | L- \overline{HL} | | | L-M |
| L-H-H | L- \overline{HH} | L-H | | |

The four proto tone sequences on trisyllabic nouns are given in (a). In (b) the final syllable is lost and its tone is assigned to the remaining stem syllable to the left. In (c) L- \overline{LL} and L- \overline{HH} have become L-L and L-H by coalescing like tones. In (d) L- \overline{LH} has simplified as L-L°, and finally, in (e), L- \overline{HL} has simplified as L-M. The net result is that the modern tone patterns correspond more or less to those of the first two syllables of the reconstructed patterns.

As a second development, following the derivations represented in Table VII, certain prefixes became M, the others staying L. In this process of prefix-raising, the relationship between the two tones (i.e. the tone of the prefix and the tone of the stem) was maintained. This "bifurcation" of tone patterns is seen below in Table VIII. Although the first three categories are quite straightforward, the last category is not. (Also note that the exceptional M-L category is not explained at all.) Since the claim being made here is that a tone raising occurred on bisyllabic nouns with their original tone intervals/contours preserved, category IV can be explained in the following way. First, while L-M was free to go up by one tone level to become M-H, L-H could not do so without creating a new (super-) H level. In order to avoid creating a new tone level, tone-raising was thus blocked, with L-H remaining L-H

TABLE VIII. Bifurcation of Bisyllabic Tone Patterns

| | | | | | |
|------|------|---------|---|------|---------|
| I. | L-L | [_ _] | → | L-L | [_ ˩] |
| | | | → | M-F | [- ˩] |
| II. | L-L° | [_ _] | → | L-L° | [_ _] |
| | | | → | M-M | [- -] |
| III. | L-M | [_ -] | → | L-M | [_ -] |
| | | | → | M-H | [- -] |
| IV. | L-H | [_ -] | → | L-R | [_ ˩] |
| | | | → | L-H | [_ -] |

in the tone-raising environments (see below). Perhaps tied in with this inability to undergo tone-raising, L-H became L-R in the non-tone-raising environments (including N₂ position, where all noun prefixes bear L tone, as we saw in Table V).⁸

Let us turn now to the L-F sequence. Up to now we have only considered stems with prefixes, although it was mentioned that a number of nouns could be uttered without a prefix. It is possible that items without prefixes developed slightly different tone patterns. The fact that ɪpɪ 'animal', ɪŋqʷə 'pig', ɪbɛ 'dog', and ɪsú 'fish' can be pronounced pɪ, ŋqʷə, bɛ, and sú suggests the following development for stems without prefixes.

TABLE IX. Derivation of Monosyllabic Tone Patterns

| | | | | | |
|-------|----|-------|---|---|-------|
| ∅-L-L | L | [_] | → | F | [˩] |
| ∅-L-H | L° | [_] | | | |
| ∅-H-L | M | [-] | | | |
| ∅-H-H | H | [-] | | | |

The L tone may have changed into [˩] to emphasize the falling contour in order to make it maximally distinct from L°. These tones were thus not subject to the modifications occurring when prefixes were raised. Recently, however, a L tone prefix was added. This resulted in merging stems without prefixes with stems with L prefixes in the case of L-L°, L-M, and L-H, but created a new pattern in the case of L-F [_ ˩], which is different from L-L [_ ˩].

It is obvious now that the problem of the tone of the prefix

provides a key element in understanding the development of the Ngie tone patterns. Our complete understanding of this problem will, in addition, have important implications for the reconstruction of earlier stages such as PG, PB, and PBC.

Considering the amount of data now available, the most likely historical scenario seems to be the following:

1) All prefixes were L (CV- prefixes for all classes except in 9 and 10, which had N-).

2) In certain contexts (e.g. citation forms), the tone of the prefix was changed from L to M except in cases in which the prefix was followed by a NC consonant cluster.

3) Nasals were lost when followed by a voiceless segment and they merged with the following segment when the latter was also a (homorganic) nasal.

There are at least five questions raised by this development.

- why should the tone of the prefix go up in certain contexts such as citation forms?
- why should this raising of L tone be stopped by NC clusters?
- where would these NC clusters come from?
- can the simplification of N [-voice, C] and NN sequences be justified?
- can the exceptions to these historical developments be accounted for?

Unfortunately, at this point, I have only hints of answers to all of these questions. It is possible that the raising of the L tone prefixes to M can be attributed to the noun preprefix reconstructed for Proto-Bantu (de Blois 1970). Various papers in this volume have demonstrated that this preprefix carried H tone in the proto language. The reason why the H preprefix would have led to a M tone in all classes except 9 and 10, but to a L tone in 9 and 10 can be attributed to syllabification problems.⁹ The preprefix \acute{V}_1 followed by a CV₂ prefix resulting in \bar{V}_2 after the loss of V_1 and C (the change from HL into M is attested in bisyllabic noun stems). In the case of a N- prefix, the consonant cluster N (from the prefix) followed by C (the first consonant of the stem) would have had a depressing effect on the fundamental frequency of neighboring

vowels which resulted in keeping a L tone on the vowel. Data from Chichewa (Trithart 1976) suggest that it is possible that NC clusters can have a more important depressing effect than N or C taken separately. This solution, which takes phonological shapes into consideration rather than, for instance, attributing a priori a L tone to class 1 and 9 and a H tone elsewhere, seems to be preferable for two reasons. First, in Ngamambo (Asongwed and Hyman 1976), the shape of the prefix is also related to its tone. Second, the fact that 9 and 10 are paired together (that is, the two classes which have a N- prefix) rather than the usual class 1 and class 9 suggests strongly that the shape of the prefix was the determining factor. It is impossible at this point, however, to justify the loss of nasals before all voiceless segments (which is required in order to account for nouns which exceptionally take L tone prefixes), except by saying that this process is not uncommon in Grass-fields Bantu. Thus, $\text{\`a}t\text{\`s}\eta$ 'ear' may reconstruct with $-\text{nt}-$, the nasal later dropping out.

Other exceptions are answered in the following way. First, forms such as $\text{\`a}b\text{\`e}^\circ$ 'monkey' and $\text{\`u}d\text{\`a}$ 'cutlass' should not be found, since they reconstruct with a CV- prefix. We can speculate that these words were monosyllabic, and that the addition of a prefix is a recent innovation. (The only other alternative is that these nouns are borrowed from another language and keep their original tone properties.) Finally, such forms as $\text{\`u}n\text{\`e}\eta^\circ$ 'bamboo' and $\text{\`u}n\text{\`e}n^\circ$ 'bird' can be accounted for by assuming that they were originally in class 9 (rather than in class 3 and class 19), and since the initial consonant of the stem was a nasal, the nn clusters had the same depressing effect as other NC clusters. Subsequently, nn was simplified to n , and these nouns were shifted into other classes. Whether the above attempt to account for the various kinds of exceptions is completely correct is something which will have to await further comparative studies in the area.

NOTES

¹Also called Angie, Baminge, Mingi, Ngi, and Ugie.

²Villages are ordered according to the number of speakers in each one (Andek having the greatest number of speakers).

³Some phonological differences are found in the different villages (see Hombert, in preparation).

⁴The pronoun 'my' has been selected because it differentiates more classes than any other pronoun.

⁵The tone marks used in Appendix A are explained in section 3.

⁶A list of words arranged by tone patterns is presented in Appendix B.

⁷It should be borne in mind that the first tone in Ngie is the tone of the prefix as opposed to PG and PB, where the two tones belong to the stem.

⁸The only other alternative is that the Ngie M-H tone pattern collapses both historical L-H-L and L-H-H by tone-raising, as has been demonstrated for Ngamambo (Asongwed and Hyman 1976). In this case, Ngie L-H nouns would be treated as \emptyset -H-H, i.e. underlyingly prefixless (cf. the discussion immediately below).

⁹I wish to thank I. Maddieson and L. Goldstein for suggesting this explanation.

APPENDIX A. CONTENT OF NOUN GENDERS IN NGIE

In the following lists, lexical items are arranged by tone patterns rather than in alphabetical order.

Gender 1/2. prefix i-, a-, u-, \emptyset / i-, a-, u-, \emptyset
concord $\text{\`o}\eta\text{\`g}^\circ$ / $\text{\`o}m\text{\`b}^\circ$

| | | | |
|---|------------------|--|---------------|
| $\text{\`w}\text{\`a}$ / $\text{\`b}\text{\`a}$ | 'person' | $\text{\`T}\text{\`f}\text{\`o}\eta$ | 'leopard(s)' |
| $\text{\`i}\text{\`s}\text{\`o}\text{\`p}$ / $\text{\`u}\text{\`s}\text{\`o}\text{\`p}$ | 'slave' | $\text{\`u}\text{\`t}\text{\`u}$ | 'vehicule(s)' |
| $\text{\`a}\text{\`t}\text{\`i}$ / $\text{\`u}\text{\`t}\text{\`i}$ | 'young girl' | $\text{\`u}\text{\`n}\text{\`o}\text{\`m}$ | 'husband(s)' |
| $\text{\`u}\text{\`d}\text{\`a}$ / $\text{\`i}\text{\`d}\text{\`a}$ | 'cutlass' | $\text{\`u}\text{\`f}\text{\`o}\text{\`n}$ | 'chief(s)' |
| $\text{\`T}\text{\`t}\text{\`a}$ | 'friend' ('pal') | $\text{\`a}\text{\`b}\text{\`u}$ | 'lady/ladies' |

Gender 3/4. prefix u- / i- concord $\text{\`u}\eta\text{\`g}^\circ$ / $\text{\`i}\eta\text{\`j}^\circ$

| | | | |
|---|---------------|--|-------------------------|
| $\text{\`u}\text{\`n}\text{\`e}\eta^\circ$ / $\text{\`i}\text{\`n}\text{\`e}\eta^\circ$ | 'bamboo' | $\text{\`u}\text{\`j}\text{\`f}$ / $\text{\`T}-$ | 'thief' |
| $\text{\`u}\text{\`k}\text{\`o}\text{\`n}$ / $\text{\`T}-$ | 'bed' | $\text{\`u}\text{\`t}\text{\`f}\text{\`m}$ / $\text{\`T}-$ | 'termite mount' |
| $\text{\`u}\text{\`k}\text{\`o}$ / $\text{\`T}-$ | 'deaf person' | $\text{\`u}\text{\`z}\text{\`o}\text{\`k}$ / $\text{\`T}-$ | 'witchcraft' |
| $\text{\`u}\text{\`f}\text{\`o}$ / $\text{\`T}-$ | 'fever' | $\text{\`u}\text{\`k}\text{\`a}\text{\`n}$ / $\text{\`T}-$ | 'message' |
| $\text{\`u}\text{\`w}\text{\`e}\eta$ / $\text{\`T}-$ | 'firewood' | $\text{\`u}\text{\`c}\text{\`o}$ / $\text{\`T}-$ | 'mouth' |
| $\text{\`u}\text{\`b}\text{\`o}\text{\`k}$ / $\text{\`T}-$ | 'hole' | $\text{\`u}\text{\`m}\text{\`e}$ / $\text{\`T}-$ | 'sauce' |
| $\text{\`u}\text{\`k}\text{\`o}\text{\`p}$ / $\text{\`T}-$ | 'money' | $\text{\`u}\text{\`b}\text{\`u}\text{\`n}$ / $\text{\`T}-$ | 'brain' |
| $\text{\`u}\text{\`k}\text{\`u}\text{\`m}$ / $\text{\`T}-$ | 'name' | $\text{\`u}\text{\`z}\text{\`e}\text{\`k}$ / $\text{\`T}-$ | 'cloth (to carry baby)' |
| $\text{\`u}\text{\`y}\text{\`o}\text{\`p}$ / $\text{\`T}-$ | 'palm tree' | $\text{\`u}\text{\`w}\text{\`e}\text{\`t}$ / $\text{\`T}-$ | 'fire' |
| $\text{\`u}\text{\`n}\text{\`f}\text{\`?}$ / $\text{\`T}-$ | 'rope' | | |

Gender 5/6. prefix i- / a- concord $\text{\`i}\eta\text{\`j}^\circ$ / $\text{\`i}\eta\text{\`j}^\circ$

| | | | |
|---|----------|--|--------|
| $\text{\`T}\text{\`k}\text{\`o}\text{\`n}$ / $\text{\`a}\text{\`k}\text{\`o}\text{\`n}$ | 'bean' | $\text{\`T}\text{\`y}\text{\`o}$ / $\text{\`a}-$ | 'eye' |
| $\text{\`T}\text{\`b}\text{\`a}\text{\`n}$ / $\text{\`a}-$ | 'breast' | $\text{\`T}\text{\`b}\text{\`e}$ / $\text{\`a}-$ | 'kola' |

| | | | |
|-----------|---------|-----------|---------|
| Twōŋ / ā- | 'spear' | Tsōŋ / ā- | 'tooth' |
| TkTŋ / ā- | 'pot' | | |

Gender 5/13. prefix i- / i- concord inj̄ / it̄

| | | | |
|-----|----------------|------|-----------------|
| ɪbɛ | 'liver(s)' | Tkf | 'floor(s)' |
| ɪɛɔ | 'landslide(s)' | Tjɔk | 'food(s)' |
| ɪnɪ | 'anus(es)' | Tyɔŋ | 'market(s)' |
| ɪfɛ | 'face(s)' | Ttú | 'wine(s)' |
| ɪkɪ | 'pipe(s)' | Tbóm | 'belly/bellies' |
| Tpó | 'body/bodies' | Tjéŋ | 'firesite(s)' |
| Twú | 'death(es)' | Ttōŋ | 'navel(s)' |

Gender 7/8. prefix a- / u- concord inj̄ / omb̄

| | | | | | |
|-------|-------|---------------|------|------|---------------------|
| àsɛ | / úsɛ | 'soap' | āzf | / ū- | 'friend' |
| àtɛŋ | / ù- | 'grasshopper' | ātɛ | / ū- | 'head' |
| àbɛ | / ù- | 'monkey' | āsɪŋ | / ū- | 'place' |
| àndú? | / ù- | 'gorilla' | ādó? | / ū- | 'throat' |
| ānóm | / ū- | 'blood' | ātɛŋ | / ū- | 'trap' |
| awú | / ū- | 'bone' | āzót | / ū- | 'tree' |
| ābé | / ū- | 'country' | āzɛ? | / ū- | 'yam' |
| āná | / ū- | 'cut' | ābóm | / ū- | 'egg' |
| ākúŋ | / ū- | 'crab' | āyɔ | / ū- | 'foot' |
| ānɛ | / ū- | 'day' | āyɛ | / ū- | 'hut (for chicken)' |

Gender 9/10. pref. i-, ø / i-, ø concord inj̄ / it̄

| | | | |
|-------|--------------------------|-------|------------|
| ɪnjɪm | 'back(s)' | ɪbɛ | 'dog' |
| ɪnjəm | 'dream(s)' | ɪsú? | 'calabash' |
| ɪpá? | 'cloud(s)' | ɪbɪ | 'palmtree' |
| ɪkɪ | 'maize(s)' | ɪngɔ | 'fowl' |
| ɪkɛŋ | 'nest(s)' | ɪbɔ | 'goat' |
| ɪnjək | 'sheep' | ɪkɔ | 'nail' |
| ɪtá | 'flower(s) from cocoyam' | ɪpɪ | 'animal' |
| ɪmbú | 'collective work(s)' | ɪfɪŋ | 'heart' |
| ɪngɛ | 'horse(s)' | ɪpóŋ | 'hair' |
| ɪngɛ | 'pig(s)' | ɪndɪf | 'cloth' |
| ɪjɛŋ | 'axe(s)' | ɪsú | 'fish' |

Gender 19/13. prefix u- / i- concord úf̄ / it̄

| | | | |
|------|-------------------------|------------|------------------|
| àjɪ | 'fly/flies' | útɪf̄ / ɪ- | 'twig (of tree)' |
| ànú | 'ant(s)' | ūbɛ / ū- | 'knife' |
| ùnɛn | / ɪnɛn | ūfú? / T- | 'leaf' |
| ùnòŋ | / ɪ- | ūɛɔ / T- | 'hummingbird' |
| | 'pipe (to carry water)' | ūsɔ / T- | 'pepper' |
| útāp | / ɪ- | ūnɔ? / T- | 'spice' |

Gender/Class 6a. prefix u- concord omb̄

| | | | | | |
|------|-------|-----|---------|------|--------|
| ūŋát | 'oil' | ūné | 'water' | ūnɛ? | 'wine' |
|------|-------|-----|---------|------|--------|

Gender/class 1. prefix varies Gender/Class 13. prefix i-

| | | | |
|------|-------|------|-------------|
| ɪbét | 'war' | Tbét | 'excrement' |
|------|-------|------|-------------|

APPENDIX B. Tone Patterns in Ngie

1. L-L, notation VC̄V̄ [_ _]

| | | | |
|-------|--------------------|-------|----------------|
| ànù | 'ant' 19 | ɪkɪ | 'maize' 9 |
| ɪnjɪm | 'back' 9 | ɪkɛŋ | 'nest' 9 |
| ɪpá? | 'cloud' 9 | ɪnjək | 'sheep' 9 |
| ɪnjəm | 'dream' 9 | ɪsɔp | 'slave' 1, 9 |
| ɪsɔŋ | 'elephant grass' 9 | àsɛ | 'soap' 7 |
| àjɪ | 'fly' 19 | àtɪ | 'young girl' 1 |
| ɪbɛ | 'liver' 5 | | |

2. L-L°, notation VC̄V̄° [_ _]

| | | | |
|------|---------------------|------|----------------------------|
| ùnɛŋ | 'bamboo' 3 | ɪngɛ | 'horse' 9 |
| ùnɛŋ | 'bird' 19 | àbɛ | 'monkey' 7 |
| ɪmbú | 'collective work' 9 | ɪngɛ | 'pig' 9 |
| àtɛŋ | 'grasshopper' 7 | ùnòŋ | 'pipe (to carry water)' 19 |

3. L-M, notation VC̄V̄ [_ -]

| | | | |
|------|--------------|------|--------------|
| ɪjɛŋ | 'axe' 9 | ɪbɔ | 'goat' 9 |
| útāp | 'branch' 19 | ɪkɔ | 'nail' 9 |
| ɪsú? | 'calabash' 9 | ɪbɪ | 'palmtree' 9 |
| ɪbɛ | 'dog' 9 | ùngɛ | 'salt' 19 |
| ɪngɔ | 'fowl' 9 | | |

4. L-H, notation VC̄V̄ [_ -]

| | | | |
|-------|--------------|------|----------|
| ɪjɛ | 'bee' 9 | ɪsú | 'fish' 9 |
| ùbúŋ | 'children' 2 | ɪbét | 'war' 1 |
| ɪndɪf | 'cloth' 9 | | |

5. L-F, notation VC̄V̄ [_ -]

| | | | |
|-------|-------------|------|---------------|
| ɪpɪ | 'animal' 9 | ɪfɪŋ | 'heart' 9 |
| údó | 'cutlass' 1 | ɪcɔ | 'landslide' 5 |
| àndú? | 'gorilla' 7 | ùbá | 'persons' 2 |
| ɪpóŋ | 'hair' 9 | | |

6. L-R, notation VC̄V̄ [_ -]

| | | | |
|------|----------|-------|---------------------|
| ɪnɪ | 'anus' 5 | ɪkɪ | 'pipe' 5 |
| àtɛŋ | 'ear' 7 | ɪtɪf̄ | 'twig (of tree)' 19 |
| ɪfɛ | 'face' 5 | | |

7. M-L, notation VC̄V̄ [- _]

| | | | |
|------|----------------------|-----|-------------|
| Ttá | 'friend (colloq.)' 1 | ūtù | 'vehicle' 1 |
| Tfóŋ | 'leopard' 1 | | |

8. M-M, notation VC̄V̄ [- -]

| | | | |
|------|---------------------------|------|-----------|
| ūbūŋ | 'brain' 3 | āyɔ | 'foot' 7 |
| uzək | 'cloth (to carry baby)' 3 | Tbɛ | 'kola' 5 |
| ābóm | 'egg' 7 | Ttōŋ | 'navel' 5 |
| uwēt | 'fire' 3 | Tkɪŋ | 'pot' 5 |

Ṭwōŋ 'spear' 5
 ūnǝ? 'spice' 19

9. M-H, notation $\bar{V}\bar{C}\bar{V}$ [- -]

Ṭkón 'bean' 5
 ūkón 'bed' 3
 ūtɥí 'belt' 19
 ānóm 'blood' 7
 Ṭpó 'body' 5
 āwú 'bone' 7
 Ṭbán 'breast' 5
 ābé 'country' 7
 ākúŋ 'crab' 7
 ānǝ 'day' 7
 Ṭwú 'death' 5
 Ṭyǝ 'eye' 5
 ūfǝ 'fever' 3
 Ṭfúŋ 'fat' 10
 Ṭkí 'floor' 5
 ūwéŋ 'firewood' 3
 Ṭják 'food' 5
 āzí 'friend' 7
 ātǝ 'head' 7
 ūbák 'hole' 3
 ūnóm 'husband' 1
 ūbǝ 'knife' 19

10. M-F, notation $\bar{V}\bar{C}\bar{V}$ [- -]

Ṭbúm 'belly' 5
 ūfón 'chief' 1
 ūbák 'dye (used for a bride)' 3
 Ṭjúŋ 'firesite' 5
 ābú 'lady' 1

ūkón 'tail' 3, 19
 Ṭsōŋ 'tooth' 5

ūfú? 'leaf' 19
 Ṭyúŋ 'market' 5
 ūkáp 'money' 3
 ūgúm 'mountain' 3
 ūǝǝ 'hummingbird' 19
 ūkúm 'name' 3
 ūŋót 'oil' 6a
 ūyáp 'palm tree' 3
 ūsǝ 'pepper' 19
 āsíŋ 'place' 7
 ūpí? 'rope' 3
 ūtíŋ 'termite mount' 3
 ūjǝ 'thief' 3
 ādó? 'throat' 7
 ātúŋ 'trap' 7
 āzát 'tree' 7
 Ṭbét 'excrement' 13
 ūné 'water' 6a
 Ṭtú 'wine' (fermented) 5
 ūzák 'witchcraft' 3
 āzǝ? 'yam' 7

ānám 'lamp' 7
 ūkân 'message' 3
 ūcǝ 'mouth' 3
 ūmǝ 'sauce' 3
 ūnǝ? 'wine' 6a

ACKNOWLEDGEMENTS

I would like to thank Larry Hyman for his helpful comments and criticisms on this paper. Special thanks to my language assistants Julius Abiedu and Ukum Shadrack for their great patience and skill at humming Ngie tone patterns.

REFERENCES

- Asongwed, T. and L. M. Hyman. 1976. Morphotonology of the Ngama-mbo noun (in this volume).
- de Blois, K. 1970. The augment in the Bantu languages. *Africana Linguistica* 4.85-165. Musée Royal de l'Afrique Centrale, Tervuren.
- Guthrie, M. 1967. *Comparative Bantu*. 4 Volumes. London: Gregg Press Ltd.
- Hombert, J-M. In preparation. Phonetics and phonology of the Ngie language.
- Hyman, L. M. and M. Tadadjeu. 1976. Floating tones in Mbam-Nkam (in this volume).
- Hyman, L. M. and J. Voorhoeve. 1977. Noun Classes in Grassfields Bantu. Paris: Société d'Etudes Linguistiques et Anthropologiques de France (in press).
- Stallcup, K. L. 1977. The Momo languages. In Hyman and Voorhoeve (in press).
- Stallcup, K. L. Forthcoming. Moghamo, Ngie and Oshie: Phonology and Noun Class Morphology of Three Languages of the Cameroon Grassfields. Ph.D. Dissertation, Stanford University.
- Trithart, L. 1976. Desyllabified noun class prefixes and depressor consonants in Chichewa (in this volume).
- Williamson, K. 1971. The Benue-Congo languages and Ijǝ. In T. A. Sebeok, ed., *Current Trends in Linguistics* 7.245-306. The Hague: Mouton.
- Wolf, P. de. 1971. The Noun Class System of Proto-Benue-Congo. The Hague: Mouton.

STUDIES IN BANTU TONOLOGY
Southern California Occasional Papers
in Linguistics No. 3, December 1976
Edited by Larry M. Hyman

MORPHOTONOLOGY OF THE NGAMAMBO NOUN

BY

TAH ASONGWED

ECOLE DE TRADUCTEURS ET INTERPRÈTES
UNIVERSITÉ LAURENTIENNE
SUDBURY, ONTARIO, CANADA P3E 2C6

AND

LARRY M. HYMAN

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

The first author is also affiliated with the Department of Linguistics at the University of Massachusetts, Amherst, where he is working on a Ph.D. in Linguistics.

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

0. INTRODUCTION

Even on Grassfields Bantu standards, the Ngamambo dialect of Moghamo offers a bewildering array of tonal patterns and tone alternations. No fewer than 10 regularly occurring tone patterns are found on bisyllabic nouns, for instance, and at least two of these have to be further subcategorized with respect to their tonal behavior in context. The purpose of the present study is to outline the tonal properties of Ngamambo, determine the abstract underlying tone forms of nouns, and the morphotonemic rules required to derive the various tonal alternations. As we shall see, these rules will by and large parallel the historical changes which have operated on the tone system of the language. In particular, it will be shown how the two-tone system of Proto-Grassfields has developed into a system recognizing five phonetic pitch levels.

1. THE NOUN CLASSES

A typical Ngamambo noun consists of a prefix and usually one or two stem syllables. A certain number of monosyllabic nouns occur without a prefix (e.g. wán 'child', pòŋ 'bushcow', sán 'elephant'), as do a very restricted number of bisyllabic borrowed nouns (e.g. mátà 'mat', mélôk 'milk'). The noun prefix consists of one syllable, either a homorganic nasal (N-), a vowel (V-), or a consonant-vowel sequence (CV-). The choice of prefix shape, as well as the consonantal and tonal concords found on morphemes undergoing grammatical agreement, is determined by the class affiliation of each noun. These noun classes, which closely resemble those given for Batibo Moghamo by Stallcup (1976), are given in Table I for reference. The following observations can be made based on this table: 1) A few nouns in singular class 1 have a vowel-initial root and can be analyzed as beginning with a prefix w- (or perhaps u- at some abstract level), e.g. w-án 'child', w-àt 'person'. In their corresponding plurals in class 2, the same nouns begin with the consonantal prefix b-, e.g. b-ón 'children', b-àt 'people'. 2) The only difference between plural classes 2 and 8 is that the latter consistently has nouns beginning with the prefix u- (I.P.A. [w]). These same nouns have a singular in class 7, as opposed to the class 2 plurals, which have a corresponding singular in class 1.

TABLE I
Noun Classes

| Class | Noun Prefix | Consonant/Tone Concord |
|---------|-------------|------------------------|
| sg. 1. | ∅-, (w-) | w |
| pl. 2. | mə-, (b-) | mb |
| sg. 3. | u- | w |
| pl. 6. | ʌ- | z |
| --- 6a. | mə- | mb |
| sg. 7. | ʌ- | z |
| pl. 8. | u- | mb |
| sg. 9. | ∅-, N- | z |
| pl. 10. | ∅-, N- | t |
| pl. 13. | lə- | t |
| sg. 19. | fə- | f |

3) The only difference between classes 6 and 7 is that the former is a plural class (with a corresponding singular in class 3), while the latter is a singular class (with a corresponding plural in class 8). 4) The only difference between classes 10 and 13 is that class 10 nouns (whose corresponding singular is class 9) do not exhibit the lə- prefix of class 13 nouns (whose singular is class 19). Strictly speaking, one could refer to a 9/13 gender, with the proviso that class 13 nouns whose singular is class 9 maintain the ∅- or N- prefix of the latter. We will continue to speak of class 10, however, since this will allow us to clearly distinguish which gender we are referring to without ambiguity. 5) The tonal concords are L (low) for classes 1, 6a and 9, and H (high) for all the remaining classes. What this means is that certain elements which agree with the noun they modify show lower tonal variants when modifying class 1, 6a and 9 nouns than when modifying other nouns. The exact context for these tonal differences will be seen below. 6) Finally, any noun which does not have a prefix can apparently be preceded by the vowel u- (with L tone). Whether this represents the historical noun class prefix which has dropped out in classes 1 and 9, or whether it is prothetic, will not be addressed here. We will have occasion to point out, however, that it does not normally exert any tonological effect.

We now briefly present the seven singular/plural noun genders

along with the one single class gender 6a.

1) Gender 1/2 consists primarily of a number of human nouns, e.g. fòṅ 'chief' (pl. mèfòṅ), jí 'thief' (pl. mójí), wán 'child' (pl. bón). In addition, the noun káná 'monkey' (pl. mèkàná) belongs to this gender, as do a number of borrowings from Pidgin English, e.g. mátà 'mat', káú 'cow', lám 'lamp', mélák 'milk' (plurals all with mè-)

2) Gender 3/6 is the modern reflex of Proto-Grassfields 5/6: ábóm 'egg' (pl. áábóm), ásòṅ 'tooth' (pl. ásòṅ), ūbén 'breast' (pl. ābén).

3) Gender 3/6a has a restricted membership. The following four nouns have been found to belong here: ūnē 'bridge' (pl. mónē), ūrí? 'rope' (pl. mérí?), ūwíní 'market' (pl. méywíní), ūtó 'intestine' (pl. mátó).

4) Gender 3/13 appears to be the modern reflex of both 3/4 and 3/13 in Proto-Western Grassfields. Its membership is considerably larger than that of either 3/6 or 3/6a: àkòbà 'belt' (pl. lèkòbà), ūkàn 'message' (pl. lákàn), ūtsòk 'mouth' (pl. lòtsòk), ūnémfí 'tongue' (pl. lónémfí).

A number of nouns exist only in a singular class 3 without any corresponding plural, e.g. ákán 'sky', ūkáp 'money', ūywiṭ 'fire', ūvó 'death'. It is of course not possible to assign them to any gender. They are instead treated as defective. A certain number of other class 3 nouns seem to be in a state of flux as regards their plural. Thus, the nouns ūkón 'bed', ūpót 'body' and ūtám 'thigh' can apparently take their plural in either class 13 or in class 6a. There appears to be some uncertainty, which is typical for class 3 in most of Western Grassfields.

5) Mass-liquid class 6a constitutes a gender of its own: mátsên 'urine', mánò? 'wine', méríp 'water', méfí 'pus', méfóm 'fat'.

6) Gender 7/8 contains a large number of inanimate nouns: áwók 'foot' (pl. áwók), ábám 'bag' (pl. ábám), ābó 'arm' (pl. ūbó), ātám 'trap' (pl. ūtám). A few animate nouns also belong to this gender: áfòn° 'leopard' (pl. áfòn°), ábò? 'slave' (pl. ábò?), áfòbá 'mouse' (pl. áfòbá)

Three nouns have been found to exhibit a ā- prefix, but do not participate in a singular/plural gender: ācwèi 'sun', ānóm 'blood', āgwí 'dust'. Since classes 6 and 7 are identical except for number (and therefore noun class pairing with either singular 5 or plural 8) we cannot determine which noun class to assign these nouns to. Comparative evidence from elsewhere in Western Grassfields suggests class 6, at least for 'blood'.

7) Gender 9/10 contains, on the one hand, a large number of animal nouns: ūbàp° 'giant rat(s)', gwí 'goat(s)', ògúp 'hen(s)', bók 'dog(s)'. There are, however, also a lot of non-animals found in 9/10: hìjm 'back(s)', nép 'house(s)', dzám 'axe(s)', kàn 'nest(s)'. These nouns are identical in singular and plural.

8) Gender 19/13 seems to contain nouns somehow associated with smallness, e.g. fèjì 'fly' (pl. lèjì), fènlàn° 'bird' (pl. lènlàn°), as well as a few nouns which inexplicably have been transferred from other proto genders, e.g. fóbúm 'belly' (pl. lóbúm) (Proto-Grassfields 5/6). In a few cases the diminutive nature of 19/13 is particularly clear, e.g. fábéi 'knife' (pl. lóbéi); cf. ūbéi 'cutlass' (3/13).

As will be seen in the following sections, much of the tonal behavior of Ngamambo nouns is tied up with their noun class affiliations.

2. THE PHONETIC NOUN TONES

In this section we will outline the different phonetic tone patterns occurring on mono-, bi-, and trisyllabic nouns, as they occur in isolation. In the following sections we shall propose corresponding underlying tonal representations, and then justify these on the basis of tonal alternations taking place within the Ngamambo noun phrase.

2.1. Monosyllabic Nouns

Monosyllabic nouns are relatively rare in Ngamambo, and with-out exception belong to genders 1/2 and 9/10. (The one possible exception gwèi° 'fish' (pl. lgwèi°) belongs to 3/6 and has the regular variant ūgwèi°. This also is the only known case of a monosyllabic noun bearing L° tone.) The commonly occurring tone shapes

of monosyllabic nouns are illustrated in (1).

- (1) L: fòn 'chief' 1/2 H: wán 'child' 1/2
 pòŋ 'bushcow' 9/10 gwí 'goat' 9/10
 H̄L: lám 'lamp' 1/2
 pâm 'animal' 9/10

The above three tone shapes are found on monosyllabic nouns belonging to both genders, although it should be noted that all H̄L nouns in 1/2 are borrowings (cf. káù 'cow'). The falling tone involved in monosyllabic words begins at a M (mid) level and descends to L, although we shall treat it as H̄L, which it is, underlyingly. The tone markings used in this study are given in (2).

- (2) L : [à] (low) M : [ā] (mid)
 L° : [à°] (unreleased low) H : [á] (high)
 'M : [á] (lower-mid)

With these five phonetic tone levels, all surface patterns can be described. Of the five levels, we have seen that only two are found on monosyllabic nouns (L and H). The one word sán 'elephant' 9/10 exhibits 'M tone, something which we will account for below. The two contour tones [á] (falling) and [ǎ] (rising) are introduced below.

2.2. Bisyllabic Nouns

The tone patterns on bisyllabic nouns are considerably more complicated than those on monosyllabic nouns. We will present these now according to the tone of the prefix, which can be either L, M (with one possible variant 'M) or H. Thus, in (3),

- (3) a. ñjlm 'back' 9/10 c. ñdòŋ 'horn' 9/10
 b. mbàp° 'rat' 9/10 d. ñgwí 'cloth' 9/10

the four tone patterns L-L, L-L°, L-'M, and L-LH are observed when the prefix is L. (In the case of (3d), although we use a single tone mark for the rising tone, it should be noted that the rise begins at a L pitch and normally goes up to a M. We represent it underlyingly as LH̄.) With very few exceptions, all nouns having a L prefix belong to gender 9/10. Those exceptions we have found are given in (4) below. We shall return to these exceptions in our discussion of the underlying tone of noun prefixes.

- (4) a. L-L: lbàm 'bag' 7/8; fèjì 'fly' 19/13;
lbò? 'slave' 7/8; mbàn 'walking stick'
 (belonging to an irregular 1/10 gender)
 b. L-L°: fènàn° 'bird' 19/13; ugwèi° 'fish' 3/6;
lfòn° 'leopard' 7/8
 c. L-'M: fèngwán 'salt' 19
 d. L-LH: ltòŋ 'ear' 7/8; ufě 'face' 3/13

The possible tone patterns found when the prefix carries M tone are given in (5):

- (5) a. āzâ? 'trap' 7/8
 b. áyá 'thing' 7/8
 c. ātsám 'home' 7/8

Instead of four patterns obtained when the prefix is L, only the three patterns M-H̄L, 'M-'M, and M-H are found when the prefix is M. A few remarks should be made. First, the falling tone in (5a) is usually realized as H̄L, though it is possible that the variant ML is acceptable. Second, the tone of the prefix in (5b) was first recorded as M, making the sequence M-'M. This was later revised, although it is apparent that other dialects of Moghamo treat this class as H-M (Stallcup 1976). Finally, although we have illustrated these tone patterns with 7/8 nouns, the same patterns are found in noun classes 3, 6, 7 and 8--that is, in all classes whose prefix consists of a vowel. In the case of genders 3/6a and 3/13, where the singular noun has a vowel prefix (u-) and the corresponding plural a consonant plus vowel (mə- or lə-), the plural noun begins with H rather than M tone, e.g. ukên 'message' (M-HL) vs. lókên 'messages' (H-H̄L). There are no nouns which belong to another noun class and exceptionally take a M tone prefix.

The final possibilities, when the prefix has H tone, are seen in (6).

- (6) a. fóbùm 'belly' 19/13
 b. fókýòŋ 'pot' 19/13
 c. móríp 'water' 6a

As implied in the previous paragraph, these three tone patterns, corresponding directly to those seen in (5), are possible only when

a noun belongs to class 2, 6a, 13 or 19. It is these classes which have a CV- noun prefix. While some nouns having such a prefix exceptionally begin on a L tone (recall fèjì 'fly'), there are no exceptions where a noun from another class begins with a H prefix. Again, recall that tonal alternations on the prefix may result in the case of 3/6a and 3/13 nouns, e.g. ùtòṅ 'navel' ('M-'M) vs. létòṅ 'navels' (H-'M). We shall account for these alternations in section 3.

Finally, we must take note of a small set of words (including some borrowings) which are bisyllabic, but which do not have a prefix, e.g. mátà 'mat' 1/2, káná 'monkey' 1/2. As seen in 'mat', some of these words have exceptional tone patterns (H-L is unattested on native words). We also have ignored possible tone patterns on a few words of uncertain etymology (perhaps involving compounding), of which our sole example is sám̀bà̀n` 'gorilla' 1/2, which may even be a borrowing as its gender suggests.

2.3. Trisyllabic Nouns

Nouns with three syllables do not offer as many contrasting tone patterns as bisyllabic nouns, but they do present problems of their own. As a whole, they are much less frequent than bisyllabic nouns. The attested tone patterns are given in (7).

- | | | | | | | | |
|--------|------------|------------|------|----|---------|------------|-------|
| (7) a. | àkòb̀b̀ | 'belt' | 3/13 | c. | f̀óká?à | 'splinter' | 19/13 |
| | àf̀òb̀b̀ | 'mouse' | 7/8 | | f̀ókámé | 'crab' | 19/13 |
| | àj̀l̀b̀l̀ | 'cane rat' | 9/10 | | | | |
| b. | ùb̀áb̀b̀ | 'wing' | 3/13 | | | | |
| | ùỳẁí̀ǹí | 'market' | 3/6a | | | | |

In (7) the possible tone patterns are organized by the tone of their prefix. When the prefix is L (7a), the sequences L-L-L, L-L-H, and L-'M-L are observed. When it is M (7b) or H (7c), only two possibilities are found which, except for the prefix tone, correspond directly to each other. Alternations in prefix tone are observed also in trisyllabic nouns: ùỳẁí̀ǹí 'market' (M-H-H) vs. m̀éỳẁí̀ǹí 'markets' (H-H-H). Since some of these patterns are poorly represented numerically, it is not possible to determine whether L tone prefixes should normally be associated only with 9/10 nouns. It should be pointed out, however, that the pattern L-'M-L consists

entirely of 9/10 nouns.

We can summarize all of the above by saying that there are three monosyllabic, ten bisyllabic, and six trisyllabic regularly occurring tone patterns for nouns. In the following section it will be demonstrated that all of the occurring phonetic tone patterns can be derived in a very general way from two underlying (morpho)tonemes, H and L, which by their position, and in combination with each other, undergo various tonal modifications to produce the five tone levels found on the surface.

3. UNDERLYING NOUN TONES

In this section we shall propose underlying tonal representations for all of the above phonetic tone patterns. Because the bisyllabic nouns represent the richest variation of tonal possibilities, we shall first address ourselves to them, and then turn to tri- and monosyllabic nouns.

3.1. Bisyllabic Nouns

As was seen in the previous discussion, much of the variation encountered in bisyllabic nouns can be attributed to the nature of the noun prefix. Putting aside for the moment the exceptional nouns in (4), the following generalization emerges: the prefix N- carries L tone, the prefix V- carries M (or 'M) tone, and the prefix CV- carries H tone. Thus, it is possible to predict the prefix tone by rule, beginning either with the prefix as toneless, or with the prefix having one tone which undergoes modification conditioned by its segmental structure. The choice between these two solutions is not particularly easy to make, since, as we shall see, whichever solution we adopt, one of the earliest phonological rules will have to be the one which spells out the tone of the noun prefix. Another alternative would be to start with L on nasal prefixes, but H on both vowel and consonant-vowel prefixes. This solution, in which a H would be lowered to M if on a vowel prefix, has the slight advantage of being able to capture the alternations between M and H tone prefixes seen in the case of 3/6a and 3/13. It thus correctly predicts that there is no alternation involving either M or H vs. L tone prefixes (the problem of predicting m̀èf̀ò̀ǹ, the plural of f̀ò̀ǹ 'chief' 1/2, would still have to be addressed). We shall adopt this

position for the purpose of the present discussion, but return to it in section 4 below.

3.1.1. Perhaps easiest to account for are the four tonal patterns found on 9/10 nouns (whose prefix is L). The position we shall take here is that bisyllabic nouns are bisyllabic specifically because they have lost their final syllable. Exactly as has been demonstrated for the nearby Mbam-Nkam languages (for a general statement see Hyman and Tadadjeu 1976), Proto-Western-Grassfields nouns consisted of a monosyllabic prefix followed by a bisyllabic stem. In the case of Ngamambo, most bisyllabic stems have lost their final vowel (trisyllabic nouns have inexplicably retained their final syllable). However, the tone of that vowel continues to exert an effect, as we shall see.

The underlying tones which we propose for the nouns in (3) are given in (8).

- (8) a. /hɔ̀lɛm'/ 'back' (L-L-L̥ → L-L)
 b. /mbàp'/ 'rat' (L-L-H̥ → L-L°)
 c. /hdɔ̀ŋ'/ 'horn' (L-H-L̥ → L-'M)
 d. /ŋgwí'/ 'cloth' (L-H-H → L-L̥H)

That is, starting with two underlying tones, H and L, where H̥ and L̥ represent "floating" tones, the four phonetic tone patterns in (3) are captured by the four logically possible sequences of L followed by bisyllabic combination of L's and H's. In the forms in (8), only the tones are to be taken as underlying--we shall maintain a broad phonetic transcription of the consonants and vowels so as to facilitate the task of associating underlying and surface representations.

Comparing (8) with (3) we see that the following must be accomplished by morphotonemic rules.

(i) A L-L-L̥ sequence must become L-L. This is accomplished very simply by dropping the final tone, which is identical to the preceding tone.

(ii) A L-L-H̥ sequence must become L-L°. This sequence differs from the L-L derived from L-L-L in that L° is realized on a low-level pitch, rather than undergoing the downgliding process which is typical of L tones before pause: mbàp° [_ _] vs. hɔ̀lɛm [_ _].

It follows from this conceptualization that the opposition between L and L° is possible only before pause. What is involved in deriving the L° tone is that the historical H prevents the preceding L from downgliding, and then drops out.

(iii) A L-H-L̥ sequence must become L-'M. We shall see below that there is a general rule in Ngamambo by which an underlying H becomes 'M when it occurs between L tones (cf. hɔ̀lɛm 'cane rat', which is underlyingly L-H-L).

(iv) A L-H-H̥ sequence must become L-L̥H̥. This rising tone derives from a process of horizontal tone assimilation (Hyman 1973) or tone spreading (Hyman and Schuh 1974). One conceptualization might be that L-H-H̥ becomes L-L̥H̥-H̥ and then the final H̥ drops out. An alternative is that the final H̥ first drops out, and then L-H becomes L-L̥H̥, much as it does in languages such as Yoruba and Gwari.

In Hyman and Tadadjeu (1976) it was shown that from a historical point of view the following steps are involved in deriving bisyllabic tone sequences from proto trisyllabic ones.

(i) A final vowel drops.

(ii) Concomitantly, the tone of that vowel is assigned to the preceding syllable. In the case of L-L-L̥ and L-H-H̥, since the final tone is identical to the preceding tone, tonal "absorption" is obtained, and the result is L-L and L-H, respectively. In the case of L-L-H̥ and L-H-L̥, by assigning the final tone to the preceding syllable, contour tones are created, i.e. L-L̥H̥ and L-H̥L̥.

(iii) The contour tones L̥H̥ and H̥L̥ undergo various modifications, such as the development of L° (from L̥H̥), or some kind of M or downstepped H from H̥L̥.

We will not be able to justify these three stages in Ngamambo, since we have not carefully studied the closely related dialects. However, it should be noted that if we recognize a L-L̥H̥ stage for the development of present-day L-L°, which would contrast with L-L from L-L-L̥, then we could say that downgliding was operative at that stage. Otherwise we are forced to say that the middle tones of L-L-L̥ and L-L-H̥ were downglided and non-downglided prior to the loss of the final syllable. This could only have been the case if

a multiple sequence of L tones before a pause downglided, one after the other.

While it might be possible to confirm the underlying tones in (8) as historically correct by comparing cognates from related languages, two kinds of internal evidence justify these forms: (i) the tonal alternations these tone patterns undergo as they occur in context; and (ii) a comparison of these alternations with those characterizing the corresponding trisyllabic tone patterns. Thus, if in some context $\text{h}d\acute{o}\eta$ undergoes the same kind of tonal alternation as $\text{h}j\grave{i}b\grave{i}$, this provides evidence for recognizing the two nouns as having the same underlying sequence of tones.

We have already suggested that the H of $\text{h}d\acute{o}\eta$ is justified on the basis of the 'M in trisyllabic $\text{h}j\grave{i}b\grave{i}$ (/hjíbì/). When these two nouns occur in the context of a following word beginning with a vowel, the final [i] of $\text{h}j\grave{i}b\grave{i}$ elides and the remaining bisyllabic sequence is indistinguishable from nouns occurring as L-'M in isolation, e.g. $\text{h}d\acute{o}\eta \lambda b\grave{o}\text{?}$ 'the horn of the slave', $\text{h}j\grave{i}b \lambda b\grave{o}\text{?}$ 'the cane rat of the slave'. The derivation of L-L from L-L-L̄ is straightforward and can be accepted without discussion. Thus we remain with demonstrating the correctness of the underlying forms for nouns whose surface tones are L-L° and L-L̄H.

In the case of L-L° nouns, first note that in context these nouns often have the same tonal shape as L-'M nouns; cf. $\text{m}b\grave{a}p\text{?}$ vs. $\text{m}b\grave{a}p \lambda b\grave{o}\text{?}$ 'the rat of the slave'. The 'M observed in this phrase can be derived from the underlying form /m̀b̀àp' + ' + λb̀ò?`/ in the following way: first, the L̄ of the associative construction characteristic of class 9 nouns (see below) sends the final H̄ of /m̀b̀àp'/' onto the main syllable; and second, the same rule converting /hjíbì/ to [hjíbì] and /h̀d̀òη / to [h̀d̀òη] produces the 'M. This rule can be formalized as in (9).

(9) H → 'M / L ____ L

Whenever this rule produces a L-'M̄ sequence (from L-H̄L̄), the contour tone is at the same time simplified to 'M.

In the case of underlying L-H-H̄, which was said to be the representation of L-L̄H nouns, we have evidence of three kinds. (i) There are no trisyllabic nouns with the sequence L-H-H. This sug-

gests, first, that this underlying sequence, which doubtless was present historically, is somehow modified, and second, that a likely way for it to be modified is for the L of the prefix to spread into the stem syllable, changing L-H-H̄ to L-L̄H-H̄ and then L-L̄H by loss of the final syllable. In trisyllabic nouns we would claim that at the L-L̄H-H stage, since the final H is to stay, an "absorption" process (Hyman and Schuh 1974) simplifies the L̄H contour to L. Thus, some instances of L-L-H derive from L-H-H and others derive from L-L-H.

(ii) Corroborating evidence is observed in the case of the noun $\text{k}\acute{a}n\acute{\lambda}$ 'monkey' 1/2. This noun is exceptional in that it is bisyllabic without a prefix. Its plural form is $\text{m}\grave{e}k\grave{a}n\acute{\lambda}$, where the change from L-H-H to L-L-H (via L-L̄H-H) is evident.

(iii) The final piece of evidence derives from the fact that in the associative construction nouns such as $\lambda f\grave{o}\eta\text{?}$ 'leopard' (underlying L-L-H̄) and $\lambda t\grave{o}\eta$ 'ear' (underlying L-H-H̄) both have the same tonal properties as trisyllabic L-L-H nouns such as $\lambda f\grave{o}b\acute{a}$.

- (10) $\lambda f\grave{o}\eta \bar{\lambda}b\text{?}$ 'the leopard of the slave'
 $\lambda t\grave{o}\eta \bar{\lambda}b\text{?}$ 'the ear of the slave'
 $\lambda f\grave{o}b \bar{\lambda}b\text{?}$ 'the mouse of the slave'

In the case of 'the ear of the slave' we start with the underlying representation /λtóη' + λ + λb̀ò?`/, with rule (9) operating twice, as seen in (11).

- (11) $\lambda t\acute{o}\eta'$ + λ + λb̀ò?` (underlying)
 $\lambda t\grave{o}\eta'$ λ λb̀ò?` (by rule 9)
 $\lambda t\grave{o}\eta'$ λ λb̀ò?` (by rule 9)
 $[\lambda t\grave{o}\eta \bar{\lambda}b\text{?}]$ (by other rules)

The additional rules required to derive the correct output are discussed below, as is the associative marker (/λ/ for class 7 in (11)).

3.1.2. We now turn to the question of setting up underlying tones for nouns whose prefix is either M or H on the surface. As we said above, we consider these nouns to have either underlying or intermediate H tone, and propose the rule in (12):

- (12) H → M / || [\bar{V}]

A H tone vowel which occurs after pause is lowered to M (or to 'M

in the case of nouns such as $\overset{\text{H}}{\text{A}}\text{y}^{\text{H}}$ 'thing'). Given that this prefix has H tone instead of L, it would be advantageous if we could show that at the underlying level the nouns in (5) and (6) differ from those in (3) only in prefix tone. This is in fact possible, although we shall first have to address ourselves to the problem of why there are only three instead of four tone patterns when the noun prefix is underlyingly H.

The answer is that nouns which have surface M-H and H-H tone (differing only in that the former have a V- and the latter a CV-prefix) must be subcategorized according to the tonal alternations they undergo in context. A preview of the differences which characterize the two subclasses is seen in (13).

- (13) a. $\bar{\text{A}}\text{tsám} \lambda\text{b}^{\circ}$ 'the home of the slave'
 $\bar{\text{A}}\text{bá}\eta \lambda\text{b}^{\circ}$ 'the airplane of the slave'
- b. $\text{m}^{\circ}\text{é}\eta\text{í}\text{p} \lambda\text{b}^{\circ}$ 'the water of the slave'
 $\text{m}^{\circ}\text{é}\text{f}^{\circ}\text{óm} \lambda\text{b}^{\circ}$ 'the fat of the slave'

In (13) the two nouns $\bar{\text{A}}\text{bá}\eta$ 'airplane' and $\text{m}^{\circ}\text{é}\text{f}^{\circ}\text{óm}$ 'fat' have been added to contrast with the previously illustrated nouns $\bar{\text{A}}\text{tsám}$ 'home' and $\text{m}^{\circ}\eta\text{í}\text{p}$ 'water'. In (13a) it is observed that 'slave' carries a H tone previous after 'home' but a 'M tone prefix after 'airplane'. In (13b), 'water' remains H-H, while 'fat' becomes H-HL. In order to capture these differences observed in the associative construction, we propose the underlying forms $/\lambda\text{tsám}'/$ vs. $/\lambda\text{bá}\eta'/$ for (13a), and $/\text{m}^{\circ}\eta\text{í}\text{p}'/$ vs. $/\text{m}^{\circ}\text{é}\text{f}^{\circ}\text{óm}'/$ for (13b). The corresponding underlying forms for the phrases in (13) are given in (14).

- (14) a. $/\lambda\text{tsám}' + \lambda + \lambda\text{b}^{\circ}/$ b. $/\text{m}^{\circ}\eta\text{í}\text{p}' + ' + \lambda\text{b}^{\circ}/$
 $/\lambda\text{bá}\eta' + \lambda + \lambda\text{b}^{\circ}/$ $/\text{m}^{\circ}\text{é}\text{f}^{\circ}\text{óm}' + ' + \lambda\text{b}^{\circ}/$

In the second form of (14a) it is seen that the final $\bar{\text{V}}$ or 'airplane' provides the crucial part of the environment for rule (9) to change the class 7 associative $/\lambda/$ to $[\lambda^{\circ}]$. This rule of course cannot apply in the first form since 'home' ends in a $\bar{\text{H}}$.

With M-H and H-H nouns having been divided in two, we now can present the four possible tonal sequences for nouns with an underlying H tone prefix. These correspond exactly to the underlying stem tones given in (8) for nouns with L tone prefixes.

- (15) a. $/\lambda\text{z}^{\circ}/$ 'trap' (H-L- $\bar{\text{L}}$ → M- $\widehat{\text{HL}}$)
 $/\lambda\text{y}^{\text{H}}/$ 'thing' (H-L- $\bar{\text{H}}$ → 'M-'M)
 $/\lambda\text{bá}\eta'/$ 'airplane' (H-H- $\bar{\text{L}}$ → M-H)
 $/\lambda\text{tsám}'/$ 'home' (H-H- $\bar{\text{H}}$ → M-H)
- b. $/\text{f}^{\circ}\text{ób}^{\circ}/$ 'belly' (H-L-L → H- $\widehat{\text{HL}}$)
 $/\text{f}^{\circ}\text{ók}\text{y}^{\circ}\eta'/$ 'pot' (H-L- $\bar{\text{H}}$ → H-'M)
 $/\text{m}^{\circ}\text{é}\text{f}^{\circ}\text{óm}'/$ 'fat' (H-H- $\bar{\text{L}}$ → H-H)
 $/\text{m}^{\circ}\eta\text{í}\text{p}'/$ 'water' (H-H- $\bar{\text{H}}$ → H-H)

In order to obtain the correct surface phonetic tones, the following must be accomplished by morphotonemic rules.

(i) The H of the prefix must spread onto the following L of the stem in order to create the $\widehat{\text{HL}}$ falling tone of 'trap' and 'belly'. In the case of 'trap' this spreading process must precede the lowering of the prefix from H to M. Otherwise we would incorrectly obtain a $\widehat{\text{ML}}$ falling tone.

(ii) Somehow underlying H-L- $\bar{\text{H}}$ must come out 'M-'M when the prefix consists solely of a vowel. It is not clear how this is obtained, except that it is possible to conceive of an intermediate H- $\widehat{\text{LH}}$ which becomes H- $\widehat{\text{LM}}$ (since a rising tone only rises to M), and then, in the case of vowel prefixes, this becomes M- $\widehat{\text{LM}}$. What is interesting is that this does not become M-L $^{\circ}$ (parallel with L-L $^{\circ}$), nor do the nouns with a CV- prefix become H-L $^{\circ}$. Apparently, a contour simplification process changes $\widehat{\text{LM}}$ to 'M when preceded by a nonlow tone. The resulting forms are M-'M (which later becomes 'M-'M) and H-'M.

(iii) For underlying H-H- $\bar{\text{L}}$ and H-H- $\bar{\text{H}}$ nouns, by assigning the floating tones to the left we obtain H- $\widehat{\text{HL}}$ and H-H. The falling tone then simplifies to H. This is exactly parallel to underlying L-H- $\bar{\text{L}}$, which first becomes L- $\widehat{\text{HL}}$. The one difference in the latter case is that rule (9) converts the nonlow tone to 'M before the contour simplification takes place.

It is interesting to note that in several instances involving both L and H tone prefixes, the tone rules discussed above interact in such a way as to create a "musical chairs" effect. In the derivations in (16), the underlying tonal sequences are given in (a).

| | | | | | |
|------|----------------------------------|-----|---------------------------------|-----|---------------------------------|
| (16) | (a) | (b) | (c) | (d) | |
| | L-L- $\overset{\circ}{\text{H}}$ | → | L- $\overset{\circ}{\text{LH}}$ | → | L-L $^{\circ}$ |
| | L-H- $\overset{\circ}{\text{H}}$ | → | L-H | → | L- $\overset{\circ}{\text{LH}}$ |
| | H-H- $\overset{\circ}{\text{L}}$ | → | H- $\overset{\circ}{\text{HL}}$ | → | H-H |
| | H-L- $\overset{\circ}{\text{L}}$ | → | H-L | → | H- $\overset{\circ}{\text{HL}}$ |

The bisyllabic patterns seen in (b) are those which are obtained when the final floating tones are assigned to the preceding syllable. In (c) we see that L- $\overset{\circ}{\text{LH}}$ has simplified to L-L $^{\circ}$. This leaves open the possibility for L-H to undergo tone spreading to become L- $\overset{\circ}{\text{LH}}$ in (d), thereby filling the slot vacated by L-L- $\overset{\circ}{\text{H}}$ nouns. In the second pair in (c) we observe that H- $\overset{\circ}{\text{HL}}$ has simplified to H-H. This leaves open the possibility for H-L to undergo tone spreading to become H- $\overset{\circ}{\text{HL}}$ in (d) again filling a slot, this time the one vacated by H-H- $\overset{\circ}{\text{L}}$ nouns. Although we have described this phenomenon as a "drag chain", the alternative interpretation of these events as a "push chain" is also consistent with the data.

3.2. Trisyllabic Nouns

Having sorted out the underlying tones of bisyllabic nouns, trisyllabic nouns are relatively straightforward. Since all three syllables are intact, there is no question of final floating tones. Rather, the underlying tones are given below in (17), corresponding to the nouns seen earlier in (7).

| | | | |
|---------|----------|------------|------------------|
| (17) a. | /əkòbà/ | 'belt' | (L-L-L) |
| | /ʌfòbá/ | 'mouse' | (L-L-H) |
| | /hǰíbi/ | 'cane rat' | (L-H-L → L-'M-L) |
| b. | /ábábà/ | 'wing' | (H-H-L → M-H-L) |
| | /éywfí/ | 'market' | (H-H-H → M-H-H) |
| c. | /fókáʔà/ | 'splinter' | (H-H-L) |
| | /fókámó/ | 'crab' | (H-H-H) |

As can be seen, relatively few modifications are needed to bring the underlying tonal representations to the surface. Rule (9) operates on underlying L-H-L to produce surface L-'M-L, as in 'cane rat' in (17a). In (17b) rule (12) has lowered an underlying H tone vowel prefix to M. Otherwise the surface tones are equivalent to their underlying counterparts.

A few interesting points should be made, however. In dealing with /ʌfòbá/ in (17a), we have decided to treat this as underlying L-L-H, although underlying L-H-H would also have become surface L-L-H by rule. Since this particular noun does not undergo any alternations, we have stayed as close to the surface as possible in setting up the underlying tones. This is to be contrasted with /mèkáná/ 'monkeys', pronounced [mèkáná], where we know that we have underlying L-H-H because of the corresponding singular káná.

In the case of /fókáʔà/ in (17c) it could be argued that this form is underlyingly H-L-L with the H-spreading rule converting the sequence to H-H-L. In this case we are further justified in staying close to the surface by the fact that there are no clear cases of either underlying H-L-L or H-L-H on three syllables. Since nouns such as 'belt' and 'mouse' occur regularly in genders other than 9/10, it would appear that the V- and CV- prefixes are assigned low tone in such cases. Thus, we can summarize the distribution of tone on noun prefixes as follows:

(i) A nasal prefix will always carry L tone. This includes a few nouns which have two prefixes, of which the second is nasal, e.g. fèngwáŋ 'salt'.

(ii) A vowel prefix will carry L tone, if it occurs with a bisyllabic stem having the tones L-L or L-H. Otherwise a vowel prefix will carry M tone ('M if the stem is 'M).

(iii) A consonant-vowel prefix will carry L tone, if it occurs with a bisyllabic stem having the tones L-L or L-H. Otherwise a CV- prefix will carry H tone.

This brings us back finally to the so-called exceptions in (4) above. Dismissing m̀bàŋ 'walking stick' and fèngwáŋ 'salt', since they contain a nasal in their prefix, these nouns are exceptional in that they have either a V- or CV- prefix, but their prefix takes L tone. While we cannot dismiss the possibility of some of these being borrowed (possibly, ʌ̀bòʔ 'slave' from Mbam-Nkam), a more likely explanation is that these nouns once had a nasal in their prefix, which kept the preceding V- or CV- low, but which later dropped out. Comparative evidence from other Grassfields languages shows that these nouns sporadically have nasal prefixes, e.g. Nga-

mambo λbàm, Njen ám̂bìà 'bag'; Ngamambo fèjì, Babanki fə̀njìnjì 'fly'; Ngamambo λtǒŋ, Mundum I àntǒŋ'nés 'ear'.

3.3. Monosyllabic Nouns

In section 2.1 we saw that monosyllabic nouns exhibit the tonal shapes L, H, and \hat{HL} , with one exceptional noun, sán 'elephant' having 'M tone. On the basis of the foregoing as well as comparative evidence, we can be virtually certain that monosyllabic nouns once carried a prefix and also had a second stem syllable. Since all monosyllabic nouns belong to either 1/2 or 9/10, their historical prefix consisted either of the vowel u- (class 1) or the vowel i- (classes 9 and 10). (Class 2 has a ma- prefix to which we shall return below.) If we assume that u- and i- carried H tone, and N- carried L tone, and if we accept the bisyllabic origin of monosyllabic nouns, then eight possible tone patterns should be found, as in (18). These are shown with our proposed surface reflexes.

- (18) a. $\begin{matrix} \text{L}_0\text{-L-L}_0 \\ \text{L}_0\text{-L-H}_0 \\ \text{L}_0\text{-H-L}_0 \\ \text{L}_0\text{-H-H}_0 \end{matrix} \rightarrow \text{L}, \text{ e.g. } \underline{fò\grave{n}}$ 'chief'
- $\begin{matrix} \text{L}_0\text{-L-H}_0 \\ \text{L}_0\text{-H-L}_0 \\ \text{L}_0\text{-H-H}_0 \end{matrix} \rightarrow \text{'M}, \text{ e.g. } \underline{sán}$ 'elephant'
- b. $\begin{matrix} \text{H}_0\text{-L-L}_0 \\ \text{H}_0\text{-L-H}_0 \\ \text{H}_0\text{-H-L}_0 \\ \text{H}_0\text{-H-H}_0 \end{matrix} \rightarrow \hat{HL}, \text{ e.g. } \underline{pám}$ 'animal'
- $\begin{matrix} \text{H}_0\text{-L-L}_0 \\ \text{H}_0\text{-L-H}_0 \\ \text{H}_0\text{-H-L}_0 \\ \text{H}_0\text{-H-H}_0 \end{matrix} \rightarrow \text{H}, \text{ e.g. } \underline{gwí}$ 'goat'
- $\begin{matrix} \text{H}_0\text{-L-L}_0 \\ \text{H}_0\text{-L-H}_0 \\ \text{H}_0\text{-H-L}_0 \\ \text{H}_0\text{-H-H}_0 \end{matrix} \rightarrow \text{H}, \text{ e.g. } \underline{wán}$ 'child'

Not attested are reflexes of L-H₀ stems having lost their prefix, or L₀-H-H₀ nouns (which would have merged with L₀-L-H₀). These presumably have either remained bi- or trisyllabic, or have merged with one of the other monosyllabic tonal shapes. We now take up each of the attested tonal shapes in turn.

(i) Nouns with L tone are found in both genders. It is clear that they did not involve a vowel prefix, because their L tone would have become a falling tone by the H-spreading rule. With the exception of wàt 'person' 1/2, all nouns in this category begin with a voiceless consonant: fòṅ 'chief' 1/2, pòŋ 'bushcow' 1/2, sè? 'friend' 1/2, fèŋ 'heart' 9/10, kwì 'maize' 9/10, kàn 'nest' 9/10. Since a nasal prefix is possible in Ngamambo only when the following consonant is voiced (with the one exception mpà? 'cloud'),

it is likely that these nouns once had a nasal prefix (with predictable L tone), which has since dropped.

(ii) The one noun sán 'elephant' 9/10 represents this tonal shape. It too begins with a voiceless consonant, one which is likely to occasion the loss of a preceding nasal. Since we have independent evidence that 'M derives from a H surrounded by two L's, we do not hesitate in positing the underlying form /'sán'/.

(iii) The tonal shape \hat{HL} consists, on the one hand, of 1/2 nouns in the singular which are borrowings, e.g. lám 'lamp'. These nouns take this tonal shape presumably because this most closely duplicates the pitch characteristics of (Pidgin) English stressed monosyllables. The other \hat{HL} nouns are to be found in 9/10 and reconstruct with an earlier i- vowel, if not also with a nasal, e.g. pám 'animal', pòŋ 'hair', dzô 'spear-grass'. In deriving the HL falling tone from underlying H-L-L₀, the final L₀ is first absorbed to the left and the H of the prefix spreads to the right and then drops out. The expected \hat{HL} is modified to \hat{ML} in initial position.

(iv) Most H tone nouns belong to the tonal class which we have represented as underlying H-H-L₀. Whether a H tone noun has a final floating L₀ or H₀ can be established only in context, as we saw for bisyllabic H-H-L₀ vs. H-H-H₀ nouns. Thus, /'gwí/ 'goat' develops a falling tone in [gwí káná] 'the goat of the monkey', whereas /'wán/ 'child' does not: [wán káná] 'the child of the monkey'.

(v) The noun wán 'child' is the only attested noun we have with underlying H-H-H₀ tone.

Nouns with H tone without exception begin with a voiced consonant, e.g. dzám 'axe' 9/10, dzók 'bee, honey' 9/10, zák 'devil' 1/2, bók 'dog' 9/10, gwí 'goat' 9/10, nép 'house' 9/10, dzó 'snake' 9/10, jí 'thief' 1/2 (cf. wán 'child' which differs from the preceding in that it has a final H₀ rather than L₀). These nouns may have once had a nasal consonant (cf. Stallcup 1976), or even a vowel plus nasal (e.g. in- for 9/10).

Monosyllabic nouns in 1/2 form their plural with the prefix ma-. (9/10 nouns are identical in singular are plural.) The tone of the class 2 prefix is predictable as follows.

(i) Nouns with L tone take a L tone plural prefix, e.g. fòn 'chief', pl. mèfò̀n; sà? 'friend', pl. mèsà?.

(ii) Nouns with \widehat{HL} tone (which in 1/2 are all borrowings) also take a L tone plural prefix, e.g. lám 'lamp', pl. mèlám. This applies as well to the borrowing mátà 'mat', whose plural is mèmátà (not exceptional failure of rule (9) to apply). The tone on the plural prefix is, of course, exceptional in that we expect surface falling tones only when there is a preceding H prefix, e.g. fóbùm 'belly' (underlying /fóbù̀m/).

(iii) Nouns with H tone take a H tone plural prefix, e.g. jí 'thief', pl. mésjí; zák 'devil', pl. mészák.

The final point to be made with respect to monosyllabic nouns is that they can optionally occur with the prefix à-. This vowel is peculiar in that it takes a L tone before all nouns, including H and \widehat{HL} nouns, e.g. wán or à wán 'child'. However, in the case of nouns such as /'gwí/ 'goat', this L tone vowel does not satisfy the environment for rule (9). We thus obtain à gwí and not *à gwí. Because this vowel does not take the same M tone as other vowel prefixes, and because it does not feed into rule (9), we separate it from its noun by a space. This also allows us to unambiguously distinguish true monosyllabic nouns from bisyllabic nouns.

4. TONE ALTERNATIONS

In this section we shall investigate and attempt to account for the tone alternations characterizing the Ngamambo associative construction ("noun of noun").

4.1. Anticipatory Register-Lowering

Before beginning, however, it is important to take note of an overall tendency in the realization of surface tones. In the preceding sections we have recognized five surface tone levels. (The difference between L^0 vs. L, however, was said to be one of level vs. downglided realizations of L tone before pause.) What this means is that Ngamambo speakers must, for example, differentiate four different drops in pitch after H: from H to M, from H to 'M, from H to L^0 , and from H to L. What we have discovered is that while a H-M vs. H-'M sequence should be distinguished by a drop of

one vs. two steps from the highest level (H), what sometimes occurs in fact is that H-'M may actually start lower and involve the same interval as H-M. The possible realizations of these sequences are represented in (19).

| | | | | |
|------|-----------------|---------------|---------|-------|
| (19) | <u>Intended</u> | <u>Actual</u> | | |
| | H-M | H-M | [- -] | (5-4) |
| | H-'M | H-'M | [- -] | (5-3) |
| | | or M-'M | [- -] | (4-3) |

Assigning each of the five pitch levels an integer (where 5 = the highest pitch), these sequences should be realized, respectively, 5-4 and 5-3. However, the intended 5-3 sequence may actually come out 4-3, which one would transcribe perhaps as M-'M, except that a "real" 'M tone, e.g. sán 'elephant', would be realized at a still lower pitch after M-'M, giving the impression of a sixth tone level.

A similar problem is that a H followed by a L^0 or L can also be lowered. We have already seen this in the case of \widehat{HL} monosyllabic nouns which, recall, are realized as \widehat{ML} on the surface. It is also possible for mátà 'mat' to be pronounced mātà, and fóbùm to be pronounced fōbùm (with the falling tone being \widehat{ML} instead of \widehat{HL}).

Since these perhaps "intonational" adjustments of a H followed by a 'M, L^0 or L level do not affect the number of possible tone contrasts (the whole phrase is affected by the lowering process), we will not transcribe these tendencies when they occur. We shall in fact not even deal with this "anticipatory register-lowering" process as a tone rule, but rather as a tone strategy. Given the opposition between H-M and H-'M, Ngamambo speakers can focus (1) on the nature of the interval difference, in which case we obtain 5-4 vs. 5-3; or (2) on the level difference of the second tone, in which case we obtain 5-4 vs. 4-3 (with the intervals being exactly the same). If we had to indicate the different strategies which are responsible for the two realizations of such intervals, we would transcribe them as in (20).

| | | | | |
|------|-----|---------------------------|--------------------------|-----------|
| (20) | a. | \bar{a} séŋ á méŋIp | 'the place of the water' | 4-5-5-5-4 |
| | b. | \bar{a} séŋ á méfòm | 'the place of the fat' | 4-5-5-5-3 |
| | or: | $^1[\bar{a}$ séŋ á méfòm] | " " " " " | 3-4-4-4-3 |

In the second realization of (20b) we have placed a ' mark to indicate that the whole phrase is affected by the anticipation of the final drop from H to 'M. This phenomenon is responsible for the fact that it is extremely difficult to find a 5 level syllable early in a long phrase. We have yet to investigate this aspect of Ngamambo tone in a systematic fashion.

4.2. The Associative Construction

In this section we shall address ourselves to the tonal alternations observed in the associative ("noun of noun") construction. In so doing we shall refer to the possessed or head noun as N_1 and the possessor or specifier noun as N_2 . The most important distinction which will be relevant to our discussion is that between noun classes 1, 9, and 6a, which take a $\underline{\text{L}}$ tone associative marker. This difference can be seen in (21), where $\underline{\text{h}}\underline{\text{j}}\underline{\text{l}}\underline{\text{m}}$ 'back' (class 9) and $\underline{\text{f}}\underline{\text{e}}\underline{\text{j}}\underline{\text{i}}$ 'fly' (class 19), both L-L- $\underline{\text{L}}$ nouns, represent the two possible associative tones.

- (21) a. $\underline{\text{h}}\underline{\text{j}}\underline{\text{l}}\underline{\text{m}}$ $\underline{\text{j}}\underline{\text{i}}$ 'the back of the thief'
 b. $\underline{\text{f}}\underline{\text{e}}\underline{\text{j}}\underline{\text{i}}$ $\underline{\text{j}}\underline{\text{i}}$ 'the fly of the thief'

In (21b) $\underline{\text{f}}\underline{\text{e}}\underline{\text{j}}\underline{\text{i}}$ acquires a rising tone which is due to the $\underline{\text{H}}$ associative marker occurring between the two nouns. The corresponding underlying tones are seen in (22).

- (22) a. $/\underline{\text{h}}\underline{\text{j}}\underline{\text{l}}\underline{\text{m}}' + ' + \underline{\text{'j}}\underline{\text{f}}\underline{\text{'}}/$ b. $/\underline{\text{f}}\underline{\text{e}}\underline{\text{j}}\underline{\text{i}}' + ' + \underline{\text{'j}}\underline{\text{f}}\underline{\text{'}}/$

In order to obtain the surface tones in (21b), the $\underline{\text{H}}$ of (22b) must be assigned to the left. Then rule (9) applies to $\underline{\text{'j}}\underline{\text{f}}\underline{\text{'}}$ 'thief', which for reasons we shall discuss is characterized here by a $\underline{\text{L}}$ rather than by a $\underline{\text{H}}$ tone prefix.

The associative marker thus depends on the noun class of the possessed nominal N_1 . If this noun belongs to classes 1, 9, or 6a, the associative marker is $\underline{\text{L}}$. If it belongs to classes 2, 3, 8, 13, or 19, the associative marker is $\underline{\text{H}}$. As seen in (23),

- (23) $/\underline{\text{\lambda}}\underline{\text{b}}\underline{\text{a}}\underline{\text{m}}' + \underline{\text{\lambda}} + \underline{\text{'j}}\underline{\text{f}}\underline{\text{'}}/ \rightarrow [\underline{\text{\lambda}}\underline{\text{b}}\underline{\text{a}}\underline{\text{m}} \underline{\text{\lambda}} \underline{\text{j}}\underline{\text{i}}]$ 'the bag of the thief'

classes 6 and 7 are characterized by an underlying $/\underline{\text{\lambda}}\underline{\text{'}}/$ associative marker. Finally, class 10 is not distinguished from its singular in class 9 in the associative construction. Thus, in the absence of a demonstrative showing class 13 concord (recall that class 10 =

class 13), a phrase such as $\underline{\text{h}}\underline{\text{g}}\underline{\text{w}}\underline{\text{a}}\underline{\text{n}}$ $\underline{\text{j}}\underline{\text{i}}$ could either mean 'the whip of the thief' or 'the whips of the thief'. This is one more indication that class 10 really doesn't exist synchronically in Ngamambo.

The most striking characteristic of the associative construction, as far as tone is concerned, is the fact that all of the nouns which had underlying H or $\underline{\text{H}}$ prefixes in isolation, take a corresponding L or $\underline{\text{L}}$ prefix in N_2 position. This has already been seen in (22), where we observe $\underline{\text{'j}}\underline{\text{f}}\underline{\text{'}}$ instead of $\underline{\text{'j}}\underline{\text{f}}\underline{\text{'}}$. In (22b) we see that this $\underline{\text{L}}$ is clearly needed in order for 'thief' to be realized with 'M tone (via rule (9)). Recall that this noun is realized $\underline{\text{j}}\underline{\text{i}}$ in isolation. Other clear indications that all N_2 noun prefixes are L are seen in (24).

- (24) a. $\underline{\text{h}}\underline{\text{j}}\underline{\text{l}}\underline{\text{m}}$ $\underline{\text{\lambda}}\underline{\text{z}}\underline{\text{e}}\underline{\text{?}}$ 'the back of the trap' ($\underline{\text{\lambda}}\underline{\text{z}}\underline{\text{e}}\underline{\text{?}}$)
 b. $\underline{\text{h}}\underline{\text{j}}\underline{\text{l}}\underline{\text{m}}$ $\underline{\text{\lambda}}\underline{\text{y}}\underline{\text{e}}\underline{\text{?}}$ 'the back of the thing' ($\underline{\text{\lambda}}\underline{\text{y}}\underline{\text{e}}\underline{\text{?}}$)
 c. $\underline{\text{h}}\underline{\text{j}}\underline{\text{l}}\underline{\text{m}}$ $\underline{\text{\lambda}}\underline{\text{b}}\underline{\text{a}}\underline{\text{n}}$ 'the back of the airplane' ($\underline{\text{\lambda}}\underline{\text{b}}\underline{\text{a}}\underline{\text{n}}$)
 d. $\underline{\text{h}}\underline{\text{j}}\underline{\text{l}}\underline{\text{m}}$ $\underline{\text{\lambda}}\underline{\text{t}}\underline{\text{s}}\underline{\text{a}}\underline{\text{m}}$ 'the back of the home' ($\underline{\text{\lambda}}\underline{\text{t}}\underline{\text{s}}\underline{\text{a}}\underline{\text{m}}$)

In section 3.1.2 these nouns (whose surface realization is given in parentheses in (24)) were argued to have the underlying tonal representations H-L- $\underline{\text{L}}$, H-L- $\underline{\text{H}}$, H-H- $\underline{\text{L}}$, and H-H- $\underline{\text{H}}$, respectively. In (24) we must accept that they have (directly prior to the operation of the tone rules) the representations L-L- $\underline{\text{L}}$, L-L- $\underline{\text{H}}$, L-H- $\underline{\text{L}}$, and L-H- $\underline{\text{H}}$. By "replacing" the H tone by a L tone on the prefix, we notice the following alternations on N_2 .

(i) In (24a) we obtain L-L instead of M- $\underline{\text{HL}}$. This means that the prefix of 'trap' in N_2 position must be specified as L prior to the operation of the H-tone spreading rule which creates the falling tone of the citation form $\underline{\text{\lambda}}\underline{\text{z}}\underline{\text{e}}\underline{\text{?}}$.

(ii) In (24b) we obtain L-L $^\circ$ instead of 'M-'M. Again, this means that the prefix had to be L prior to the simplification of H- $\underline{\text{LH}}$, which yields the citation form $\underline{\text{\lambda}}\underline{\text{y}}\underline{\text{e}}\underline{\text{?}}$.

(iii) In (24c) we obtain L-'M instead of M-H. What this means is that the prefix had to be L prior to the operation of rule (9), by which $\underline{\text{\lambda}}\underline{\text{b}}\underline{\text{a}}\underline{\text{n}}\underline{\text{'}}$ becomes $\underline{\text{\lambda}}\underline{\text{b}}\underline{\text{a}}\underline{\text{n}}$ in N_2 position.

(iv) In (24d) we obtain L- $\underline{\text{LH}}$ instead of M-H, which means that the prefix had to be L prior to the operation of the L-tone spread-

ing rule which then changes N_2 / $\lambda tsám'$ / to $\lambda tsám$.

The above can be summarized by saying that the prefix of the N_2 noun must be specified as L prior to the operation of all known tone rules. That this L could not have come from the \bar{L} associative marker for $\dot{h}j\dot{i}m$ (class 9) is clearly established in (25).

(25) / $\lambda tsám' + \acute{\lambda} + \lambda tsám'$ / \rightarrow [$\bar{\lambda} tsám \acute{\lambda} tsám$] 'home of home'

Since we know that 'home' has H-H stem syllables, and that class 7 takes a H tone / $\acute{\lambda}$ / associative marker, the only way for the final tone to have come out M is for there to have been a L tone prefix on N_2 . This will be seen even more clearly as we go through the different tone combinations in the associative construction.

In the remainder of this section we will represent the prefix of N_2 as L and put off until section 5 the implications of this decision. Notice that by replacing the H tone of V- and CV- prefixes by L, the number of different tone patterns in N_2 position is reduced. Significantly, the changes which we have already observed to characterize these nouns (e.g. M-HL corresponds to L-L, etc.) further confirms the underlying tones argued in section 3.

4.2.1. \bar{L} Tone Associatives

We begin by discussion $N_1 + N_2$ sequences where the intervening associative marker is \bar{L} . We shall limit discussion to bisyllabic nouns, since they occur in the majority. Seven different bisyllabic tone patterns have been found to occur in classes 1, 9 and 6a (those taking \bar{L} associative tone), with H-'M being the missing eighth pattern. The four tone patterns L-L, L-L°, L-'M, and L- $\bar{L}\bar{H}$ are found in N_2 position for both \bar{L} and \bar{H} associative constructions.

A complete table of the 28 combinations involving associative \bar{L} is given in (26). The correct surface tones can be derived by means of the following rules.

(i) Rule (9) operates and converts all sequences of L-H-L to L-'M-L. This applies to N_1 in (26b) and (26c) and to 'airplane' each time it occurs as N_2 . This process is termed tone-lowering.

(ii) Tone-grounding, or the process of assigning a floating tone to a syllabic unit occurs as follows: (a) Final floating tones are assigned to the preceding stem syllable. In cases where that

(26) $N_1 + \bar{L} + N_2$ (Bisyllabic Nouns)

| | | | | |
|----|---|---------------|--|---------------------|
| a. | / $\dot{h}j\dot{i}m'$ + ' + $\lambda b\dot{o}^\circ$ / | \rightarrow | [$\dot{h}j\dot{i}m \lambda b\dot{o}^\circ$] | 'back of slave' |
| | / $\dot{h}j\dot{i}m'$ + ' + $\lambda f\dot{o}n'$ / | \rightarrow | [$\dot{h}j\dot{i}m \lambda f\dot{o}n^\circ$] | 'back of leopard' |
| | / $\dot{h}j\dot{i}m'$ + ' + $\lambda b\acute{a}\eta$ / | \rightarrow | [$\dot{h}j\dot{i}m \lambda b\acute{a}\eta$] | 'back of airplane' |
| | / $\dot{h}j\dot{i}m'$ + ' + $\lambda tsám'$ / | \rightarrow | [$\dot{h}j\dot{i}m \lambda tsám$] | 'back of home' |
| b. | / $\dot{m}b\acute{a}p'$ + ' + $\lambda b\dot{o}^\circ$ / | \rightarrow | [$\dot{m}b\acute{a}p \lambda b\dot{o}^\circ$] | 'rat of slave' |
| | / $\dot{m}b\acute{a}p'$ + ' + $\lambda f\dot{o}n'$ / | \rightarrow | [$\dot{m}b\acute{a}p \lambda f\dot{o}n^\circ$] | 'rat of leopard' |
| | / $\dot{m}b\acute{a}p'$ + ' + $\lambda b\acute{a}\eta$ / | \rightarrow | [$\dot{m}b\acute{a}p \lambda b\acute{a}\eta$] | 'rat of airplane' |
| | / $\dot{m}b\acute{a}p'$ + ' + $\lambda tsám'$ / | \rightarrow | [$\dot{m}b\acute{a}p \lambda tsám$] | 'rat of home' |
| c. | / $\dot{h}d\acute{o}\eta'$ + ' + $\lambda b\dot{o}^\circ$ / | \rightarrow | [$\dot{h}d\acute{o}\eta \lambda b\dot{o}^\circ$] | 'horn of slave' |
| | / $\dot{h}d\acute{o}\eta'$ + ' + $\lambda f\dot{o}n'$ / | \rightarrow | [$\dot{h}d\acute{o}\eta \lambda f\dot{o}n^\circ$] | 'horn of leopard' |
| | / $\dot{h}d\acute{o}\eta'$ + ' + $\lambda b\acute{a}\eta$ / | \rightarrow | [$\dot{h}d\acute{o}\eta \lambda b\acute{a}\eta$] | 'horn of airplane' |
| | / $\dot{h}d\acute{o}\eta'$ + ' + $\lambda tsám'$ / | \rightarrow | [$\dot{h}d\acute{o}\eta \lambda tsám$] | 'horn of home' |
| d. | / $\dot{h}gw\acute{i}'$ + ' + $\lambda b\dot{o}^\circ$ / | \rightarrow | [$\dot{h}gw\acute{i} \lambda b\dot{o}^\circ$] | 'cloth of slave' |
| | / $\dot{h}gw\acute{i}'$ + ' + $\lambda f\dot{o}n'$ / | \rightarrow | [$\dot{h}gw\acute{i} \lambda f\dot{o}n^\circ$] | 'cloth of leopard' |
| | / $\dot{h}gw\acute{i}'$ + ' + $\lambda b\acute{a}\eta$ / | \rightarrow | [$\dot{h}gw\acute{i} \lambda b\acute{a}\eta$] | 'cloth of airplane' |
| | / $\dot{h}gw\acute{i}'$ + ' + $\lambda tsám'$ / | \rightarrow | [$\dot{h}gw\acute{i} \lambda tsám$] | 'cloth of home' |
| e. | / $m\acute{o}n\dot{o}^\circ$ + ' + $\lambda b\dot{o}^\circ$ / | \rightarrow | [$m\acute{o}n\dot{o}^\circ \lambda b\dot{o}^\circ$] | 'wine of slave' |
| | / $m\acute{o}n\dot{o}^\circ$ + ' + $\lambda f\dot{o}n'$ / | \rightarrow | [$m\acute{o}n\dot{o}^\circ \lambda f\dot{o}n^\circ$] | 'wine of leopard' |
| | / $m\acute{o}n\dot{o}^\circ$ + ' + $\lambda b\acute{a}\eta$ / | \rightarrow | [$m\acute{o}n\dot{o}^\circ \lambda b\acute{a}\eta$] | 'wine of airplane' |
| | / $m\acute{o}n\dot{o}^\circ$ + ' + $\lambda tsám'$ / | \rightarrow | [$m\acute{o}n\dot{o}^\circ \lambda tsám$] | 'wine of home' |
| f. | / $m\acute{o}f\acute{o}m'$ + ' + $\lambda b\dot{o}^\circ$ / | \rightarrow | [$m\acute{o}f\acute{o}m \lambda b\dot{o}^\circ$] | 'fat of slave' |
| | / $m\acute{o}f\acute{o}m'$ + ' + $\lambda f\dot{o}n'$ / | \rightarrow | [$m\acute{o}f\acute{o}m \lambda f\dot{o}n^\circ$] | 'fat of leopard' |
| | / $m\acute{o}f\acute{o}m'$ + ' + $\lambda b\acute{a}\eta$ / | \rightarrow | [$m\acute{o}f\acute{o}m \lambda b\acute{a}\eta$] | 'fat of airplane' |
| | / $m\acute{o}f\acute{o}m'$ + ' + $\lambda tsám'$ / | \rightarrow | [$m\acute{o}f\acute{o}m \lambda tsám$] | 'fat of home' |
| g. | / $m\acute{o}r\acute{i}p'$ + ' + $\lambda b\dot{o}^\circ$ / | \rightarrow | [$m\acute{o}r\acute{i}p \lambda b\dot{o}^\circ$] | 'water of slave' |
| | / $m\acute{o}r\acute{i}p'$ + ' + $\lambda f\dot{o}n'$ / | \rightarrow | [$m\acute{o}r\acute{i}p \lambda f\dot{o}n^\circ$] | 'water of leopard' |
| | / $m\acute{o}r\acute{i}p'$ + ' + $\lambda b\acute{a}\eta$ / | \rightarrow | [$m\acute{o}r\acute{i}p \lambda b\acute{a}\eta$] | 'water of airplane' |
| | / $m\acute{o}r\acute{i}p'$ + ' + $\lambda tsám'$ / | \rightarrow | [$m\acute{o}r\acute{i}p \lambda tsám$] | 'water of home' |

stem syllable is identical to the floating tone, absorption takes place; in cases where the stem syllable bears the opposite tone, 'ML, L'M, and $\bar{L}\bar{H}$ contour tones are created (where 'M results from rule (9) in (i)). (b) The associative \bar{L} tone is in all cases assigned to the right, where it is absorbed into the L prefix of N_2 .

(iii) Tone-simplification: (a) The contour $\bar{L}\bar{H}$ simplifies to

to L° before pause. (b) The contours L'M and 'ML simplify to 'M.

(iv) Tone-spreading: (a) Nouns which after tone-grounding are L-H become L-LH by spreading of the L tone of the prefix. (b) Nouns which after tone-grounding are H-L become H-HL by spreading of the H tone of the prefix. A prefix tone will thus spread onto an opposite stem tone.

A sample derivation is given in (27).

| | | |
|------|-----------------------|----------------------------------|
| (27) | /ñbàp' + ' + λtsám'/' | 'the rat of the home' |
| | ñbàp' λtsám' | : by tone-lowering (i) |
| | ñbàp λtsám | : by tone-grounding (ii a) |
| | ñbàp λtsám | : by tone-grounding (ii b) |
| | ñbàp λtsám | : by tone-simplification (iii b) |
| | [ñbàp λtsám] | : by tone-spreading (iv a) |

The four tone rules given above must apply in the order given, or else an incorrect output is obtained for at least one or more forms:

(i) Tone-lowering must precede tone-grounding; otherwise, when L-H-H in N₁ position becomes L-H, this will incorrectly undergo lowering and become L-'M. (ii) Tone-grounding must precede tone-simplification, because the former rule feeds the latter rules; (iii) Tone-simplification must precede tone-spreading, or else the L-LH which is derived from L-H will become L-L° before pause.

4.2.2. H Tone Associatives

The tone of the associative is H (/λ/ for classes 6 and 7) for all classes except 1, 9, and 6a. All eight bisyllabic tone sequences are found in N₁ position. A complete table of the 32 combinations is given below in (28).

In the case of H tone associatives, the derivation of the correct surface tones is somewhat more problematic. We shall present one analysis which, however, must remain speculative in certain respects. We begin by applying the same four rules to the underlying forms in (28).

(i) Tone-lowering converts L-H-L to L-'M-L, affecting the associative /λ/ in all of (28a,c,e,g), as well as each occurrence of /λbáŋ'/ 'airplane' in N₂ position.

(ii) Tone-grounding (a) assigns final floating tones to the

(28) N₁ + H + N₂ (Bisyllabic Nouns)

| | | | | |
|----|--------------------------|---|------------------|------------------------|
| a. | /λbàm' + λ + λbò?/' | → | [λbàm' λbò?] | 'bag of slave' |
| | /λbàm' + λ + λfòn'/' | → | [λbàm' λfòn°] | 'bag of leopard' |
| | /λbàm' + λ + λbáŋ'/' | → | [λbàm' λbáŋ] | 'bag of airplane' |
| | /λbàm' + λ + λtsám'/' | → | [λbàm' λtsám] | 'bag of home' |
| b. | /λfòn' + λ + λbò?/' | → | [λfòn' λbò?] | 'leopard of slave' |
| | /λfòn' + λ + λfòn'/' | → | [λfòn' λfòn°] | 'leopard of leopard' |
| | /λfòn' + λ + λbáŋ'/' | → | [λfòn' λbáŋ] | 'leopard of airplane' |
| | /λfòn' + λ + λtsám'/' | → | [λfòn' λtsám] | 'leopard of home' |
| c. | /fèŋgwáŋ' + ' + λbò?/' | → | [fèŋgwáŋ' λbò?] | 'salt of slave' |
| | /fèŋgwáŋ' + ' + λfòn'/' | → | [fèŋgwáŋ' λfòn°] | 'salt of leopard' |
| | /fèŋgwáŋ' + ' + λbáŋ'/' | → | [fèŋgwáŋ' λbáŋ] | 'salt of airplane' |
| | /fèŋgwáŋ' + ' + λtsám'/' | → | [fèŋgwáŋ' λtsám] | 'salt of home' |
| d. | /λtòŋ' + λ + λbò?/' | → | [λtòŋ' λbò?] | 'ear of slave' |
| | /λtòŋ' + λ + λfòn'/' | → | [λtòŋ' λfòn°] | 'ear of leopard' |
| | /λtòŋ' + λ + λbáŋ'/' | → | [λtòŋ' λbáŋ] | 'ear of airplane' |
| | /λtòŋ' + λ + λtsám'/' | → | [λtòŋ' λtsám] | 'ear of home' |
| e. | /λzə? + λ + λbò?/' | → | [λzə? λbò?] | 'trap of slave' |
| | /λzə? + λ + λfòn'/' | → | [λzə? λfòn°] | 'trap of leopard' |
| | /λzə? + λ + λbáŋ'/' | → | [λzə? λbáŋ] | 'trap of airplane' |
| | /λzə? + λ + λtsám'/' | → | [λzə? λtsám] | 'trap of home' |
| f. | /λγù' + λ + λbò?/' | → | [λγù' λbò?] | 'thing of slave' |
| | /λγù' + λ + λfòn'/' | → | [λγù' λfòn°] | 'thing of leopard' |
| | /λγù' + λ + λbáŋ'/' | → | [λγù' λbáŋ] | 'thing of airplane' |
| | /λγù' + λ + λtsám'/' | → | [λγù' λtsám] | 'thing of home' |
| g. | /λbáŋ' + λ + λbò?/' | → | [λbáŋ' λbò?] | 'airplane of slave' |
| | /λbáŋ' + λ + λfòn'/' | → | [λbáŋ' λfòn°] | 'airplane of leopard' |
| | /λbáŋ' + λ + λbáŋ'/' | → | [λbáŋ' λbáŋ] | 'airplane of airplane' |
| | /λbáŋ' + λ + λtsám'/' | → | [λbáŋ' λtsám] | 'airplane of home' |
| h. | /λtsám' + λ + λbò?/' | → | [λtsám' λbò?] | 'home of slave' |
| | /λtsám' + λ + λfòn'/' | → | [λtsám' λfòn°] | 'home of leopard' |
| | /λtsám' + λ + λbáŋ'/' | → | [λtsám' λbáŋ] | 'home of airplane' |
| | /λtsám' + λ + λtsám'/' | → | [λtsám' λtsám] | 'home of home' |

preceding stem syllable; and (b) assigns the associative /ʌ/ to the right, where it fuses with the /λ/ of N₂. Since classes 6 and 7 involve a full vowel associative, we cannot properly speaking refer to part (b) as a grounding process, but rather a "vowel coalescence" (cf. however (28c), where 'salt' is characterized by a H associative). Whether or not there is a vowel involved, we obtain an intermediate $\widehat{\text{HL}}$ falling tone on the N₂ prefix, which remains.

(iii) Tone-simplification (a) simplifies $\widehat{\text{LH}}$ to L° before pause, and (b) simplifies the contours $\widehat{\text{L}}\text{'M}$ and $\text{'M}\widehat{\text{L}}$ to 'M. The simplification of $\text{'M}\widehat{\text{L}}$ to 'M takes place in (28a,c,e,g), where we have seen tone-lowering to have affected the associative /ʌ/.

(iv) Tone-spreading will (a) convert intermediate $\lambda\text{t}\acute{\text{o}}\eta$ to $\lambda\text{t}\delta\eta$ in (28d), and (b) convert intermediate $\acute{\lambda}\text{z}\hat{\text{e}}\text{?}$ to $\acute{\lambda}\text{z}\hat{\text{e}}\text{?}$ in (28e).

(v) Tone-absorption will then simplify $\lambda\text{t}\delta\eta$ to $\lambda\text{t}\delta\eta$ (and also $\lambda\text{f}\delta\eta$ to $\lambda\text{f}\delta\eta$), since these are followed by a the H of the associative. Similarly, tone-absorption will simplify the $\widehat{\text{HL}}$ of intermediate $\acute{\lambda}\text{z}\hat{\text{e}}\text{?}$, which although not followed by a L pitch, is followed by a pitch two steps lower (i.e. 'M).

The above steps, with only tone-absorption being added to the rules needed for L_0 associatives, are by and large sufficient--except for two problems.

(i) The tone of the prefix of N₂, which the rules leave as $\widehat{\text{HL}}$ in (28b,d,f) must be simplified not to a H (as in (28h)) but to a M. Except for the forms where N₂ is /λtsám'/ 'home', this may have to do with the lowering process mentioned in 4.1, whereby H-L, H-L°, and H-'M can optionally be realized as M-L, M-L°, and M-'M. It is thus not clear whether $\lambda\text{f}\delta\eta$ $\bar{\lambda}\text{b}\hat{\text{o}}\text{?}$ 'the leopard of the slave' can contrast with a hypothetical L-L # H-L. Perhaps we could just as transcribe this phrase as $\lambda\text{f}\delta\eta$ $\acute{\lambda}\text{b}\hat{\text{o}}\text{?}$. (The intricate register-lowering which we have occasionally encountered remains to be worked out. Since this is a five-level system, the superimposing of a such a lowering process may complicate the recognition of the different levels.)

(ii) The tone of /λtsám'/ 'home' in N₂ position is somewhat intriguing. In (28a) the prefix is realized on a 'M tone, since it is both preceded and followed by a L tone in the underlying re-

presentations. But we would expect $\bar{\lambda}\text{z}\hat{\text{e}}\text{?}$ $\acute{\lambda}\text{ts}\bar{\text{a}}\bar{\text{m}}$ in (28e) and $\bar{\lambda}\text{b}\acute{\text{a}}\eta$ $\acute{\lambda}\text{ts}\bar{\text{a}}\bar{\text{m}}$ in (28g), since we have an underlying L-H-L sequence here too. (Similarly, we expect $\text{f}\delta\eta\text{gw}\acute{\text{a}}\eta$ $\acute{\lambda}\text{ts}\bar{\text{a}}\bar{\text{m}}$ in (28c), where we find two occurrences of M instead of 'M.) In these examples we observe $\bar{\lambda}\text{ts}\bar{\text{a}}\bar{\text{m}}$ with both syllables realized on a M pitch. To account for this, we tentatively suggest a corrective rule which raises a 'M prefix to M when it occurs between two H's.

This still will not account for the M on $\bar{\lambda}\text{ts}\bar{\text{a}}\bar{\text{m}}$ in (28b,d,f) and the H on $\acute{\lambda}\text{ts}\bar{\text{a}}\bar{\text{m}}$ in (28h). We tentatively suggest the following late rules in (29) and (30).

(29) $\widehat{\text{HL}} - (\text{H} \dots) \rightarrow \text{M} - (\text{M} \dots) / [\overline{+\text{pref}}]$

(30) $\text{M} \rightarrow \text{H} / \text{H} [\overline{+\text{pref}}]$

First, in (29), the intermediate N₂ prefix $\widehat{\lambda}$ - becomes a M, as does the following stem H or sequence of H's (cf. $\lambda\text{t}\delta\eta$ $\bar{\lambda}\text{z}\bar{\text{e}}\bar{\text{r}}\bar{\text{i}}$ 'the ear of the tree' ($\bar{\lambda}\text{z}\bar{\text{e}}\bar{\text{r}}\bar{\text{i}}$)). Second, in (30), the M prefix derived from (29) is raised to H when preceded by a H. This kind of prefix-assimilation to the preceding tone is quite common in the Grassfields area. The reason why the prefix of N₂ is not raised to H in (28b, d,f) is that (28b) and (28d) both involve an intermediate $\widehat{\text{LH}}$ rising tone which first undergoes absorption to become L. In the case of 'thing', we make no attempt to explain its M-M tone in N₁ position, except for noting that it too may somehow be a simplification of $\widehat{\text{HL}}$ -H to M-M (cf. also 'the salt of the home' in (28c)).

Finally, in order to obtain the surface tones, rule (12) lowers a H tone vowel prefix to M. A sample derivation is given in (31).

(31) /λtóη' + λ + λbáη' / 'the ear of the airplane'
 $\lambda\text{t}\acute{\text{o}}\eta'$ λ λbáη' : by tone-lowering (i)
 $\lambda\text{t}\acute{\text{o}}\eta$ λ λbáη : by tone-grounding (ii a)
 $\lambda\text{t}\acute{\text{o}}\eta$ λbáη : by tone-grounding (ii b)
 $\lambda\text{t}\acute{\text{o}}\eta$ λbáη : by tone-simplification (iii b)
 $\lambda\text{t}\delta\eta$ λbáη : by tone-spreading (iv a)
 $\lambda\text{t}\delta\eta$ λbáη : by tone-absorption
 $[\lambda\text{t}\delta\eta$ $\bar{\lambda}\text{b}\acute{\text{a}}\eta]$: by rule (29)

4.2.3. Summary

In the preceding subsections we have seen how L_0 and H_0 associa-

tive markers interact with N_1 and N_2 to produce a number of tone alternations, for which we have proposed rules. The fact that N_2 nouns always begin with a L prefix is extremely interesting and is corroborated also for monosyllabic and trisyllabic nouns. Although we shall not treat these systematically here, two examples will suffice.

First, recall that nouns such as *ji* 'thief' were said to have a prefix tone as well as a second stem tone. The underlying tones for this noun, as it occurs in isolation, is /'ji'/. When it occurs in N_2 position, however, its \bar{H} prefix turns up as \bar{L} , as in (32).

(32) /'tsám' + á + 'ji' / → [átsám á ji] 'home of thief'

Proof that there is a \bar{L} prefix is seen from the fact that 'thief' is realized on a 'M tone in (32).

The same can be said of prefixes of trisyllabic nouns, as seen in the phrase 'the home of the market' in (33).

(33) /'tsám' + á + úywíni / → [átsám á ywíni]

Although the isolation form for 'market' is M-H-H, the M-M tones on its two stem syllables in (33) indicates that its prefix must have underlying L tone in N_2 position. In the above phrase both rule (29) and rule (30) have applied.

5. CONCLUSION

In the preceding sections we have seen that the five phonetic pitch levels of Ngamambo can be derived from the various combinations of two underlying tones, H and L. We not only can reduce the number of underlying tone levels, but can at the same time account for frequently occurring tone alternations.

Our analysis has not been without its problems, however. Some of these problems have to do with the exact formalization of the synchronic tone rules in question. Others have more of a historical significance. These two concerns, the synchronic and diachronic, meet head on in the case of determining the underlying tone of the noun prefixes. This issue is beyond a doubt the most crucial, and most problematic one encountered in the morphotonology of the Ngamambo noun.

In our previous discussion we have noted the near-complementary distribution of tones on the noun prefix: L occurs on N-, M on V-, and H on CV-. Exceptions were, however, seen in the nouns in (4), where L is observed on a few V- and CV- prefixes. To top off the problem, nouns in N_2 position all have L tone prefixes, regardless of the segmental shape of the prefix. These facts raise the difficult question of how to represent the underlying tones of prefixes. Assuming as we do that these tones are predictable, there appear to be at least three possible solutions.

(i) All noun prefixes have underlying L tone; V- prefixes are raised to M, and CV- prefixes to H (with some exceptions) in certain specifiable grammatical constructions (e.g. isolation forms).

(ii) All noun prefixes have underlying H tone; N- prefixes and a few exception V- and CV- prefixes, as seen in (4), are lowered to L in all environments; V- and CV- prefixes are lowered to L in trisyllabic nouns whose stem is L-L or L-H; and all prefixes are lowered to L in the N_2 position of the associative construction. The underlying H of V- prefixes not affected by lowering to L are then lowered to M.

(iii) Noun prefixes have no underlying tone. Tone is assigned as follows: in N_2 position, assign L; in all other positions which we have studied, L is assigned to N-, M to V-, and H to CV-, except where V- and CV- occur before L-L and L-H stems, in which case L is assigned; and except for a few exceptional nouns, which receive L tone as well.

A fourth possibility, the one we tentatively accepted (where the prefix is sometimes H, sometimes L), is rejected, since it is equivalent to saying that tone is not predictable underlyingly. (This may turn out to be simply a variant of (iii), since in (iii), the rule assigning tone will be the first rule of the tonology, so that all other tone rules can follow.)

Looking over these three approaches, it appears that (i) is the simplest way of handling the tonal alternations discussed above. This also is the one which would seem to be supported by Proto-Bantu, where noun prefixes reconstruct with L tone. It is not clear whether the tone raising which occurs is to be identified

with the Proto-Bantu preprefix or augment, which on the basis of a number of papers in this volume can be reconstructed as H. It is tempting to say that such a preprefix did characterize Ngamambo nouns by causing a tone raising of the prefix (and then dropping out). In such an approach we would add that the H tone preprefix did not occur on nouns in N₂ associative position.

We therefore tentatively accept the treatment of Ngamambo noun prefixes as L, taking note of the following issues:

(i) Prefix-raising must be stated so that all bisyllabic nouns will be affected (as well as some monosyllabic ones, e.g. nám 'animal', from /'nám/). Thus, L-L-L̄ will come out H-H̄L, but trisyllabic L-L-L will not develop a H tone prefix.

(ii) In the pronoun system there are such instances as à wúm 'mine' (class 3), à zúm 'mine' (classes 6 & 7), etc., where a L-H sequence is found. We cannot explain (i) why the vowel has not been raised to M (cf. the "prothetic" vowel prefix of monosyllabic nouns in 3.3); or (ii) why the L of the prefix, once not having been raised to M, did not spread into the next syllable to create à wúm, à zúm, etc. Since there is no interaction between this prefix and what follows, we separate the two by a space.

The task of reconstructing the tones of Proto-Western Grassfields nouns is a formidable one. In Hyman (in press) it was shown that in the other major subgroup of Western Grassfields, the Ring group, both H and L prefixes are also attested, depending on the language. If we are correct in postulating a tone-raising process applicable to V- and CV- prefixes and ultimately due to some kind of preprefix with proto H tone, then this same process must have affected these neighboring languages as well (cf. Elimelech 1976 and Arvanites 1976 for similar processes in Kombe and Kimbundu, two "narrow" Bantu languages). The preprefix hypothesis could then complement Hyman's (1976) hypothesis that noun prefixes in Proto-Ring were H for all classes except 1 and 9. Instead, we could conjecture that all prefixes had L tone in the proto language, but that the preprefix carried H tone for all classes except 1 and 9, the two classes which tend to have some association with nasal prefixes in Proto-Western Grassfields.

REFERENCES

- Arvanites, Linda. 1976. Tonal alternations in the Kimbundu noun (in this volume).
- Elimelech, Baruch. 1976. Noun tonology in Kombe (in this volume).
- Hyman, Larry M. 1973. The role of consonant types in natural tonal assimilations. In Larry M. Hyman (ed.), *Consonant Types and Tone*, 151-179. Southern California Occasional Papers in Linguistics No. 1, Department of Linguistics, University of Southern California.
- Hyman, Larry M. 1976 (in press). Babanki and the Ring group. In Larry M. Hyman and Jan Voorhoeve (eds.), *Noun Classes in Grassfields Bantu*. Paris: Société d'Etudes Linguistiques et Anthropologiques de France.
- Hyman, Larry M. and Russell G. Schuh. 1974. Universals of tone rules: evidence from West Africa. *Linguistic Inquiry* 5.81-115.
- Hyman, Larry M. and Maurice Tadadjeu. 1976. Floating tones in Mbam-Nkam (in this volume).
- Stallcup, Kenneth. 1976. Noun classes in Momo: Moghamo, Ngie, Oshie. In Larry M. Hyman and Jan Voorhoeve (eds.), *Noun Classes in Grassfields Bantu*. Paris: Société d'Etudes Linguistiques et Anthropologiques de France.

FLOATING TONES IN MBAM-NKAM

BY

LARRY M. HYMAN

AND

MAURICE TADADJEU

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

0. INTRODUCTION¹

The Mbam-Nkam languages, spoken in the mountainous region of Western Cameroon, are well known for their tonal complexity. Although closely related to Narrow Bantu, where the normal situation is a two-tone system with H and L, these languages have developed as many as four distinct tone levels, as well as a number of unexpected tonal phenomena not found elsewhere. While there has been steady progress in the description of these languages, most of them remain unstudied, and their tone systems poorly understood. In an attempt to fill this important gap in our knowledge of the area, a comparative study was carried out by the two authors in the Summer of 1974 in Mbam-Nkam country, where the basic characteristics of some 20-odd tone systems were investigated and compared. The purpose of the present study is to report on these findings and to provide a perspective for the study of "floating" tones in Cameroonian Bantu. In the following discussion we shall first address ourselves to the nature of floating tones (section 1), then to the comparative study of Mbam-Nkam tonology (section 2), and finally to a description of the tone system of Bamileke-Dschang (section 3), one of the most complicated tone systems in the area. Throughout our study of Mbam-Nkam tonology, we shall witness the centrality of floating tones, without which tonal analyses are extremely cumbersome, if not impossible.

1. THE NATURE OF FLOATING TONES

In two recent studies (Hyman 1973, Hyman and Schuh 1974), an attempt was made to provide generalizations concerning the nature of tone rules. When the juxtaposition of two unlike tones occasions an alternation of one or both tones, this was said to be due either to assimilation or simplification.² In assimilation, one tone either partially or completely takes on the tone of a neighboring syllable. Thus, in Batcham, the plural of the class 1 noun ká 'crab' is màkà (cl. 2). Since the singular involves a H tone and the plural a LH rising tone, we conclude that it is the addition of the L tone prefix mà- which has caused the following H to assimilate. The change of a L-H sequence to L-LH is extremely common, and is referred to in the above works as partial horizontal

assimilation or tone-spreading. In simplification, a tonal contour becomes a level tone. Thus, in Fe?fe?, when a \widehat{LM} rising tone is followed by a L tone, it simplifies to a M, e.g. $\grave{h}k\grave{a}\bar{a}$ 'money', but: $\grave{h}k\bar{a}\bar{a}$ $\grave{b}\grave{a}$ 'my money'.³ In our discussion of the tone processes found in Mbam-Nkam languages, it will be helpful to keep these rule types in mind. We therefore summarize them in Table I.

TABLE I

| | |
|------------------------|--|
| <u>Assimilation:</u> | (a) Vertical, e.g. L-H becomes M-H |
| | (b) Horizontal, e.g. L-H becomes L- \widehat{LH} |
| <u>Simplification:</u> | (a) Absorption, e.g. \widehat{LH} -H becomes L-H |
| | (b) Levelling, e.g. \widehat{LH} -L becomes H-L |

Vertical assimilation is said to occur when a syllable raises or lowers its tone towards (or to) the level of an adjacent tone. Horizontal assimilation takes place when a tone spreads its domain from its own syllable onto a neighboring one. Absorption occurs when the beginning or end point of a contour tone is lost by virtue of its being adjacent to a syllable bearing like tone. Levelling takes place when a contour tone becomes a level tone other than by absorption.

Even with the above typology of tone rules, sometimes when two tones are placed side by side, tone alternations take place which do not fit into any of the categories of Table I. An example representative of most of Mbam-Nkam can be seen from the Babete forms in (1).

| | | | | | | |
|--------|--------------------------------|-------------|----|-----------------------|--------------------------------|-----------------------------------|
| (1) a. | $\grave{h}k\grave{u}$ | 'message' | b. | $\grave{h}k\grave{u}$ | $\rho\grave{e}\gamma\grave{u}$ | 'the message of the strangers' |
| | $\rho\grave{e}\gamma\grave{u}$ | 'strangers' | | | | |

Although both 'message' and 'strangers' have L-L tone in isolation, when they are combined to form an "associative" construction, the result is that the L tone of the prefix of 'strangers' goes up to H. One could, of course, speak of a dissimilation process. However, since the raising of a L to H is restricted to the associative construction, there are countless occurrences of L-L followed by L-L where no tone raising is observed. Thus, there is something about the noun-noun ("N₁ of N₂") associative construction which causes a tone raising on the prefix of the second noun. In order

to account for this, we recognize a "floating" H tone, symbolized as \grave{H} , which is the mark of noun association when the first noun belongs to any noun class other than 1 or 9. This \grave{H} tone is thus a "tonal morpheme" (Welmers 1959) which has no phonetic realization except in the association of nouns, in which case it always surfaces on one of the adjacent syllables. We therefore refer to it as a grammatical floating tone.

Another kind of floating tone has received somewhat less attention in the literature, but is at least as prevalent in Mbam-Nkam as grammatical floating tones. This is what we term a lexical floating tone, whose need is seen in the following Mbui forms:

| | | | | |
|--------|--|----------------------|--|----------------------------|
| (2) a. | $\grave{b}\grave{a}k\acute{o}$ | 'crabs' | $\grave{b}\grave{a}n\acute{d}\acute{u}m$ | 'husbands' |
| | $\grave{b}\grave{a}k\acute{o}$ | $\acute{b}\acute{e}$ | $\acute{s}\acute{o}\eta$ | 'the crabs of the bird' |
| | $\grave{b}\grave{a}n\acute{d}\acute{u}m$ | $\acute{b}\acute{e}$ | $\acute{s}\acute{o}\eta$ | 'the husbands of the bird' |

In (2a) it is seen that both 'crabs' and 'husbands' have L-H tone in isolation. However, in (2b), when these nouns occur in an associative construction with $\acute{s}\acute{o}\eta$ 'bird' as N₂, a tonal difference is observed. The associative marker $\acute{b}\acute{e}$ 'of' (=the form obtained with a class 2 N₁) is realized on its underlying H level after 'crabs', but is downstepped to a 'H level after 'husbands'. Since we know that 'H tone comes from the loss of a L tone between two H tones in Mbui, we are justified in setting up the following underlying forms in (3).

| | | | |
|--------|--|----|--|
| (3) a. | $/\grave{b}\grave{a}k\acute{o} + \acute{b}\acute{e} + \acute{s}\acute{o}\eta/$ | b. | $/\grave{b}\grave{a}n\acute{d}\acute{u}m + \acute{b}\acute{e} + \acute{s}\acute{o}\eta/$ |
|--------|--|----|--|

In (3b) we have recognized a final \grave{L} tone on 'husbands' which causes the associative marker $\acute{b}\acute{e}$ to be downstepped one level. Since this \grave{L} is not the mark of any construction, nor is it the realization of a noun suffix (but rather of a second stem syllable), its function is lexical rather than grammatical. In (3a) we have recognized 'crabs' without a second stem tone, since one is not needed. However, for the sake of symmetry (and also basing ourselves on comparative evidence--see below), we will have to address ourselves to the possibility of recognizing underlying $/\grave{b}\grave{a}k\acute{o}'/$ 'crabs' and even $/\acute{s}\acute{o}\eta'/$ 'bird'.⁴

The assignment of a floating tone to a syllable will hence-

forth be referred to as "tone-grounding". Some of the factors which may play a role in determining the direction of tone-grounding (i.e. to the left or right) include the following:

(i) A $\overset{\circ}{T}$ (floating tone) tends to be assigned in the direction in which it will have the greatest tonal effect. Thus, if a $\overset{\circ}{L}$ occurs between a L and a H, chances are that it will be grounded to the right. If it occurs between a H and a L, it may instead be grounded to the left.

(ii) A $\overset{\circ}{T}$ tends to be assigned in the direction which creates the more natural tonal contour. Thus, if a $\overset{\circ}{H}$ occurs between a \widehat{HL} and a L tone, it may be grounded to the right to create a \widehat{HL} contour, rather than to the left to create the complex \widehat{HLH} contour.

(iii) Syllabic structure may determine the direction of tone-grounding. Thus, if a $\overset{\circ}{T}$ occurs between a CV and another CV, it may be grounded to the left, since that is where it has easier access to a syllabic segment. If, on the other hand, it occurs between a CVC and a VC, it may be grounded towards the right.

(iv) Related to (iii), tone-grounding may be repulsed by a strong grammatical boundary. Thus, if a $\overset{\circ}{T}$ occurs directly before a prefixless CV stem, it may be grounded to the end of the preceding word, or simply drop out entirely. This contrasts with the great tendency in Mbam-Nkam for a floating tone to be grounded on a prefix syllable (often CV-) to the right.

(v) A $\overset{\circ}{T}$ may show a tendency to be assigned to the syllable of a word with which it has greater grammatical affinity than another. This last possibility appears to have the least applicability of the five factors.

The five tendencies outlined above are only general strategies. Exceptions are not particularly hard to find. On the other hand, there are so many cases where (i) is so closely obeyed that we feel safe in asserting that such a tendency does exist. Examples will be given throughout the following sections.

Before addressing ourselves to Mbam-Nkam tonology as a whole, let us consider for a moment the possibility of avoiding floating tones altogether. In many of the dialects, when studied closely,

some evidence is obtained for segmental features to accompany, for example, the associative marker. Warnier and Voorhoeve (1975) have shown this for Mankon, and Tadadjeu (1977) has done likewise for Dschang. Consider, for example, the Dschang forms in (4).

- (4) a. $\text{l}\grave{\text{e}}\text{s}\grave{\text{d}}\eta^{\circ}$ 'tooth' $\text{\grave{a}}\text{l}\grave{\text{d}}\eta^{\circ}$ 'cartridge'
 b. $\text{l}\grave{\text{e}}\text{s}\grave{\text{d}}\eta^{\circ}\text{h}\text{ s}\acute{\text{e}}\eta$ 'the tooth of the bird'
 $\text{\grave{a}}\text{l}\grave{\text{d}}\eta^{\circ}\text{h}\text{ s}\acute{\text{e}}\eta$ 'the cartridge of the bird'

Although 'tooth' and 'cartridge' have the same tones in isolation and in context, in (4b) a segmental difference is noted in the associative construction. The reason for this is that 'cartridge' belongs to class 7 (prefix $\text{\grave{a}}-$), which conditions what Tadadjeu has shown to be an underlying H tone / $\acute{\text{a}}$ / associative marker--which in (4b) assimilates to the vowel of the preceding syllable. For all of the remaining noun classes Tadadjeu recognizes underlying /e/, which has L tone for classes 1 and 9, and H tone for the other classes. This latter associative marker surfaces as [e], [ə], additional length on a preceding sonorant (as in 'the tooth of the bird', alternately realized as $\text{l}\grave{\text{e}}\text{s}\grave{\text{d}}\eta\text{ s}\acute{\text{e}}\eta$), or \emptyset . Perhaps we could avoid this grammatical $\overset{\circ}{T}$ altogether and say that the associative marker always involves an underlying vowel in Dschang.

Even if we could demonstrate that the associative is underlyingly grounded on a vowel in Dschang, it would not be possible to argue for such a vowel in other dialects, especially those located to the East (e.g. Fe[?]fe[?], Bandjoun, Bangangte, etc.). Also, we would still have to face the problem of lexical $\overset{\circ}{T}$'s for Dschang and other dialects. For lexical $\overset{\circ}{T}$'s it might appear attractive to consider an alternative analysis whereby the final $\overset{\circ}{T}$'s are underlyingly grounded on the final (stem) syllable of each noun. Thus, instead of having nouns specified as underlying L-H- $\overset{\circ}{L}$ and L-L- $\overset{\circ}{H}$, we might consider recognizing L- \widehat{HL} and L- \widehat{LH} , which is what is usually obtained by the tone-grounding process anyway. (The sequences L-L- $\overset{\circ}{L}$ and L-H- $\overset{\circ}{H}$ would be reanalyzed as L- \widehat{LL} and L- \widehat{HH} , which are equivalent to L-L and L-H, respectively; see below.)

That this alternative is not always available is seen from Bandjoun (Nissim, in press), where monosyllabic nouns reveal a contrast between $\overset{\circ}{L}$ -H (e.g. $\text{m}\acute{\text{u}}$ 'child'), \widehat{LH} (e.g. $\text{\textcircled{S}}\acute{\text{u}}\eta$ 'thief'), and

L-H₀ (e.g. sùŋ⁰ 'tooth'). These three tone classes have the following properties:

(i) The L₀-H class contains nouns realized as H in isolation, but as 'H whenever preceded by a H. It is this last property which justifies the preceding L₀, which as we shall see, reconstructs as a noun prefix.

(ii) The LH class contains nouns realized as LH in isolation, but often as H or 'H in context.

(iii) The L-H₀ class contains nouns realized as L⁰ (nonfalling L) in isolation. When occurring before a L₀ tone, however, the H₀ is grounded on the preceding syllable. In possessive pronoun constructions (where there is an intervening L₀ between the noun and the pronoun), both the H₀ of the L-H₀ noun and the following possessive L₀ are grounded to the left, creating a HL falling tone, e.g. sùŋ⁰ 'tooth', but sùŋ tsyá 'his tooth'.

If we were to assign all of the floating tones to the one syllable which comes to the surface, we would obtain the same LH for all three tone classes. There are basically two ways to avoid floating tones and at the same time have a unique representation for each of the above three tone patterns. The first is to cling to the surface and represent L₀-H nouns as underlyingly H, but with a diacritic indicating that these nouns undergo downstepping when preceded by a H tone. LH nouns would be represented as such, and L₀-H nouns would be recognized as simply underlying L⁰ (with some feature specification such as [↓downglide] distinguishing L⁰ from L, which unlike L⁰ creates a downglided pitch before pause). In this analysis we would not be able to provide underlying tonal representations which take advantage of the general tone rules operating in each dialect. Instead, many of the tonal alternations which occur on the surface would appear to be arbitrary and unexpected. After all was said and done, we would still have to maintain that nouns with L⁰ tone behave as if they consisted of a L followed by an "imaginary" H floating tone after them. Thus, the use of floating tones captures this parallel in a general way (cf. the argumentation in Asongwed and Hyman 1976, where it is possible to compare, for example, bisyllabic L-H-L₀ with trisyllabic L-H-L,

etc., and capture the parallelism between such tone classes by means of floating tones).

The second way of avoiding T₀'s in Bandjoun is to go back to much more abstract representations which mirror the tone sequences reconstructed for Proto-Mbam-Nkam. These are, respectively: (i) L-H-L; (ii) L-H-H; and (iii) L-L-H. We could try these sequences for Bandjoun, with all tones being assigned to the one stem syllable, i.e. LHL, LHH, and LLH, where LHH and LLH undergo fusion of like tones and therefore neutralize as LH.⁵ Besides the problem of sorting out two kinds of LH representations, we still have the problem of justifying the final L of supposed LHL nouns. In fact, there is even some confusion over whether classes (i) and (ii) reconstruct as L-H-L and L-H-H, or vice-versa, partly because the correspondences are imperfect. The way we have set them up makes more sense phonetically, since L-H becomes L-LH (and then LH by loss of the prefix) in this analysis, while L-HL (from L-H-L) is not able to undergo spreading of the initial L to derive a complex LHL contour on the surface. As a result the initial L simply drops out. Later, we would claim, HL simplified as H (as in mú 'child', whose etymology is clear).

We will not further discuss the Bandjoun case here, since it would involve us in a discussion which has already gone beyond the simple demonstration we have intended. It should be noted only that to deny the existence of floating tones, and to try to handle them by having them grounded in lexical representations, would create more problems than it would solve. We therefore accept the appropriateness of T₀'s as a formal device, and postpone to some later date a thorough investigation of how abstract tonology is.

2. MBAM-NKAM TONOLOGY

In the preceding section we have seen the need for floating tones in several Mbam-Nkam languages/dialects. In this section we shall systematically look at the tonology of the Mbam-Nkam noun, how it appears in isolation and in the associative construction in the 20 or so dialects we have studied. We shall then turn to the tones of possessive pronouns and conclude the section with some considerations about verb tones.

TABLE II

| Dialect | *L-L-L | *L-L-H | *L-H-L | *L-H-H |
|----------------------------|--------|-------------------|----------------------|--------------------------------|
| Mankon (1A) | L-L-L | L-L-H | L-H-L | L _H ^L -H |
| Mundum I (1A) | L-L-L | L-L-H | L-H-L | L-L-H |
| Nkwen (1A) | L-L-L | L-L-L° | L-H-L | L _H ^L -H |
| Pinyin (1A) | L-L-L | L-L-L° | L-H-L | L-L-H ? |
| Mbui (1A) | L-L | L-L° | L-H-L _g | L-H |
| Bamenyan (2B) | L-L | L-L ^H | L-H ^L | L-H |
| Babadjou (2B) | L-L | L-L° | L-H ^L | L-L ^H |
| Babete (2B) | L-L | L-L° | L-H | L-H |
| Bati (2G) | -L | -L | -H | -H |
| Bagam (2G?) | -L | -L° | -H | -H |
| Batcham/Bangang (2C) | L-L | L-L° | L-H | L-L ^H |
| Dschang/Ngwe (3C) | L-L | L-L° | L-'H | L-H |
| Baloum (3CD) | L-L | L-L° | L-H-L _g | L-L ^H ? |
| Fomoepa (3DE) | L-L | L-L° | L-H-L _g ? | L-H |
| Bamendjou (4D) | L-L | L-L° | L-H-L _g | L-L ^H |
| Baleng (4DE) | (L)-L | (L)-L° | (L)-H | (L)-H |
| Bandjoun (4E) | -L | -L° | -H | -L ^H |
| Batie (4E) | (L)-L | (L)-L° | (L)-H | (L)-H |
| Bangou (4F) | -L | -L-L _g | -M | -H |
| Batoufam (4F) | -L | -L-L _g | -M ? | -H |
| Fotouni (5E) | (L)-L | (L)-L° | (L)-H | (L)-H |
| Fondjomekwet/Fondanti (5F) | -L | -L-L _g | -H | -H |
| Fe?fe? (5F) | -L | -L° | -M | -L ^H |
| Bangangte (6G?) | -L | -L° | -H-L _g | -H |
| Bamoun (7G) | -L | -L | -H | -H |

SUMMARY OF REFLEXES OF THE FOUR PROTO-TONE SEQUENCES IN NOUNS

2.1. Noun Tones

In Proto-Mbam-Nkam all nouns except the prefixless few in class *la* were characterized by a L tone noun class prefix of the shape N-, V-, or CV-, and a bisyllabic stem. Since the two syllables of the stem could carry H and L tone in any combination, this means that there were four tone sequences on Proto-Mbam-Nkam nouns: L-L-L, L-L-H, L-H-L, L-H-H. In only a few of the Ngemba dialects, however, do we still find the three syllables intact, and even in these dialects the final vowel has reduced to schwa (which in some cases is in the process of being dropped). The different reflexes of the proto tone sequences are given in Table II. The various dialects investigated are indicated on the accompanying map, where it is noted that the name of a village is normally used to refer to its language as well. Since we are confronted by the double problem of genetic vs. areal classification, which become frequently entangled, we have used a double classificatory system, however crude, to identify the various dialects and dialect groups. Each dialect is thus identified first by a number which places it within an administrative unit (département/division). The code used here is as follows:

| | |
|------------------------------|----------------------------------|
| 1 : Mezam Division | 5 : Département du Haut-Nkam |
| 2 : Département du Bamboutos | 6 : Département du Ndé |
| 3 : Département de la Menoua | 7 : Département Bamoun |
| 4 : Département de la Mifi | 8 : Divisions North of the Mezam |

These different divisions are indicated by horizontal lines in Table II. The second part of the code consists of a capital letter denoting a broad genetic group, as follows:

| | |
|----------------------|---------------------------|
| A : Ngemba | E : Southcentral Bamileke |
| B : NW Bamboutos | F : Southern Bamileke |
| C : Dschangoid | G : Nun (Bamunoid) |
| D : Central Bamileke | H : Nkambe (Limbumoid) |

The above classificatory scheme not only allows a double classification of dialects, but also provides a general picture of both the geographic and the genetic continua involved. Thus, numbers and letters which are adjacent represent dialects sharing certain traits, and dialects whose numbers and letters are close to one

MAP OF VILLAGES STUDIED IN THE MBAM-NKAM REGION



another are to be expected to have more shared features than dialects whose numbers and letters are further apart. Also, observe how the letter system allows for certain dialects to be transitional (e.g. Baloum is classified as 3CD, which means that it is in the Department of the Menoua, but is transitional between Dschangoid and Central Bamileke). Note, finally, that the above scheme replaces that suggested by Hyman (1972), which was based in part on areal features (the softening of *j to z, and the loss of noun prefixes). Needless to say, this classification may yield to further refinements as more information is gathered and should in no way be taken as definitive.⁶

Looking over Table II, we observe that the only instances of languages maintaining the trisyllabic structure of nouns occur in Ngemba (A), although even some of these have lost the final syllable. As we move into groups B, C, and D to the South, we find that in all of these dialects the final syllable of nouns has been lost. Finally, in groups E, F, and G, almost all prefixes have been lost as well.⁷ Thus, what starts out as trisyllabic becomes monosyllabic in dialects such as Bandjoun (4E), Fe?fe? (5F), and Bangangte (6G?). As an illustration, consider the reflexes of Proto-Mbam-Nkam *li-sòŋó 'tooth' in Table III.

TABLE III

| | | | |
|---------------------|---------|-------------------|--------------------|
| Mankon (1A) | nḻsòŋó | Fomopea (3DE) | èsòŋ° |
| Mundum I (1A) | nḻsòŋó | Bandjoun (4E) | sùŋ° |
| Nkwen (1A) | nḻsòŋò° | Batie (4E) | èsò° |
| Pinyin (1A) | nḻsòŋò° | Fotouni (5E) | èsò° |
| Mbui (1A) | nḻsòŋ° | Bangou (4F) | sòŋ |
| Bamenyan (2B) | nèšùó | Batoufam (4F) | sùók |
| Babadjou (2B) | lèsòŋ° | Fondjomekwet (5F) | sòŋ |
| Babete (2B) | nèšòŋ° | Fe?fe? (5F) | sè?° |
| Batcham (2C) | lèsòŋ° | Bangangte (6G?) | sò° |
| Foreke-Dschang (3C) | lḻsòŋ° | Bamoun (7G) | sù |
| Baloum (3CD) | nèšò° | Bati (2G) | sḻŋ |
| Bamendjou (4D) | nèšòŋ° | Bagam (2G) | sòŋ° |
| Baleng (4DE) | nèšù° | Limbou (8H) | ḻsòŋ° ⁸ |

The following observations can be made on the basis of the

forms in Table III:

(i) As we move from West to East there is a tendency to lose, first, the final vowel, which is found only in certain Ngemba (1A) dialects.

(ii) As we move from West to East there is a tendency to first shorten the prefix by loss of the initial consonant, and then to lose the remaining vowel altogether. (There is of course variation between nV- and lv- for this prefix.)

Let us first address ourselves to the loss of final syllables. We know that although the final vowel of a noun may have dropped, its tone may continue to exert an effect (cf. (2b) from Mbui dialect). This has provided the motivation for recognizing underlying synchronic floating tones. The question which must be addressed at this point is how such tones come into being. Does a vowel simply drop and leave its tone floating, or what? The sequence of events we would like to propose is the following:

(i) When a vowel drops, its tone is shifted (or "grounded") onto a remaining adjacent syllable, in this case the preceding stem syllable. The possibilities are thus $L-\widehat{L}L$, $L-\widehat{L}H$, $L-\widehat{H}L$, and $L-\widehat{H}H$.

(ii) When the receiving syllable has the same tone as the grounding tone, there is absorption; thus, $L-L-L$ becomes $L-\widehat{L}L$, which then simplifies to $L-L$; similarly, $L-H-H$ becomes $L-\widehat{H}H$, which simplifies to $L-H$.

(iii) When the contour tones $\widehat{L}H$ and $\widehat{H}L$ are created by tone-grounding, these may undergo further simplification, i.e. levelling. Thus, $L-\widehat{L}H$ is realized as $L-L^\circ$ (L followed by a nonreleased or non-falling L) in most Mbam-Nkam dialects, or as $L-L$ in a few others. Similarly, $L-\widehat{H}L$ is realized as $L-'H$ in Dschang (L followed by a downstepped H), and as a M in Bangou (where the noun prefix is lost).

If we observe the reflexes of the four proto-tone sequences in Mbam-Nkam nouns in Table III, we observe the following generalizations:

(i) The $L-\widehat{L}H$ sequence obtained through tone-grounding appears to undergo simplification earlier than the corresponding $L-\widehat{H}L$ sequence. Thus, while Bamenyan (2B) has both $L-\widehat{L}H$ and $L-\widehat{H}L$, Babadjou

(2B) has only $L-\widehat{H}L$. Babadjou $L-\widehat{L}H$ has been simplified to $L-L^\circ$.⁹

(ii) While $L-\widehat{L}H$ undergoes simplification (to $L-L^\circ$) earlier, the opposition $L-L$ vs. $L-\widehat{L}H$ appears to be more stable than the opposition $L-H$ vs. $L-\widehat{H}L$. This is seen in Babete (2B), Bagam (2G?), Baleng (4DE), Bati (4E), Fotouni (5E), and a few other dialects as well. In all of these dialects a phonetic contrast is found between L and L° (the reflex of $\widehat{L}H$), while no such contrast is found between H and earlier HL. Note that it is only in Bati (2G) and Bamoun (7G) that $L-L$ and $L-\widehat{L}H$ merge entirely. This appears to be a frequent characteristic of languages in the Nun (G) group.

The first generalization probably has to do with the greater complexity involved in a rise as opposed to a fall in pitch (see Hombert 1976 and references therein). Compare the $L-L-L^\circ$ realization of Proto-Mbam-Nkam $L-L-H$ in Nkwen (1A) and Pinyin (1A), where there has been a vertical assimilation of H to L in final position. In both of these dialects, however, Proto-Mbam-Nkam $L-H-L$ still surfaces unchanged. The second generalization may have to do with the greater tendency for a low (as opposed to high) pitch to drop out entirely. Note the number of dialects which show no trace of the final L of Proto-Mbam-Nkam $L-H-L$.

Returning to the derivation of $L-L^\circ$ from $L-L-H$ in the forms of 'tooth' in Table III, we would propose, then, that $L-L^\circ$ is derived via the intermediate stage $L-\widehat{L}H$. The evidence for this is twofold. First, we find $L-\widehat{L}H$ in Bamenyan (2B). If this were not the case, we might suspect that $L-L^\circ$ derives from a $L-L-L^\circ$ stage, as found in Nkwen (1A) and Pinyin (1A). While one could imagine such a derivation, with final vowel deletion changing $L-L-L^\circ$ to $L-L^\circ$, a second indirect piece of evidence from Mbui dialect (1A) suggests $L-\widehat{L}H$ as the correct intermediate stage.

In Mbui dialect, as described by Hyman (1972), the reflex of proto $L-L-H$ is actually pronounced M-M. We choose to represent this sequence rather as $L-L^\circ$ because to us a true M is one which allows a lower tone to precede it. There are no L-M sequences allowed in Mbui. Rather, a L tone is automatically raised to M before a H (or M).¹⁰ Thus, one can imagine any of the following three possibilities to derive M-M from $L-L-H$:

- (5) a. L-L-H > M-M-H > M-M
 b. L-L-H > M-M-H > M-MH > M-M
 c. L-L-H > L-LH > M-MH > M-M

In both (5a) and (5b) vertical assimilation of L to M takes place before tone-grounding. In (5a) the final H simply drops out. In (5b) it is assigned to the left after tone-raising. In (5c) the final H is first grounded to the left, and then vertical assimilation occurs. What is of concern to us here is to show that (5a) cannot be correct. Rather, (5c) represents the most general and probably the correct route for most, if not all of Mbam-Nkam.

The main argument derives from the fact that a H-M sequence in Mbui is realized with the same pitch interval as a H-'H sequence in the same language. Consider the word $\bar{\eta}k\bar{o}$ 'monkey', which we recognize as underlying L-L-H.¹¹ When the M-M noun 'monkey' (=L-L°, recall) occurs after a H tone associative marker, the prefix goes up to H. However, as can be seen from (6),

- (6) $\bar{b}\bar{e}t\bar{i}\bar{e} \ b\acute{o} \ \acute{h}k\bar{o}$ = $\bar{b}\bar{e}t\bar{i}\bar{e} \ b\acute{o} \ \acute{h}'k\bar{o}$ 'the pots of the monkey'
 we don't know whether to represent the last two syllables as H-M or H-'H, since the same interval is involved. The solution is seen from the phrases in (7).

- (7) a. $\bar{\eta}k\bar{o} \ y\acute{o}'\acute{h}$ 'that monkey' (near hearer)
 b. $\bar{b}\bar{e}t\bar{i}\bar{e} \ b\acute{o} \ \acute{h}'k\bar{o} \ y\acute{o}'\acute{h}$ 'the pots of that monkey'

Although the demonstrative $y\acute{o}'\acute{h}$ 'that' (near hearer) is realized on a higher pitch than $\bar{\eta}k\bar{o}$ in (7a), it is not realized on a higher pitch in (7b). What this means is that the two syllables of 'monkey' in (7b) must be recognized as H-'H so that the 'H will establish a ceiling and prevent the demonstrative from being higher in pitch. But in order for a H-'H sequence to have been created, it would have been necessary for there to have been a H-LH stage. Hence, the final H of L-L-H would have had to be grounded to the left, rather than simply falling out directly. The alternative is that two separate histories are involved depending on whether the L-L-H noun is preceded by a H tone (associative, in this case). In other words, we would have to assume that H # L-L-H somehow becomes H-L-H and then H-'H-H. The final step would be for H-'H-H to become H-'H. Since there is no evidence elsewhere in the lan-

guage that H-L-H develops into H-'H-H, we conclude that the paradigm case of L-L° developing from L-L-H is for there to have been a L-LH stage.¹²

Thus, we can summarize the above by saying that when the final vowel of a noun is lost, its tone is sent to the left. The same can be said of a prefix vowel, except that in this case the tone is grounded to the right. If we return to the forms in Table III, we observe that the proto form for the class 5 prefix is * $\bar{l}i-$, and various dialects have lost (or modified) the consonant, as well as the vowel. A vocalic prefix is attested in Fomopea (3DE), Batié (4E), and Fotouni (5E). In the rest of E, and in all of F and G, the prefix has dropped out entirely. (In Limbum (8H) the prefix consists of a syllabic [ɾ].) While it cannot be seen from 'tooth' (since the stem syllable begins with a L tone), the L of the prefix can be grounded onto a H tone stem. This appears to be the case in Bandjoun (4E) and Fe?fe? (5F), where L-H-H corresponds to a monosyllabic rising tone (LH and LM, respectively). It appears that the class 5 prefix is the last to lose its vowel. (Several dialects maintain syllabic nasal prefixes only, while a few dialects at least have even desyllabified these.) The process seems to be gradual, such that one is not always certain whether a vowel appears before a noun or not. In Hyman (1972) it was noted that any prefixless Fe?fe? (5F) noun can be preceded by what appears to be a L toned ingressive whispered schwa-like vowel. It is interesting to note that no evidence has been found that final vowels go through a voiceless stage (as they do in certain Bantu Zone A languages in Cameroon). Finally, it should be pointed out that the loss of the final vowel in nouns (and verbs) is only part of a general weakening process which has also later caused the modification or loss of the preceding consonant. Thus, compare the realization of * $\bar{l}is\bar{o}n\acute{e}$ 'tooth' in such dialects as Batié (4E), Batoufam (4F), Fe?fe? (5F), and Bamoun (7G) in Table III above.

2.2. The Associative Construction

While the reflexes of the four trisyllabic tone sequences in Proto-Mbam-Nkam nouns have been listed in Table II, much of the complexity found in the tonal systems of these languages becomes apparent only in context. One such context is the associative (N₁

of N_2) construction, where in addition to the tones seen in Table II, we have also found cases of 'L (downstepped L), and "H and "L (double-downstepped H and L) in Dschang (cf. section 3; also Hyman 1976b), as well as ↑H (uplifted H) in Mankon and probably other Ngemba dialects (see section 2.4). In this section we shall survey the general properties of the associative construction in Mbam-Nkam and highlight some of the effects of floating tones in context.

We have already alluded to the fact that there is an associative marker which appears between N_1 and N_2 in an associative construction. We have also said that this marker, which is segmental in some dialects but only tonal in others, has L tone when the noun class of N_1 is either 1 or 9, and H tone in all other cases (including the plurals of 1 and 9). Class 1 is, as elsewhere in Bantu, the general singular human class, while class 9 is the general singular animal class. What this means, as seen in (8),

(8) Proto-Mbam-Nkam *CV-CVCV (+ CV + CV-CVCV
 L H H H L H H
 L L L L L L
 1 x 2 x 2 x 2 x 1 x 2 x 2 = 32

is that 32 distinct tonal possibilities were possible in N_1 of N_2 constructions in Proto-Mbam-Nkam.¹³ In many dialects where a class of nouns lacking a prefix (class 1a) exists, more tonal patterns will be possible. Such is the case with Dschang, as we shall see in section 3. Given the possible tonal sequences in (8), and given the fact that we have good reconstructions for Proto-Mbam-Nkam nouns, the two authors determined that it would be worthwhile to investigate the realization of the above 32 combinations in the 20-odd dialects in Table II. Our aim was to study the nature of tone processes in Mbam-Nkam, especially tone-grounding, tonal assimilations, and contour simplifications. The results are too vast to present in table form, and so we shall content ourselves with a prose summary of our findings.

2.2.1. The Associative Marker

As can be seen in (8), the associative marker reconstructs as a full syllable. As seen in the proto forms proposed in Table IV, the associative marker in Proto-Mbam-Nkam consisted either of a V

TABLE IV

| | | | |
|-------|----|-------|----|
| cl. 1 | ə | cl. 7 | é |
| 2 | bé | 8 | é |
| 3 | é | 9 | ə |
| 5 | í | 10 | é |
| 6 | mé | 19 | fé |

or CV sequence.¹⁴ The vowel of the associative marker is *a for class 7 (cf. the Dschang forms in (4) above), *i for class 5, and a schwa or i-like vowel for the remaining classes. The reconstructions given in (9) correspond closely to the surface forms found in Mankon (1A) today (Warnier and Voorhoeve 1975:137).

As in the case of noun prefixes and final vowels, most Mbam-Nkam languages drop the segmentals of the associative marker and retain the tone (L for classes 1 and 9, H for the remaining classes). Even Mankon shows a tendency to drop or merge the schwa-like associative vowels of classes 1, 3, 8, 9 and 10. There seem to be three distinct stages, each represented by present-day dialects:

(i) The segmentals and tones are fully, or nearly fully intact. This is the case in Ngemba (A). Thus, both CV and V associatives are attested, more or less as in Table IV.

(ii) The only segmental information retained is the difference between an open vowel (in class 7) and a more closed vowel (in the other classes). This is the case in Dschang (3C), where the consonants of the associative markers have fallen, leaving a distinction between synchronic /á/ (class 7) vs. /e/ (often realized as [ə]) (Tadadjeu 1977). The tonal differences are maintained.

(iii) All segmental information is lost, with the only evidence for an associative marker existing between the two nouns being tonal (í for classes 1 and 9, é elsewhere). This situation characterizes all of groups E, F, and G (perhaps also D). Thus, compare Nissim (in press) for Bandjoun (4E), Hyman (1972) for Feʔfeʔ (5F), Voorhoeve (1971) for Bangangte (6G?), and Hombert (in press) for Bamoun (7G) and Bali (1G).

Since Mbui dialect (1A) has lost the final vowel of nouns, but

not the segmentals of the associative marker, it would appear that the associative marker, at least in its CV form, is more stable than the final schwa reconstructed on Proto-Mbam-Nkam nouns. It should be noted that the stage represented in (ii), with an open vs. closed vowel distinction in the associative construction is also found in certain Western Grassfields languages, notably in the Ring and Momo groups (see Hyman and Voorhoeve [in press] for details of how these languages relate to Mbam-Nkam). This distinction seems to owe its existence to the greater stability of an [a] vowel than a more closed [ə] or [ɨ]. Finally, it is interesting to point out that the reconstructions in Table IV differ from those going back to the Proto-Grassfields stage in several ways, as seen in Table V.

TABLE V

| | | | |
|-------|----|---------|--------|
| cl. 1 | ù | cl. 7 | á ~ ké |
| 2 | bé | 8 | f |
| 3 | ú | 9 | }\ |
| 4 | f | 10 | f ~ sí |
| 5 | lf | 13 | tf |
| 6 | á | 19 | ff |
| | 6a | má ~ mǎ | |

The problems involved with classes 6, 6a, 7, and 10 go well beyond the scope of this paper. Thus, we shall merely point out that the associative markers reconstructed as *ə for Proto-Mbam-Nkam go back to either *u or *i at some earlier stage.

2.2.2. Tone-Grounding

Since the segmentals of the associative marker are lost in most Mbam-Nkam dialects, this means that in a N_1 of N_2 construction one may find as many as three floating tones in a row. An example discussed by Voorhoeve (1971:50-51) illustrates this point in Bangangte (6G?). As seen in (9),

| | | | |
|-----|-----------------|--------------------------|--------------------------|
| (9) | Proto-Mbam-Nkam | *à-júmǎ + á + mù-ánǎ | 'the thing of the child' |
| | Bangangte | / 'jú ' + ' + 'mǎn ' / | [UNDERLYING] |
| | | [yú'ú 'mǎn] or [yú 'mǎn] | [SURFACE] |

the seven syllables of 'the thing of the child' in Proto-Mbam-Nkam

have been reduced to two, although there is an absolute need of at least 5 of their 7 tones in this example. (The first and last are not needed in (9), although they would be needed if something preceded and followed this phrase.) What is interesting is the need for three floating tones in a row. If we assume that a H-L-H sequence surfaces as H-'H, then the underlying Bangangte tone sequence L̄-H-L̄ + H̄ + L̄-H-L̄ will naturally develop into L̄-H 'H̄ 'H-L̄. This leaves three floating tones, the first and last simply dropping out in this phrase. The intervening 'H̄ can do one of two things: (i) it can be grounded to the left, in which case we derive a H̄'H contour tone; or (ii) it can drop out entirely, in which case the following syllable is realized two steps lower than the previous H. That is, we obtain a double-downstepped H in the variant [yú 'mǎn]. Thus, it can be seen how an unusual tonal property (a double-downstepped tone) comes into being as the result of tone-grounding and contour simplification. It is not clear whether the second variant should be viewed as being derived from the first or whether the two represent different tonal derivations entirely, as just described. The problem centers around determining at what point segmental deletions occur, and in what order the various floating tones coalesce. Thus, in the above example, since in the proto form we have [ǎ] followed by [á], i.e. a sequence of two vowels, it is probable that these two syllables fused before being confronted by the L of the prefix of 'child'. On the other hand, if the order of the two nouns had been reversed, as in (10),

| | | | |
|------|-----------------|------------------------|--------------------------|
| (10) | Proto-Mbam-Nkam | *mù-ánǎ + ǎ + à-júmǎ | 'the child of the thing' |
| | Bangangte | / 'mǎn ' + ' + 'jú ' / | [UNDERLYING] |
| | | [mǎn yú] or [mǎn jú] | [SURFACE] |

we would not know how to begin to describe the ultimate fusion of three vowels in sequence. Part of the problem consists of determining whether it makes any difference to claim that coalescence took place one way rather than the other. Thus, in (10), we do not know if the associative [ǎ] first coalesced with the preceding [ǎ] or with the following [à]. Notice in (10) that we once again have two possible surface forms: (i) the three L̄ tones coalesce and are grounded to the left to create a H̄L̄ falling tone on [mǎn]; or (ii) the three L̄ tones coalesce and drop out entirely.

The following general tendencies have been noted with respect to how an associative floating tone will be grounded:

(i) A $\underset{\circ}{\text{L}}$ associative marker will tend to be grounded to the left. If it were grounded to the right it would be absorbed in the L prefix of N_2 , and this would therefore be equivalent to its dropping out entirely.

(ii) A $\underset{\circ}{\text{H}}$ associative marker will tend to go to the left if N_1 ends in L tone. Otherwise it will tend to be grounded to the right. This difference is seen in the examples from Bamenyan (2B) in (11).¹⁵

- (11) a. / $\text{h}\underset{\circ}{\text{k}}\text{è} + ' + \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}/ \rightarrow [\text{h}\underset{\circ}{\text{k}}\text{è} \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}]$ 'the message of the strangers'
cf. [$\text{h}\underset{\circ}{\text{k}}\text{è}$] 'message' [$\text{p}\underset{\circ}{\text{à}}\text{y}\text{è}$] 'strangers'
- b. / $\text{m}\underset{\circ}{\text{à}}\text{k}\text{w}\text{é} + ' + \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}/ \rightarrow [\text{m}\underset{\circ}{\text{à}}\text{k}\text{w}\text{é} \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}]$ 'the bones of the strangers'
cf. [$\text{m}\underset{\circ}{\text{à}}\text{k}\text{w}\text{é}$] 'bones' [$\text{p}\underset{\circ}{\text{à}}\text{y}\text{è}$] 'strangers'

In (11a), where the $\underset{\circ}{\text{H}}$ associative marker is surrounded by L tones on both sides, it is grounded to the left to create a rising tone on [$\text{h}\underset{\circ}{\text{k}}\text{è}$]. In (11b), on the other hand, where the $\underset{\circ}{\text{H}}$ is preceded by a H tone, it is assigned rather to the right, causing the prefix of 'strangers' to rise to H.¹⁶

The above two tendencies or "principles" seem to have great application throughout the Mbam-Nkam languages. However, it is not always clear from the surface forms whether they have operated as expected. Consider, for example, the following forms in (12), again from Bamenyan (2B).

- (12) a. / $\text{m}\underset{\circ}{\text{à}}\text{š}\text{ù}\text{ó} + ' + \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}/ \rightarrow [\text{m}\underset{\circ}{\text{à}}\text{š}\text{ù}\text{ó} \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}]$ 'the teeth of the strangers'
cf. [$\text{m}\underset{\circ}{\text{à}}\text{š}\text{ù}\text{ó}$] 'teeth' [$\text{p}\underset{\circ}{\text{à}}\text{y}\text{è}$] 'strangers'
- b. / $\text{h}\underset{\circ}{\text{g}}\text{w}\text{í}\text{é} + ' + \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}/ \rightarrow [\text{h}\underset{\circ}{\text{g}}\text{w}\text{í}\text{é} \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}]$ 'the wives of the strangers'
cf. [$\text{h}\underset{\circ}{\text{g}}\text{w}\text{í}\text{é}$] 'wives' [$\text{p}\underset{\circ}{\text{à}}\text{y}\text{è}$] 'strangers'

In (12a) we observe that the associative $\underset{\circ}{\text{H}}$ has been grounded to the right, since it is preceded by a H tone. In (12b), on the other hand, it would appear that the $\underset{\circ}{\text{H}}$ has somehow gone to the right, although surfacing as a 'H on the prefix of 'strangers'. Two possible accounts come to mind: (i) the $\underset{\circ}{\text{H}}$ was first grounded to the left, in accordance with principle (ii) above, to create first $\underset{\circ}{\text{H}}\text{L}\text{H}$ and then $\underset{\circ}{\text{H}}\text{H}$; then the HH contour was simplified to H, with the 'H showing up one syllable later on the prefix of 'strangers'; or (ii)

the $\underset{\circ}{\text{H}}$ was assigned to the right and there is a rule changing HLH to HH (i.e. intermediate $\text{h}\underset{\circ}{\text{g}}\text{w}\text{í}\text{é} \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}$ becomes [$\text{h}\underset{\circ}{\text{g}}\text{w}\text{í}\text{é} \text{p}\underset{\circ}{\text{à}}\text{y}\text{è}$]). Both sequences of events are attested in Mbam-Nkam, though the first alternative, which postulates an intermediate HLH contour, may seem needlessly complex. Thus, it is difficult to determine the direction of tone-grounding in this and certain other instances.

In addition to the above indeterminate case, there are other derivations where our principles are in effect, but where one has to dig to find them. In these cases it is often possible to explain unexpected tonal alternations by adhering to principles (i) and (ii). An example comes from Fomopea (3DE), where the following derivations in (13) are in effect.

- (13) a. / $\text{à}\text{p}\text{ò} + ' + \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}/ \rightarrow [\text{à}\text{p}\text{ó} \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}]$ 'the bag of the strangers'
cf. [$\text{à}\text{p}\text{ò}$] 'bag' [$\text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$] 'strangers'
- b. / $\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta + ' + \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}/ \rightarrow [\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}]$ 'the teeth of the...'
cf. [$\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta$] 'teeth' [$\text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$] 'strangers'

If one looks at the underlying tones in both examples in (13), one wonders why a rising tone should be created on [$\text{à}\text{p}\text{ó}$] in (13a), but not on [$\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta$] in (13b). Why should underlying L-L-L show evidence of a H tone, while L-L-H does not? This unexpected difference can be directly attributed to the two principles outlined above. Thus, the complete derivations for (13a) and (13b) are given below in (14a) and (14b), respectively.

- (14)
- | | | |
|--|--|-----------------------------|
| a. | b. | |
| / $\text{à}\text{p}\text{ò} + ' + \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}/$ | / $\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta + ' + \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}/$ | UNDERLYING |
| $\text{à}\text{p}\text{ò} \quad \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$ | $\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta \quad \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$ | tone-grounding ₁ |
| $\text{à}\text{p}\text{ó} \quad \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$ | $\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta \quad \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$ | tone-grounding ₂ |
| ----- | $\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta \quad \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$ | tone-absorption |
| $\text{à}\text{p}\text{ó} \quad \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$ | ----- | vertical assimilation |
| [$\text{à}\text{p}\text{ó} \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$] | [$\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta \text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}$] | PHONETIC |

In the above derivations, first tone-grounding assigns the final $\underset{\circ}{\text{T}}$ of each noun to the preceding syllable, causing absorption in the case of / $\text{à}\text{p}\text{ò}/$ and / $\text{m}\underset{\circ}{\text{è}}\text{y}\text{h}\text{à}/$, but the creation of a rising tone in the case of / $\text{m}\underset{\circ}{\text{è}}\text{s}\text{ò}\eta/$. A second cycle of tone-grounding then sends the associative $\underset{\circ}{\text{H}}$ to the left in (14a), but to the right in (14b). This second application of tone-grounding thus conforms to

our general principle that the associative \mathbb{H} will be assigned to the left only if preceded by L. In the following stage of the derivation, a process of tone absorption takes place whereby \widehat{LH} becomes L before H in N_1 and \widehat{HL} becomes H before L in N_2 . Finally, by a process of vertical assimilation, the L prefix of the N_2 noun rises to H after a H. The result is the difference observed in the two phonetic outputs.

While the above derivations may seem somewhat complex, there are at least two pieces of evidence that confirm the reconstruction of this sequence of events. The first piece of evidence comes from two derivations parallel to those in (13). These are given in (15).

- (15) a. /àpò` + ' + məcóŋ'/ → [àpò məcóŋ] 'the bag of the thieves'
 cf. [àpò] 'bag' [məcóŋ] 'thieves'
- b. /mèsòŋ' + ' + məcóŋ'/ → [mèsòŋ mé'cóŋ] 'the teeth of the thieves'
 cf. [mèsòŋ] 'teeth' [məcóŋ] 'thieves'

The derivations in (15) differ from those in (13) only in that the noun [məcóŋ] 'thieves' is substituted for [mèyħà] 'strangers' in N_2 position. As can be seen, we not only find a difference between phonetic L- \widehat{LH} in (15a) vs. L-L in (15b), but also a difference between H-H vs. H-'H on the N_2 noun. This second, also unexpected, difference can be accounted for by the same processes observed in (14). The corresponding derivations are given in (16).

| | | | |
|------|---------------------|-----------------------|-----------------------------|
| (16) | a. | b. | |
| | /àpò` + ' + məcóŋ'/ | /mèsòŋ' + ' + məcóŋ'/ | UNDERLYING |
| | àpò ' məcóŋ | mèsòŋ ' məcóŋ | tone-grounding ₁ |
| | àpò məcóŋ | mèsòŋ məcóŋ | tone-grounding ₂ |
| | ----- | mèsòŋ mé'cóŋ | downstep rule |
| | ----- | mèsòŋ mé'cóŋ | tone-absorption |
| | àpò məcóŋ | ----- | vertical assimilation |
| | [àpò məcóŋ] | [mèsòŋ mé'cóŋ] | PHONETIC |

The stages involved here are as follows: (i) first, the final \mathbb{T} 's are assigned to the preceding syllables of N_1 and N_2 ; (ii) the associative \mathbb{H} is assigned to the left in (16a), but to the right in (16b); (iii) \widehat{HL} -H is simplified to H-'H; (iv) tone absorption changes \widehat{LH} to L before H in (16b); and (v) vertical assimilation applies to the L prefix of N_2 in (16a).

The reason why the above derivations support those presented in (14) is that we can now explain by means of the same difference in the tone-grounding of the associative \mathbb{H} why 'thieves' is realized as H-H in (16a), but as H-'H in (16b). Tone-grounding of \mathbb{H} to the right in (16b) creates a \widehat{HL} -H sequence, which serves as the input to downstep creation. By contrast, the H of [məcóŋ] in the phonetic output of (16a) is due to vertical assimilation of L to H when preceded by a H tone. Thus, when H # L-H becomes H # H-H, no downstep results, since the input to downstep creation must be a \widehat{HL} -H sequence.

The second piece of evidence in favor of the above derivation, derives from Bandjoun (4E). Gabriel Nissim has observed (personal communication) that although the noun 'thieves' is realized as [mécúŋ] in isolation, it sometimes inexplicably acquires a L-H pattern as N_2 in an associative construction, e.g. [pè məcúŋ] 'the bag of the thieves'. Since the L- \widehat{LH} sequence of this noun as pronounced in its citation form clearly derives from L-H by spreading of the L of the prefix to the following stem syllable, somehow this spreading must be blocked in the above phrase. The same derivation as in (16a) will account for this anomalous fact:

| | | |
|------|---------------------|--|
| (17) | /`pè` + ' + məcúŋ'/ | UNDERLYING |
| | pè ' məcúŋ | tone-grounding ₁ |
| | pè məcúŋ | tone-grounding ₂ |
| | pè məcúŋ | vertical assimilation (=Fomopea) |
| | pè məcúŋ | tone-absorption (\widehat{LH} -H → L-H) |
| | pè məcúŋ | vertical assimilation |
| | [pè məcúŋ] | PHONETIC |

The stages involved are the same as above: (i) tone-grounding of lexical \mathbb{T} 's; (ii) tone-grounding of the associative \mathbb{H} to the left; (iii) vertical assimilation of the L of the N_2 prefix to H; (iv) tone-absorption, whereby \widehat{LH} becomes L before H; and (v) vertical assimilation of the derived H of the N_2 prefix to L. Fomopea differs from Bandjoun in not permitting these last two steps. Thus, while the environment for the L-H of 'thieves' to become L- \widehat{LH} by tone spreading appears to be met in the surface output of (17), this possibility has been blocked by the fact that tone spreading was supposed to have applied at a stage where the N_2 prefix was H.¹⁷

Thus, not only is the leftward grounding of the associative \underline{H} motivated, but also we observe a double instance of prefix assimilation to the tone of the preceding syllable. The above analysis of the Pomopea forms therefore seems to be on solid ground.

In summary, we have thus isolated two tendencies in the grounding of the associative tonal morpheme (\underline{H} or \underline{L}). It has also been shown that we must make a careful distinction between an N_2 prefix which has become H by tone-grounding of a \underline{H} associative marker as opposed to one which has become H by vertical assimilation to a preceding H tone on N_1 . The interaction of the tone-grounding principles with the natural tone processes outlined in section 1 is quite intricate. Instead of discussing the numerous other derivations we have uncovered for the various dialects, which would require a tremendous undertaking, let us turn to the tones of possessive pronouns.

2.3. Possessive Pronoun Tones

The possessive pronouns offer a slightly different problem than nouns in that they involve three underlyingly tones in sequence but are monosyllabic in virtually all Mbam-Nkam dialects. Their internal structure can be analyzed as in (18).¹⁸

| | | | | | | | |
|------|-----|---|----|---|------|-----|--|
| (18) | (V) | - | CV | - | V(C) | (V) | Prefix + Class Concord + Pronominal Stem |
| | L | | H | | H | | |
| | | | L | | L | | |

Each possessive pronoun begins with an underlying vowel preprefix whose presence is clearer in dialects further to the West, especially in the independent possessive forms 'mine', 'yours', etc. The central part of the pronoun consists of a CV class concord marker, which takes L tone for classes 1 and 9 and H tone for the rest. Finally, there is the pronominal stem, which can consist of a V, a VC, or a VCV sequence. The preprefix reconstructs as *à- for class 7, and *è- for the remaining classes. As we in Table V for the associative markers, this schwa-like vowel reconstructs sometimes as *ɪ- and sometimes as *ù- in Proto-Grassfields. It always bears L tone.

The class concords found in second position can be reconstructed as follows for Proto-Mbam-Nkam.

TABLE VI

| | | | |
|-------|-----|-------|-----|
| cl. 1 | gù- | cl. 7 | jf- |
| 2 | bé- | 8 | bf- |
| 3 | gú- | 9 | jl- |
| 5 | lf- | 10 | jf- |
| 6 | mé- | 19 | fé- |

It should be pointed out that Proto-Mbam-Nkam *g is frequently realized as [ɣ] and as [w] before rounded vowels; also, that *j is realized as [y] in the far-west and far-east dialects, but as [z] in the dialects in between. Since the possessive stem always begins with a vowel, the *i, *u, and *ə found in the class concords will always be subject to gliding or elision. Thus, although a possessive pronoun may in certain cases have had the structure V-CV-VCV, with theoretically four syllables and four tones, it is never the case that more than 3 syllables will be heard on the surface. In fact, as we shall see, possessive pronouns are usually monosyllabic.

The reconstructions for the six possessive pronoun stems (where frequently occurring compound possessives such as 'we inclusive' are ignored) are presented in Table VII.

TABLE VII

| | singular | plural |
|------------|----------|---------------------|
| 1st person | -àm | -f'kó ¹⁹ |
| 2nd person | -ò | -f'né |
| 3rd person | -í | -á'bé |

Since the plural -VCV pronouns will always lose one syllable in combination with the preceding class concord marker, we shall consider them as having a single H tone. Thus, if we look at the structure in (18) again, we see that the same four tonal sequences are possible in possessive pronouns as we saw earlier in nouns: L-L-L, L-L-H, L-H-L, L-H-H. However, since vowel coalescences necessarily occur (and since the preprefix vowel is generally unstable when preceded by the possessed noun), we should not necessarily expect the surface realizations of the four patterns to correspond exactly to their noun counterparts. In order to see how

TABLE VIII

| Dialect | *L-L-L | *L-L-H | *L-H-L | *L-H-H |
|----------------------------|---------|---------|---------|---------|
| Mankon (1A) | ḷ-L(-L) | ḷ-L(-)H | ḷ-H(-)L | ḷ-H(-)H |
| Mbui (1A) | ḷ-L | ḷ-L° | ḷ-H | ḷ-H |
| Bamenyan (2B) | L | LH | HL | H |
| Babadjou (2B) | L | L° | HL | H |
| Babete (2B) | L | L° | ḷ-H | ḷ-H |
| Bati (2G) | L | L | ḷ-H ? | ḷ-H ? |
| Bagam (2G?) | L | L° | H | H |
| Batcham/Bangang (2C) | L | L° | ḷ-H | ḷ-H |
| Dschang (3C) | ḷ-L | ḷ-L° | ḷ-LH | ḷ-LH |
| Ngwe (3C) | ḷ-L | ḷ-L° | ḷ-'H | ḷ-H |
| Baloum (3CD) | L | L° | ḷ-H | ḷ-H |
| Fomopea (3DE) | L | L° | ḷ-H | ḷ-H |
| Bamendjou (4D) | L | L° | ḷ-H | ḷ-H |
| Baleng (4DE) | L | L° | ḷ-H | ḷ-H |
| Bandjoun (4E) | L | L° | LH | H |
| Batie (4E) | L | L, L° | ḷ-H | ḷ-H |
| Bangou (4F) | L | L | ḷ-M | ḷ-H |
| Batoufam (4F) | L | L | ḷ-M | ḷ-H |
| Fotouni (5E) | L | L, L° | ḷ-H | ḷ-H |
| Fondjomekwet/Fondanti (5F) | L | L | ḷ-H | ḷ-H |
| Fe?fe? (5F) | ḷ-L | ḷ-L° | ḷ-LM | ḷ-LM |

SUMMARY OF REFLEXES OF THE FOUR PROTO-TONE SEQUENCES IN POSSESSIVE PRONOUNS

the grounding of floating tones would be affected by having less segmental room to accommodate them, a parallel study of the possessive pronouns (and hence the noun classes) was conducted in the same 20-odd Mbam-Nkam dialects. The results are summarized in Table VIII, which should of course be compared with those presented in Table II for nouns. One thing which should be pointed out, however, is that it was not always possible to determine whether there was a ḷ preceding the pronoun, since this was not systematically investigated. In any case, it should be clear that this ḷ can be detected before L or LH only if it is itself preceded by H. Otherwise it would be absorbed whichever way it was grounded.

As a means of justifying the above reconstructions, consider the realizations of the six possessive pronouns of classes 1 and 2 in Mankon (1A), Bamenyan (2B), Ngwe (3C), and Fe?fe? (5F) in Tables IX and X below (presented without preprefix vowels).

TABLE IX. Possessive Pronouns (class 1)

| | 'my' | 'your' | 'his' | 'our' | 'your' | 'their' |
|-----------------|----------------|---------------|---------------|-----------------|-----------------|-----------------|
| Mankon (1A) | γ̣λ | γ̣ò(γ̣è) | γ̣ é | wəγ̣ó | wəŋó | wàá |
| Bamenyan (2B) | wíè | γ̣ò/wò | ɥé | wǎ | wǒ | wǒ |
| Ngwe (3C) | γ̣à | γ̣ò | gyè° | wə̀k° | wλ° | wλp° |
| Fe?fe? (5F) | à | ò | l° | γ̣òh° | γ̣èn° | γ̣àa° |
| PROTO-MBAM-NKAM | à-gù-àm LLL | à-gù-ò LLL | à-gù-f LLH | à-gù-fká LLH | à-gù-fnó LLH | à-gù-ábá LLH |

TABLE X. Possessive Pronouns (class 2)

| | 'my' | 'your' | 'his' | 'our' | 'your' | 'their' |
|-----------------|----------------|---------------|---------------|-----------------|-----------------|-----------------|
| Mankon (1A) | `bλ̣ | `bò | `byé | `báγ̣ó | `báŋó | `baá(γ̣é) |
| Bamenyan (2B) | píè | pò | pé | pú | pó | pó |
| Ngwe (3C) | `bá | `bó | bé | bák | bá | báp |
| Fe?fe? (5F) | `bǎ | `bǒ | `bǐ | `γ̣òh | `γ̣èn | `γ̣àa |
| PROTO-MBAM-NKAM | à-bó-àm LHL | à-bó-ò LHL | à-bó-f LHH | à-bó-fká LHH | à-bó-fnó LHH | à-bó-ábá LHH |

As can be seen from Tables VIII, IX, and X, there are a number of cases where the possessive pronouns are not realized identically with nouns having the same proto-tone sequences. Thus, in Dschang, for instance, although L-H-L and L-H-H nouns are realized respect-

ively as L-'H and L-H, L-H-L and L-H-H possessive pronouns are both realized as \underline{L} - \widehat{LH} . It is observed in Table VIII that in a number of dialects possessive pronouns are preceded by \underline{L} only if they have H tone on their one syllable. This follows from the hypothesis that a floating tone will be absorbed onto a syllable with like tone. Thus, it will be hard to find a \underline{L} -L sequence having a different effect from a simple L--although if preceded by H, there might be a difference obtained by tone-grounding to the left.

In any case, the four dialects represented in Tables IX and X show that the reflexes of the four proto-tone sequences for nouns observed in Table II are by and large applicable to possessive pronouns as well. We shall now see that the same is true of verb tones.

2.4. Verb Tones

Most of the work accomplished to date on the various Mbam-Nkam languages has centered around nouns and their modifiers. Thus, we have been able to make considerable progress in the study of noun classes and noun tonology. Relatively little is known about the verb structure of these languages, and even less is known about verb tones. A few hints of what is involved in Mbam-Nkam verb tonology can be found in Voorhoeve (1974) for Bangangte (6G?) and Hyman (1976a) for Fe?fe? (5F). Section 3.2 below is devoted to verb tones in Dschang (3C). Since noun tonology has been much more accessible and therefore studied first, much of our own study of verb tonology has attempted to demonstrate that the tonal properties uncovered for nouns are also applicable to verbs. In this section we shall demonstrate this fact with data from Mankon (1A), a dialect which we were able to investigate with the help of Jacqueline Leroy-Warnier.

In Mankon, as pointed out earlier, the three syllables of nouns are still intact. Likewise, verbs have a final syllable of schwa-like character which has disappeared in most other dialects. As in Bantu in general, the verb stem carries either H or L tone in Mbam-Nkam. However, instead of having a complex system of prefixes and suffixes, as is the case in Narrow Bantu, it is often necessary to posit a string of floating tones on both sides of the verb stem in order to make the tone alternations found in the various verbal

constructions line up with those found, say, in the noun-noun associative construction.

The most salient tonal feature of Mankon is the process by which a H tone is "uplifted" to a superhigh level (henceforth $\uparrow H$, marked by an upright arrow). Thus, in the example in (19),

(19) àtùá' íbó'lómá 'the tree of the husbands'

the syllable [bə] is realized one pitch level higher than the preceding H. The following syllable [lo] is realized back on the ordinary H tone level and is therefore marked as being downstepped from the level of the preceding superhigh. There are two important constraints on the occurrence of H: 1) uplifting is not progressive; i.e. there is only one superhigh level, such that we do not obtain an infinite number of "upsteps"; and 2) although the three tone levels H (=same as preceding $\uparrow H$), 'H (=regular H), and L are possible after a $\uparrow H$, one cannot go back up to that level unless there has been an intervening L (e.g. we cannot have a $\uparrow H$ -'H- $\uparrow H$ sequence).²⁰ The $\uparrow H$ tone is derived in most cases from one of two rules, of which the first is given in (20).

(20) \widehat{HL} -H \rightarrow H- $\uparrow H$ / {L, #} $\underline{\quad}$

Thus, a L- \widehat{HL} -H sequence will become L-H- $\uparrow H$, just as the shorter sequence \widehat{HL} -H will become H- $\uparrow H$ after pause. A sample derivation is given in (21).

(21) /àdì'á + á + 'múá/ \rightarrow [àdì'á \uparrow múá] 'the place of the child'

In the above example one might propose that the associative marker /á/ coalesces with the preceding H toned vowel of 'place'. Then the initial \underline{L} of 'child' is grounded to the left, yielding the intermediate form àdì'á múá. At this point rule (20) applies to derive the phonetic output in (21).²¹

Rule (20) thus represents a tone simplification process which applies to instances of \widehat{HL} when preceded by L or pause, and when followed by H. In both of these instances, we would like to claim, the \widehat{HL} -H sequence is re-perceived in such a way that the first syllable appears to carry a lower tone than the second. This re-perception is not possible, however, when there is a preceding H tone. In this case, as seen in the derivation in (22),

(22) $\widehat{HL}-H \rightarrow H-'H \rightarrow \uparrow H-'H / H \underline{\quad}$

it is the tone following the \widehat{HL} contour which is perceived as lower. Thus, the $\widehat{HL}-H$ sequence becomes $H-'H$, and as a second adjustment, the H preceding the drop to 'H will rise to a $\uparrow H$ level.²² This therefore is the second rule which is responsible for the development of a $\uparrow H$ tone in Mankon, and it is best seen as a form of anticipation of the drop in interval from H to 'H effected in order to create a wider pitch range to accommodate the drop (cf. the example in (19)). The $\uparrow H$ tone will, however, not be derived in cases where there is no intervening L between a preceding $\uparrow H$ and a $H-'H$ sequence. In this case, as seen in (23),

(23) /àγάγλ + á + 'múλ/ → [à↑γά'γλ 'múλ] 'the distance of the child'

where we recognize an intermediate stage $\text{à}\uparrow\gamma\acute{\alpha}'\gamma\lambda\ \acute{m}\acute{\lambda}$, we do not obtain $\text{*}\text{à}\uparrow\gamma\acute{\alpha}'\gamma\lambda\ \uparrow\acute{m}\acute{\lambda}$, since we would have had two instances of $\uparrow H$ occurring in the same phrase without an intervening L tone.

The importance of the above discussion is that the exact same rules are involved in verbal constructions, though determining the correct underlying tones is not always as transparent as it is in nominal constructions. Let us begin by considering the realization of the two verb stems $-\text{g}\gamma\lambda\eta-$ 'come' and $-\text{b}\acute{o}\eta-$ 'dance' in the relatively straightforward recent past tense forms in (24).

(24) a. /à ló ðgyl'ηλ/ → [à ló ðgyl'ηλ] 'he came'
 b. /à ló ðb'óηó/ → [à ló ðb'óηó] 'he danced'

In (24a) the only process involved in deriving 'he came' is the very common assimilation of a L tone nasal prefix to the H of a preceding syllable. In (24b), on the other hand, the same rule (20) seen to be operative on nouns is clearly operative on 'he danced'. The result is that the two syllables [b'óηó], which are underlyingly H, are both uplifted to a superhigh level.²³

A more complicated derivation is necessarily involved in the following forms in (25), which include the transitive verbs $-\text{ts}\acute{\alpha}\gamma-$ 'send' and $-\text{ly}\acute{\epsilon}\gamma-$ 'rinse'.

(25) a. á tsàγλ káηλ 'he is sending a squirrel'
 b. á ↑lyéγλ káηλ 'he is rinsing a squirrel'

In (25a) we observe a $L-\widehat{HL}$ pattern on the underlying L tone verb, followed by a tone-raising of underlying /kàηλ/ 'squirrel' to $H-L$. In (25b) we observe the creation of a $\uparrow H$ tone on the first syllable of the verb, followed by the same tone-raising on 'squirrel'. It is therefore necessary to posit tonal morphemes both between the subject pronoun /à/ (whose L tone is ascertained from a comparison of its realization in other tenses; cf. (24)) and the verb, as well as between the verb and its object 'squirrel'. The forms we propose are given in (26).

(26) a. /à + ' ` + tsàγλ + ` + á + kàηλ/
 b. /à + ' ` + lyéγλ + ` + á + kàηλ/

The morphemes involved are, from left to right: (i) the subject pronoun /à/ 'he/she'; (ii) a H_0-L_0 sequence associated with the present tense; (iii) the verb stem combined with a /λ/ suffix; (iv) a L_0 suffix associated apparently with the indicative mood; (v) an /á/ class 1 object agreement marker ('squirrel' belongs to class 1a); and (vi) the noun object /kàηλ/ 'squirrel'.²⁴ The realizations in (25) are derived from the underlying representations in (26). One complication is the fact that the L_0 assigned to the preceding verb must (i) not allow $\text{à ts}\acute{\alpha}\gamma\lambda\ \acute{k}\acute{\alpha}\eta\lambda$ to undergo uplifted to become $\text{*}\text{à ts}\acute{\alpha}\gamma\lambda\ \uparrow\acute{k}\acute{\alpha}\eta\lambda$ by rule (20), and (ii) condition a simplification of intermediate $\text{ly}\acute{\epsilon}\gamma\lambda$ to $H-L$ before any of the remaining tone rules apply. These complications are noticed sporadically in the language and remain to be studied in greater detail.

While Mankon maintains at least some of the underlying vowels associated with grammatical morphemes pre- and postposed to the verb, other dialects further to the South and East have only the tonal alternations. In Feʔfeʔ (5F), as shown by Hyman (1976a), the H tone represents a new uplifted level created by a L tone surrounded by both a preceding and a following H. Thus, compare the various realizations of the L tone stem $-\text{k}\acute{\epsilon}\acute{\epsilon}-$ 'refuse' in (27).

(27) a. /'kèè'/ → [kèè°] 'refuse!'
 b. /sì 'kèè'/ → [sì kèè] 'without refusing'
 c. /'ðkèè'/ → [ðkèè] 'and refused' (consec.)
 d. /á pàh' 'kèè'/ → [á pàh kèè] 'let's refuse!'

In (27a) we see that the sequence L_0-L-H_0 yields a L° on a L tone

verb in the imperative. In (27b), a $\text{L}_0\text{-L-L}_0$ sequence surfaces as L after the preposition 'without'. In (27c), in the consecutive, as well as in the imperative/subjunctive in (27d), a $\text{H}_0\text{-L-H}_0$ sequence comes out H (actually a superhigh which has been reinterpreted as H, as argued in Hyman 1976a). We therefore can see that in each construction it is necessary to posit floating tones both before and after the monosyllabic verb stem, and it is these floating tones which account for the surface tones as they appear in each case. It is always to be hoped that the verb tones will participate in the same tone rules found to characterize the more straightforward noun and its modifiers. In the dialects where verb tones have been studied, there is considerable correlation, though problems do arise (see, for example, section 3.2 below).

3. DSCHANG TONOLOGY

In the preceding sections we have looked at the nature of floating tones in Mbam-Nkam and have caught a glimpse of the range of tonal variation within this linguistic unit. In this section we shall take a closer look at one Mbam-Nkam dialect, Bamileke-Dschang (3C). What we shall have to say is characteristic of most of the Dschangoid dialects placed in the 3C unit, with only slight variations. The earliest tonal study of a dialect in this group is to be found in Dunstan's (1966) description of Ngwe nominals. While the work of Dunstan represented an important landmark in the study of Mbam-Nkam tonology, several major features of the tone systems of 3C have since been discovered. The opposition between L-H vs. L-'H uncovered by Tadadjeu (1974) and characteristic of the parent language of 3C, as well as the opposition between L-L vs. L-'L, have both been confirmed for Ngwe by the present authors. In this section we shall present data from the Bafou variant of Dschang. The present discussion therefore constitutes a refinement and expansion of Tadadjeu's earlier study and is applicable to much of this Mbam-Nkam zone. We shall first look at noun tones (especially as they alternate in the associative construction), and then turn to verbs.

3.1. Noun Tones

3.1.1. As pointed out in Tadadjeu (1974), nouns are princi-

pally bisyllabic, consisting of a noun class prefix followed by a single stem syllable. Based on internal arguments, as well as comparative evidence, the four tone patterns found on bisyllabic nouns are represented underlyingly as shown in (28), where all four nouns consist of the class 5 prefix /lè/ followed by the single syllabic structure /tɔŋ/.

- (28) a. /lètòŋ/ → [lètòŋ] 'to reimburse'
 b. /lètòŋ°/ → [lètòŋ°] 'navel'
 c. /lètóŋ/ → [lètóŋ] 'to call'
 d. /lètóŋ°/ → [lètóŋ°] 'feather'²⁵

From a L prefix followed by a L vs. H opposition on the stem syllable, followed by a L vs. H floating tone opposition, we derive a set of four contrasting tones after L: L-L, L-L°, L-'H, L-H. Thus, the following rules are necessary.

- (i) A tone-grounding rule which assigns the T_0 of the underlying forms in (28) to the preceding syllable. This yields the intermediate tonal representations $L-\widehat{L}L$, $L-\widehat{L}H$, $L-\widehat{H}L$, $L-\widehat{H}H$.
 (ii) A tone coalescence rule whereby $L-\widehat{L}L$ becomes L-L and $L-\widehat{H}H$ becomes L-H.
 (iii) A tone simplification rule which changes $L-\widehat{L}H$ to L-L°.
 (iv) A tone simplification rule which changes $L-\widehat{H}L$ to L-'H.

Except for the tone coalescence process, which appears to take place in all environments, the above rules must be made sensitive to the following tonal context. Thus, we must consider $L-\widehat{L}H$ and $L-\widehat{H}L$ in three contexts: (a) before pause; (b) before L; (c) before H.

Let us first consider nouns which are underlyingly L-H- L_0 and intermediately $L-\widehat{H}L$. These nouns appear on the surface in two tonal shapes. First, as we have seen, $L-\widehat{H}L$ simplifies as L-'H before pause. It also simplifies to L-'H before H, as seen in (29).

- (29) /mèmb'há' + ' + s'óŋ'/ → [mèm'bhá s'óŋ] 'the dogs of the bird'

In (29) the noun mèm'bhá 'dogs' (class 10) is realized L-'H before the H_0 tone associated with that class in N_1 position. In (30), on the other hand,

(30) /mbhá' + ' + s'óŋ'/ → [m'bhà s'óŋ] 'the dog of the bird'

we observe that L- \widehat{HL} is realized as L-'L when followed by the $\underset{0}{L}$ associated with the singular class 9 in N_1 position. We therefore need the two rules in (31) and (32).

(31) L- \widehat{HL} → L-'H / ___ {H, #}

(32) L- \widehat{HL} → L-'L / ___ L

A \widehat{HL} falling tone is simplified to 'H when preceded by L and followed by H or pause in (31); it is simplified to 'L when preceded and followed by L in (32). This latter rule might conceivably have been stated as a change from L-'H to L-'L before L, with (31) feeding into the process of 'L creation. We prefer to state this latter process as in (32), since we are convinced that the 'L is derived as part of a tone contour simplification process. We hypothesize that L- \widehat{HL} -L first becomes L-H' \widehat{L} -L by a L-H-L downdrift process no longer functional in the language, and then L-L' \widehat{L} -L by a vertical assimilation operating on the first part of the contour. Finally, the L' \widehat{L} contour simplifies to 'L, and L-'L-L is derived.

Turning to the simplification of L- \widehat{LH} , L-L° contrasts with L-L only before pause and is derived by the rule in (33).

(33) L- \widehat{LH} → L-L° / ___ ||

Before a H tone, L- \widehat{LH} becomes L-L, as seen in (34).

(34) /lèsòŋ' + ' + s'óŋ'/ → [lèsòŋ s'óŋ] 'the tooth of the bird'

In this example, both the final $\underset{0}{H}$ of 'tooth' and the $\underset{0}{H}$ associated with class 5 in N_1 position coalesce and simply drop out. We propose the rule in (35) to operate when the H tone undergoing lowering is a suffix.

(35) L-H → L-L / ___ # H

After rule (35) has applied, the L remaining is grounded to the left, and hence coalesces with the stem L of 'tooth'.²⁶

As we see in (36),

(36) /h'ndzà' + ' + s'óŋ'/ → [h'ndzà'á s'óŋ] 'the axe of the bird'

L- \widehat{LH} becomes L-L' \widehat{H} (where the doubled vowel represents lengthening) when combined with a $\underset{0}{L}$ tone associated with class 9 in N_1 position.

We can postulate an intermediate $\widehat{hdzàá s'óŋ}$ to which rule (31) can apply to derive the 'H tone.

At this point, consider the derivation in (37).

(37) /lèsòŋ' + ' + h'dzwì'/ → [lèsòŋ h'dzwì] 'the tooth of the leopard'

In this example we postulate the following sequence of events: (i) the $\underset{0}{H}$ of 'tooth' and the $\underset{0}{H}$ associative tone coalesce; (ii) the resulting $\underset{0}{H}$ is grounded to the right to create a \widehat{HL} falling tone on the prefix of 'leopard'; (iii) the environment for rule (32) is satisfied, but if it were to apply, we would incorrectly derive * $\widehat{lèsòŋ h'dzwì}$. Thus, a very general constraint must be placed on rule (32). Namely, if the \widehat{HL} of the L- \widehat{HL} -L sequence falls on a prefix, it will be the following stem which undergoes the downstepping to 'L, instead of the prefix. In other words, prefixes are immune to L-downstepping.²⁷ Let us therefore restate the rule affecting L- \widehat{HL} -L sequences as consisting of two parts, one of which (part a) occurs if the \widehat{HL} falls on a prefix, and one of which (part b) applies elsewhere.

(38) a. L # \widehat{HL} -L → L-L-'L

b. L- \widehat{HL} -L → L-'L-L

The above difference observed when prefixes are involved does not mean that 'L cannot appear on a prefix on the surface, as the example in (39) amply shows.

(39) [h'dzà h'dzwì] 'the axe of the leopard'

The derivation in (40) shows, however, both that the 'L should not have occurred specifically on the prefix and that an alternative realization with 'L occurring before the prefix is available:

(40) /h'dzà' + ' + h'dzwì'/ → [h'dzà'à h'dzwì]

Thus, the phonetic realization in (39) necessarily represents a low-level contour simplification working on the output of (40), in which (38b) has correctly applied. It is only this latter contour simplification which gives the (false) impression of violating the principle upon which (38a) is based. Notice, finally, in (41),

(41) /h'dzà' + ' + k'àng'/ → [h'dzà 'k'àng°] 'the axe of the squirrel'

that (38a) rather than (38b) applies if the N_2 does not have a pre-

TABLE XI

| | | | | | |
|-----|----------|---------------|---|---------------------|------------------------------|
| 1. | /ɛfɔ̀ | + ' + ñdzwì\ | → | [ɛfɔ̀ ñdzwì] | 'the chief of the leopard' |
| 2. | /ɛfɔ̀ | + ' + ñkɔ̀ʔ\ | → | [ɛfɔ̀ ñkɔ̀ʔ°] | 'the chief of the rooster' |
| 3. | /ɛfɔ̀ | + ' + ñbhé\ | → | [ɛfɔ̀ ñ'bhé] | 'the chief of the dog' |
| 4. | /ɛfɔ̀ | + ' + ñtsɔ̀ŋ\ | → | [ɛfɔ̀ ñtsɔ̀ŋ] | 'the chief of the thief' |
| 5. | /ñdzà' | + ' + ñdzwì\ | → | [ñdzà' à ñdzwì] | 'the axe of the leopard' |
| 6. | /ñdzà' | + ' + ñkɔ̀ʔ\ | → | [ñdzà' à ñkɔ̀ʔ°] | 'the axe of the rooster' |
| 7. | /ñdzà' | + ' + ñbhé\ | → | [ñdzà' à ñ'bhé] | 'the axe of the dog' |
| 8. | /ñdzà' | + ' + ñtsɔ̀ŋ\ | → | [ñdzà' à ñtsɔ̀ŋ] | 'the axe of the thief' |
| 9. | /ñgyá' | + ' + ñdzwì\ | → | [ñ'gyá ñdzwì] | 'the house of the leopard' |
| 10. | /ñgyá' | + ' + ñkɔ̀ʔ\ | → | [ñ'gyá ñkɔ̀ʔ°] | 'the house of the rooster' |
| 11. | /ñgyá' | + ' + ñbhé\ | → | [ñ'gyá ñ'bhé] | 'the house of the dog' |
| 12. | /ñgyá' | + ' + ñtsɔ̀ŋ\ | → | [ñ'gyá ñtsɔ̀ŋ] | 'the house of the thief' |
| 13. | /ñká' | + ' + ñdzwì\ | → | [ñká ñdzwì] | 'the monkey of the leopard' |
| 14. | /ñká' | + ' + ñkɔ̀ʔ\ | → | [ñká ñkɔ̀ʔ°] | 'the monkey of the rooster' |
| 15. | /ñká' | + ' + ñbhé\ | → | [ñká ñ'bhé] | 'the monkey of the dog' |
| 16. | /ñká' | + ' + ñtsɔ̀ŋ\ | → | [ñká ñtsɔ̀ŋ] | 'the monkey of the thief' |
| 17. | /àpà' | + ' + ñdzwì\ | → | [àpà ñ' dzwì] | 'the bag of the leopard' |
| 18. | /àpà' | + ' + ñkɔ̀ʔ\ | → | [àpà ñ' kɔ̀ʔ°] | 'the bag of the rooster' |
| 19. | /àpà' | + ' + ñbhé\ | → | [àpà' á ñbhé] | 'the bag of the dog' |
| 20. | /àpà' | + ' + ñtsɔ̀ŋ\ | → | [àpà' á ñtsɔ̀ŋ] | 'the bag of the thief' |
| 21. | /lèsɔ̀ŋ' | + ' + ñdzwì\ | → | [lèsɔ̀ŋ ñ' dzwì] | 'the tooth of the leopard' |
| 22. | /lèsɔ̀ŋ' | + ' + ñkɔ̀ʔ\ | → | [lèsɔ̀ŋ ñ' kɔ̀ʔ°] | 'the tooth of the rooster' |
| 23. | /lèsɔ̀ŋ' | + ' + ñbhé\ | → | [lèsɔ̀ŋ' ɔ̀ ñbhé] | 'the tooth of the dog' |
| 24. | /lèsɔ̀ŋ' | + ' + ñtsɔ̀ŋ\ | → | [lèsɔ̀ŋ' ɔ̀ ñtsɔ̀ŋ] | 'the tooth of the thief' |
| 25. | /àpú' | + ' + ñdzwì\ | → | [à'pú ñdzwì] | 'the arm of the leopard' |
| 26. | /àpú' | + ' + ñkɔ̀ʔ\ | → | [à'pú ñkɔ̀ʔ°] | 'the arm of the rooster' |
| 27. | /àpú' | + ' + ñbhé\ | → | [à'pú ñ' bhé] | 'the arm of the dog' |
| 28. | /àpú' | + ' + ñtsɔ̀ŋ\ | → | [à'pú ñ' tsɔ̀ŋ] | 'the arm of the thief' |
| 29. | /lètɔ̀ŋ' | + ' + ñdzwì\ | → | [lètɔ̀ŋ ñdzwì] | 'the feather of the leopard' |
| 30. | /lètɔ̀ŋ' | + ' + ñkɔ̀ʔ\ | → | [lètɔ̀ŋ ñkɔ̀ʔ°] | 'the feather of the rooster' |
| 31. | /lètɔ̀ŋ' | + ' + ñbhé\ | → | [lètɔ̀ŋ ñ' bhé] | 'the feather of the dog' |
| 32. | /lètɔ̀ŋ' | + ' + ñtsɔ̀ŋ\ | → | [lètɔ̀ŋ ñ' tsɔ̀ŋ] | 'the feather of the thief' |

32 TONE COMBINATIONS OF BISYLLABIC NOUNS IN N₁ + N₂ ASSOCIATIVE CONSTRUCTION

fix. What this suggests is that the underlying representation in (41) must be "parsed" as $\text{ñdzà} \# \text{'kàn}^\circ$, with the H_L being assigned as if it were the prefix of 'squirrel'. This not only accounts for the 'L "transferred" to 'kàn^o, but also for the fact that there is no acceptable alternative such as * ñdzà' à kàn° . We shall see that the same phenomena are associated with verb tones as well.

3.1.2. It was mentioned in section 2 that the two authors undertook to study all of the theoretically possible N₁ + N₂ tone combinations in the associative construction in over 20 Mbam-Nkam dialects. The 32 different possible combinations involving bisyllabic nouns in Dschang are presented in Table XI. The numbers from 1 to 32 indicate the code used to compare realizations of equivalent tone sequences in the various dialects.

The surface forms seen in Table XI are derived in a straightforward manner by means of tone-grounding followed by the various tone rules given in (31), (33), (35), and (38). The only additional rules needed concern instances of $\text{H}\bar{\text{L}}$ contours which occur after a H tone, since our earlier rules (31) and (38) are restricted to L- $\text{H}\bar{\text{L}}$ sequences. Two different, though related, rules are required to produce the correct surface tones in examples [25] - [32], where the associative H is grounded to the right and thus produces a $\text{H}\bar{\text{L}}$ contour with the prefix of N₂ (which in turn is preceded by a H or 'H after rule (31) has applied to /àpú\ in [25] - [28]). Since we obtain à'pú ñdzwì 'the arm of the leopard' in [25], instead of * à'pú ñdzwì , we clearly need an absorption rule of the form in (42).

$$(42) \quad \text{H-}\bar{\text{H}}\bar{\text{L}} \rightarrow \text{H-H} / \text{ ____ } \{ \text{L, \#} \}$$

The L part of the $\text{H}\bar{\text{L}}$ contour is absorbed into a following L tone syllable when $\text{H}\bar{\text{L}}$ is preceded by H. (When it is preceded by L, rule (38) would derive L-L-'L or L-'L-L depending on the morphological structure of the forms involved.) Although not shown in the forms in Table XI, H- $\text{H}\bar{\text{L}}$ will simplify to H-H before pause as well. This is seen particularly well in the verb tones.

In examples [27], [28], [31], and [32], where the syllable following the intermediate H- $\text{H}\bar{\text{L}}$ sequence carries H tone, a rule of the form in (43) is needed.

(43) $\widehat{HL}-H \rightarrow H-'H / \text{---} H$

This rule will, for example, take an intermediate structure such as $\text{l}\acute{\text{e}}\text{t}\acute{\text{s}}\acute{\eta} \text{ n}\acute{\text{t}}\text{s}\acute{\eta}$ 'the feather of the thief' and derive $\text{l}\acute{\text{e}}\text{t}\acute{\text{s}}\acute{\eta} \text{ n}'\text{t}\text{s}\acute{\eta}$ as in example [32]. Notice, in passing, that the drop from H to 'H created by rule (43) is entirely attributable to contour simplification, since there is no downdrift in Dschang (Tadadjeu 1974).

It should be noted before leaving bisyllabic $N_1 + N_2$ constructions that there are a few possible variants for some of the examples in Table XI. First, in examples [5] to [8], the $\widehat{L'L}$ contour on N_1 can be simplified to L, with the downstepping postponed until the L of the N_2 prefix. Thus, we obtain either $\text{h}\acute{\text{d}}\text{z}\acute{\text{a}}'\text{a} \text{ h}\acute{\text{d}}\text{z}\acute{\text{w}}\acute{\eta}$ or $\text{h}\acute{\text{d}}\text{z}\acute{\text{a}} \text{ h}\acute{\text{d}}\text{z}\acute{\text{w}}\acute{\eta}$ 'the axe of the leopard', as pointed out above. A similar simplification can change the $\widehat{L'H}$ contour of N_1 in examples [19], [20], [23], and [24] to L, with the rise to 'H postponed until the prefix of N_2 . We thus obtain either $\text{a}\acute{\text{p}}\text{a}'\text{a} \text{ n}\acute{\text{t}}\text{s}\acute{\eta}$ or $\text{a}\acute{\text{p}}\text{a} \text{ n}\acute{\text{t}}\text{s}\acute{\eta}$ 'the bag of the thief' for the underlying tonal sequence in [20]. Finally, note that L-H can be realized $L-\widehat{LH}$ before pause in the Bafou variant of Dschang: $[\text{n}\acute{\text{t}}\text{s}\acute{\eta}]$ or $[\text{n}\acute{\text{t}}\text{s}\acute{\eta}]$ 'thief'.

3.1.3. In addition to bisyllabic nouns, most Mbam-Nkam languages retain evidence of earlier class la nouns which did not carry a prefix. Some of these nouns are clearly borrowings, such as $\text{l}\acute{\text{a}}\text{m}$ 'light' from Pidgin English (<English lamp). Others may be derived from verbs, e.g. Proto-Mbam-Nkam $*\text{s}\acute{\eta}\acute{\eta}\acute{\eta}$ 'bird' from the cognate verb 'to tremble'. Most class la nouns, however, do not have a transparent etymology, and must therefore be treated as prefixless nouns which take class 1 concords. Their plural generally is in class 2, as in the proto form $*\text{b}\acute{\text{e}}-\text{s}\acute{\eta}\acute{\eta}\acute{\eta}$ 'birds'.

In Dschang these prefixless nouns tend to be monosyllabic, since in addition to having no prefix, they have also lost their final vowel. We have been able to find reflexes of three of the four possible proto tone sequences on class la nouns, as in (44).

- (44) a. $*\emptyset-L-L$: $/\text{n}\acute{\text{a}}'/ \rightarrow [\text{n}\acute{\text{a}}]$ 'animal'
 b. $*\emptyset-L-H$: $/\text{k}\acute{\text{a}}\eta'/ \rightarrow [\text{k}\acute{\text{a}}\eta^\circ]$ 'squirrel'
 c. $*\emptyset-H-L$
 d. $*\emptyset-H-H$: $/\text{s}\acute{\eta}\acute{\eta}'/ \rightarrow [\text{s}\acute{\eta}\acute{\eta}]$ 'bird'

The tones of the three attested combinations are predictable from

the rules operating on bisyllabic nouns. Namely, $L-L$ and $H-H$ are realized, respectively, as L and H, by tone-grounding to the left, followed by tone coalescence. Underlying $L-H$, on the other hand, first becomes \widehat{LH} by tone-grounding, and then simplifies via rule (33) to L° . Rule (33) must, however, be modified as in (33') so as to allow \widehat{LH} to simplify to L° when preceded by L or pause.²⁸

(33') $\widehat{LH} \rightarrow L^\circ / \{ \text{---}, L \} \text{---}$

The reason why we cannot identify the $H-L$ nouns as distinct from $H-H$ nouns may have to do with the fact that the major criterion for distinguishing the two sequences is obtained from their behavior after L. The one monosyllabic noun which does not line up tonally with 'bird' is $/\text{m}\acute{\text{s}}'/$ 'child'. Since this noun is at least optionally realized as 'H in isolation (as compared with the H of 'bird'), and since it undergoes rule (38) to become L or 'L, we are justified in giving it the underlying representation $L-H-L$. And since we have not found any nouns reconstructing as $*\emptyset-H-L$, we shall put 'child' in this slot and study its tonal behavior in the associative construction (taking note of some problems such as the presence of an allomorph $\text{m}\acute{\text{e}}\eta$). Since we now have four additional tone patterns on nouns (those associated with prefixless nouns), the following combinations could theoretically be added to the 32 bisyllabic $N_1 + N_2$ combinations seen in Table XI:

| | |
|---|-------------------|
| bisyllabic $N_1 +$ monosyllabic N_2 | : 32 combinations |
| monosyllabic $N_1 +$ bisyllabic N_2 | : 32 combinations |
| monosyllabic $N_1 +$ monosyllabic N_2 | : 32 combinations |

The grand total of 128 $N_1 + N_2$ combinations were systematically investigated in the following 23 dialects: Mankon (1A), Mbui (1A), Bamenyan (2B), Babadjou (2B), Babete (2B), Bati (2G), Bagam (2G?), Batcham (2C), Bangang (2C), Dschang (3C), Ngwe (3C), Baloum (3CD), Fomopea (3DE), Bamendjou (4D), Baleng (4DE), Bandjoun (4E), Batie (4E), Bangou (4F), Batoufam (4F), Fotouni (5E), Fondjomekwet (5F), Fondanti (5F), and Fe²fe² (5F). In addition, at least the 32 possibilities in Table IX were studied in the remaining dialects of Table II either by us or by our colleagues in the Grassfields Bantu Working Group. In a few cases where prefixes had been dropped, e.g. in group (F), we did not find instances of an earlier opposi-

TABLE XII

| | | | |
|-----|---------------------|-----------------|-------------------------------|
| 33. | /èfò` + ` + nà`/ | → [èfò nà] | 'the chief of the animal' |
| 34. | /èfò` + ` + kàŋ`/ | → [èfò kàŋ°] | 'the chief of the squirrel' |
| 35. | /èfò` + ` + `mó`/ | → [èfò `mó] | 'the chief of the child' |
| 36. | /èfò` + ` + sɔŋ`/ | → [èfò sɔŋ] | 'the chief of the bird' |
| 37. | /hɔzà` + ` + nà`/ | → [hɔzà `nà] | 'the axe of the animal' |
| 38. | /hɔzà` + ` + kàŋ`/ | → [hɔzà `kàŋ°] | 'the axe of the squirrel' |
| 39. | /hɔzà` + ` + `mó`/ | → [hɔzà`à `mó] | 'the axe of the child' |
| 40. | /hɔzà` + ` + sɔŋ`/ | → [hɔzà`á sɔŋ] | 'the axe of the bird' |
| 41. | /hɔgá` + ` + nà`/ | → [h`gá nà] | 'the house of the animal' |
| 42. | /hɔgá` + ` + kàŋ`/ | → [h`gá kàŋ°] | 'the house of the squirrel' |
| 43. | /hɔgá` + ` + `mó`/ | → [h`gá `mó] | 'the house of the child' |
| 44. | /hɔgá` + ` + sɔŋ`/ | → [h`gá sɔŋ] | 'the house of the bird' |
| 45. | /hóká` + ` + nà`/ | → [hóká nà] | 'the monkey of the animal' |
| 46. | /hóká` + ` + kàŋ`/ | → [hóká kàŋ°] | 'the monkey of the squirrel' |
| 47. | /hóká` + ` + `mó`/ | → [hóká `mó] | 'the monkey of the child' |
| 48. | /hóká` + ` + sɔŋ`/ | → [hóká `sɔŋ] | 'the monkey of the bird' |
| 49. | /àpà` + ` + nà`/ | → [àpà nà] | 'the bag of the animal' |
| 50. | /àpà` + ` + kàŋ`/ | → [àpà kàŋ°] | 'the bag of the squirrel' |
| 51. | /àpà` + ` + `mó`/ | → [àpà`á mó] | 'the bag of the child' |
| 52. | /àpà` + ` + sɔŋ`/ | → [àpà sɔŋ] | 'the bag of the bird' |
| 53. | /lèsòŋ` + ` + nà`/ | → [lèsòŋ nà] | 'the tooth of the animal' |
| 54. | /lèsòŋ` + ` + kàŋ`/ | → [lèsòŋ kàŋ°] | 'the tooth of the squirrel' |
| 55. | /lèsòŋ` + ` + `mó`/ | → [lèsòŋ`h` mó] | 'the tooth of the child' |
| 56. | /lèsòŋ` + ` + sɔŋ`/ | → [lèsòŋ sɔŋ] | 'the tooth of the bird' |
| 57. | /àpú` + ` + nà`/ | → [à`pú nà] | 'the arm of the animal' |
| 58. | /àpú` + ` + kàŋ`/ | → [à`pú kàŋ°] | 'the arm of the squirrel' |
| 59. | /àpú` + ` + `mó`/ | → [à`pú `mó] | 'the arm of the child' |
| 60. | /àpú` + ` + sɔŋ`/ | → [à`pú sɔŋ] | 'the arm of the bird' |
| 61. | /lètɔŋ` + ` + nà`/ | → [lètɔŋ nà] | 'the feather of the animal' |
| 62. | /lètɔŋ` + ` + kàŋ`/ | → [lètɔŋ kàŋ°] | 'the feather of the squirrel' |
| 63. | /lètɔŋ` + ` + `mó`/ | → [lètɔŋ `mó] | 'the feather of the child' |
| 64. | /lètɔŋ` + ` + sɔŋ`/ | → [lètɔŋ sɔŋ] | 'the feather of the bird' |

32 TONE COMBINATIONS OF ASSOCIATIVE BISYLLABIC N₁ + MONOSYLLABIC N₂

tion between Ø- and L-. What we quickly discovered was that, except for the aberrant noun 'child', the only combinations which shed further light on the tonal structure of the various dialects in the associative construction consisted of bisyllabic N₁ + monosyllabic N₂. We therefore present these 32 combinations in Table XII. The following observations can be made from these forms:

(i) In [37] and [38] the 'L occurs on the monosyllabic N₂, since as we saw in (41), rule (38a) applies when N₂ does not have a prefix.

(ii) In [49], [50], [53], and [54] we observe that the H₀ associative is deleted without a trace. The explanation we would like to propose is that there is a rule of the form in (45),

$$(45) \quad L-H \rightarrow L-L / \text{--- stem } [L$$

whose ultimate effect is to simplify a LH̄ to L when followed by a prefixless noun (note the similarity of this rule to (35)).

If one takes a close look at the surface realizations for the underlying forms in Tables XI and XII, it becomes clear that all of the tone rules discussed above must take place in a left to right iterative fashion. This is shown for one derivation in (46).

| | | |
|------|--------------------|----------------------------|
| (46) | /àpú` + á + hɔzà`/ | UNDERLYING ²⁹ |
| | àpú á hɔzà` | lexical tone-grounding |
| | à`pú á hɔzà` | by rule (31) |
| | à`pú hɔzà` | grammatical tone-grounding |
| | à`pú hɔzà` | by rule (42) |
| | à`pú hɔzà` | lexical tone-grounding |
| | [à`pú hɔzà`] | PHONETIC |

With this left to right application of rules, the only thing we need to add is that rule (42) may have to be expanded to accommodate H-'H̄, which must become H-'H before pause. Thus, à`pú h`bhá becomes à`pú h`bhá 'the arm of the dog' [27], merging with à`pú h`tsɔŋ 'the arm of the thief' [28].

3.1.4. In the above discussion we have studied the various tone rules which produce the following tone inventory: L, L°, H, 'L, 'L°, 'H. These tones were seen to derive from the simplification of tonal contours. The various realizations are summarized

in Table XIII.

TABLE III

| | | |
|--------------------------------|-------------------------------|----------------------------|
| L- \widehat{HL} -L → L-'L-L* | H- \widehat{HL} -L → H-H-L | - \widehat{HL} -L → H-L |
| L- \widehat{HL} -H → L-'H-H | H- \widehat{HL} -H → H-H-'H | - \widehat{HL} -H → H-'H |
| L- \widehat{HL} - → L-'H | H- \widehat{HL} - → H-H | - \widehat{HL} - → H ? |
| L- \widehat{LH} -L → L-L-L | H- \widehat{LH} -L → H-L-L | - \widehat{LH} -L → L-L |
| L- \widehat{LH} -H → L-L-H | H- \widehat{LH} -H → H-L-H | - \widehat{LH} -H → L-H |
| L- \widehat{LH} - → L-L° | H- \widehat{LH} - → H-L° | - \widehat{LH} - → L° |

(* or L-L-'L if N₂ is prefixless)

Notice from Table XIII that 'L and 'H only derive from the simplification of \widehat{HL} . The only complication seen from the simplification of \widehat{LH} is the development of the L° tone. The realizations indicated in this table demonstrate that the following tonal sequences are found on the surface: L-L, L-'L, L-L°, L-'L° (not shown), L-H, L-'H vs. H-H, H-'H, H-L°, H-L. That is, after a L tone we find six different tonal possibilities, but after a H tone we find only four. The two missing tonal sequences are H-'L and H-L°. These sequences are, however, found in certain verb forms which we shall treat below.³⁰

3.2. Verb Tones

As has been stated earlier, the general strategy followed by investigators of Mbam-Nkam tonology has been to first settle the noun tonology, and then hope that the same rules apply in some fairly transparently way to verbs. It is only after several years of frustration that we are now in the position to demonstrate the correctness of this strategy.

3.2.1. As in Bantu in general, we recognize underlying H tone verb stems and underlying L tone verb stems. Our examples throughout this section will be - $\widehat{t\acute{o}\eta}$ - 'call' and - $\widehat{k\grave{o}\eta}$ - 'like'. The verb stem - $\widehat{t\grave{o}\eta}$ - 'reimburse' demonstrates that there are true minimal pairs contrasting H and L (cf. - $\widehat{l\acute{a}}$ - 'cook' vs. - $\widehat{l\grave{a}}$ - 'cry'). There are three isolation forms which can serve as the point of departure for the present discussion of verb tones. The first was seen in (28), repeated here for the above two verbs in (49).

- (49) / $\widehat{l\grave{a}-t\acute{o}\eta-}$ / → [$\widehat{l\grave{a}'t\acute{o}\eta}$] 'to call'
 / $\widehat{l\grave{a}-k\grave{o}\eta-}$ / → [$\widehat{l\grave{a}k\grave{o}\eta}$] 'to like'

In these examples we observe the class 5 noun prefix / $\widehat{l\grave{a}-}$ / followed by the H or L verb stem, followed in turn by a \widehat{L} suffix associated with the infinitive form. Depending on the construction the infinitives in (49) will be treated as more noun-like (taking class 5 possessive pronouns) or verb-like (taking class 1 object pronouns). A second kind of infinitive is obtained from the "consecutivized" form of the verb, seen in (50).

- (50) / $\widehat{h-t\acute{o}\eta-}$ / → [$\widehat{h't\acute{o}\eta}$] 'and called, to call'
 / $\widehat{h-k\grave{o}\eta-}$ / → [$\widehat{h'k\grave{o}\eta}$] 'and liked, to like'

As can be seen in (50), the mark of the consecutive construction is a H tone homorganic nasal prefix and a \widehat{H} suffix. This construction offers the only example we know of where the sequence H- \widehat{LH} (obtained by tone-grounding to the left) simplifies as H-'H. In noun constructions we would invariably obtain H-L°, e.g. / $\widehat{l\grave{a}t\acute{o}\eta'}$ + ' + $\widehat{k\grave{a}\eta}$ / 'the feather of the squirrel' [62] comes out [$\widehat{l\grave{a}t\acute{o}\eta k\grave{a}\eta^\circ}$] rather than *[$\widehat{l\grave{a}t\acute{o}\eta k\acute{a}\eta}$]. Unless we are dealing with some difference in boundary (e.g. / $\widehat{h+k\grave{o}\eta+}$ / vs. / $\widehat{l\grave{a}t\acute{o}\eta'}$ + ' # $\widehat{k\grave{a}\eta}$ /) we cannot explain this difference. Finally, the singular imperative forms are illustrated in (50').

- (50') / $\widehat{t\acute{o}\eta\acute{o}}$ / → [$\widehat{t\acute{o}\eta\acute{o}}$] 'call!'
 / $\widehat{k\grave{o}\eta\acute{o}}$ / → [$\widehat{k\grave{o}\eta\acute{o}}$] 'like!'

In the first form, rule (42) simplifies H- \widehat{HL} to H-H before pause; in the second, rule (31) converts L- \widehat{HL} to L-'H before pause. Thus, at least in (49) and (50'), we see that simplex verb forms undergo the same tone rules we have seen to be operative on nouns.

The same can be said for verbal constructions, though it is sometimes necessary to set up numerous floating tones to account for the otherwise inexplicable tone alternations. These floating tones vary to the tense/aspect of the construction and must therefore be determined separately for each case. Rather than presenting each tense/aspect combination possible in Dschang, we shall first present a straightforward case, and then a more complicated one involving tense, aspect, and mood, as well as object nouns. The first concerns the immediate future tense, exemplified in (51).

- (51) a. /à + ' + tóŋ + ' / — [à'á tóŋ] 'he is about to call'
 b. /à + ' + kòŋ + ' / — [àà 'kòŋ°] 'he is about to like'

In (51) we observe that the immediate future tense is characterized by a $\text{H}\overline{\text{L}}\text{H}$ prefix and a H suffix on the verb. The derivations involved are as follows:

| | | | |
|------|--------------------|--------------------|-----------------------------|
| (52) | a. | b. | |
| | /à + ' + tóŋ + ' / | /à + ' + kòŋ + ' / | UNDERLYING |
| | à'á tóŋ ' / | à'á kòŋ ' / | tone-grounding ₁ |
| | à'á tóŋ ' / | ----- | by rule (31) |
| | ----- | àà 'kòŋ ' / | by rule (38a) |
| | à'á tóŋ | àà 'kòŋ | tone-grounding ₂ |
| | | àà 'kòŋ° | by rule (33') |
| | [à'á tóŋ] | [àà 'kòŋ°] | PHONETIC |

The processes involved are the following: (i) the $\text{H}\overline{\text{L}}\text{H}$ prefix sequence is grounded to the left causing the subject pronoun /à/ to lengthen; (ii) rule (31) derives $\text{L}'\text{H}$ from LHL before H in (52a); (iii) rule (38a) derives $\text{L}-\text{L}$ from $\text{LHL}-\text{L}$ in (52b); (iv) the final H is grounded to the left resulting in absorption in (52a), but in the creation of a LH tone in (52b); (v) rule (33') simplifies LH to L° before pause. Note that the 'L occurs on the verb stem in (52b) rather than on the subject pronoun (i.e. we do not obtain *à'á kòŋ°). The segmentally prefixless verb stem thus requires (38a) instead of (38b), exactly as class l_a nouns have been seen to function (cf. (41)).

The second, more complicated, construction to be considered concerns the yesterday past tense, whose underlying tones and phonetic realizations are given in (53).

- (53) a. /à + kè + ' + tóŋ + ' / → [à kè tóŋ'ŋ] 'he called' (yest.)
 b. /à + kè + ' + kòŋ + ' / → [à kè 'kòŋ'ŋ] 'he liked' (yest.)

The markers associated with this tense include a L toned /kè/ as well as a H prefix (the two may go together as /kè'/), and a $\text{H}\overline{\text{L}}\text{H}$ floating tone suffix. This latter sequence of floating tones may seem unrestrained in our analysis, and yet it is this final sequence which allows a correct derivation for both forms using the rules we have justified earlier. The derivations for these forms are given in (54).

| | | | |
|------|-------------------------|-------------------------|-----------------------------|
| (54) | a. | b. | |
| | /à + kè + ' + tóŋ + ' / | /à + kè + ' + kòŋ + ' / | UNDERLYING |
| | à kè tóŋ ' / | à kè kòŋ ' / | tone-grounding ₁ |
| | ----- | à kè 'kòŋ ' / | by rule (31) |
| | à kè tóŋ'ŋ | à kè 'kòŋ'ŋ | tone-grounding ₂ |
| | à kè tóŋ'ŋ | à kè 'kòŋ'ŋ | by rule (43) |
| | [à kè tóŋ'ŋ] | [à kè 'kòŋ'ŋ] | PHONETIC |

The processes involved are as follows: (i) the H prefix is grounded to the right, which results in absorption in (54a), but in the creation of a HL tone in (54b); (ii) rule (31) converts $\text{L}-\text{HL}$ to $\text{L}-\text{H}$ before H in (54b); (iii) the HLH suffix sequence is grounded to the left; since we have tòŋ and 'kòŋ at this stage, the initial H is absorbed and we obtain the sequences HLH and 'HLH with lengthening of the final nasal of the verb stem; (iv) rule (43) converts HLH to $\text{H}'\text{H}$ and 'HLH to $\text{'H}'\text{H}$. The result is the phonetic forms à kè tóŋ'ŋ and à kè 'kòŋ'ŋ .³¹

There are at least two additional pieces of evidence in favor of the underlying tonal forms in (53) and (54). The first concerns the corresponding sentences in the conditional mood. As seen in (55),

- (55) a. /à + kè + ' + tóŋ + ' / → [à kè tóŋ] 'if he called' (yest.)
 b. /à + kè + ' + kòŋ + ' / → [à kè 'kòŋ] 'if he liked' (yest.)

the conditional differs from the indicative on the surface in that it lacks the drop from H to 'H on the verb stem. This we have taken to indicate that the final $\overline{\text{L}}\text{H}$ of the $\text{H}\overline{\text{L}}\text{H}$ suffix observed in (54) is somehow associated with the indicative mood. As such, it has a grammatical function and can be justified accordingly.

The second piece of evidence in favor of suffixal $\text{H}\overline{\text{L}}\text{H}$ is seen from the tonal alternations observed on following object nouns. First, let us observe the object noun /s'óŋ' / 'bird' in (56).

- (56) a. à kè tóŋ'óŋ 's'óŋ 'he called a bird' (yest.)
 b. à kè 'kòŋ'óŋ 's'óŋ 'he liked a bird' (yest.)

In these examples, a full vowel [ó] is observed between the verb and the object noun. This is because 'bird' belongs to class l_a , which requires a /á/ object agreement marker. This vowel is heard

phonetically as such in phrases like á sḗŋ 'a/the bird', which might be appropriately used to answer the question 'what did you see?' (cf. Mankon, note 24). Since /sḗŋ'/ 'bird' does not have a L prefix, there must be some suffix which is responsible for the downstepping of this noun in (56). The clue is seen in (57),

- (57) a. à kè tḥḥó's sḗŋ 'he called (only) a bird' (yest.)
 b. à kè 'kḥḥó's sḗŋ 'he liked (only) a bird' (yest.)

where contrastive emphasis is placed on the object noun. In this case the surface realization of the underlying $\overline{H}LH$ sequence posited in (54) is evident. The 'H' is obtained on 'bird' in (56) by a simplification process changing $\overline{H}H-H$ to H-'H', i.e. postponing the drop to 'H' until the following syllable. Since we have hypothesized that the final $\overline{L}H$ suffix is not present in the conditional mood, it is not surprising to find the corresponding forms in (58) involving a noun object lacking a downstep.

- (58) a. à kè tḥḥó sḗŋ 'if he called a bird' (yest.)
 b. à kè 'kḥḥó sḗŋ 'if he liked a bird' (yest.)

In (58), /sḗŋ'/ is realized on the same H level as the preceding syllable, thereby justifying the underlying tones in (55). Now compare the tonal differences between indicative and conditional forms involving the nouns /sḗŋ'/ 'bird', /'mḥ/' 'child', /kàŋ°/ 'squirrel', and /nà°/ 'animal' in (59).

| | INDICATIVE | CONDITIONAL | |
|----|------------------|-----------------|-----------------------------|
| a. | à kè tḥḥó 'sḗŋ | à kè tḥḥó sḗŋ | '(if) he called a bird' |
| | à kè tḥḥó 'mḥ | à kè tḥḥó 'mḥ | '(if) he called a child' |
| | à kè tḥḥó 'kàŋ° | à kè tḥḥó kàŋ° | '(if) he called a squirrel' |
| | à kè tḥḥó 'nà | à kè tḥḥó nà | '(if) he called an animal' |
| b. | à kè 'kḥḥó 'sḗŋ | à kè 'kḥḥó sḗŋ | '(if) he liked a bird' |
| | à kè 'kḥḥó 'mḥ | à kè 'kḥḥó 'mḥ | '(if) he liked a child' |
| | à kè 'kḥḥó 'kàŋ° | à kè 'kḥḥó kàŋ° | '(if) he liked a squirrel' |
| | à kè 'kḥḥó 'nà | à kè 'kḥḥó nà | '(if) he liked an animal' |

As can be seen in the above forms, the tone of a monosyllabic object noun is one step lower in the indicative than in the conditional. This thus results in a "H (double-downstepped H) tone in 'he called a child' and 'he liked a child', as well as contrasts

between H-L° vs. H-'L° and H-L vs. H-'L. We have already accounted for this tone difference. The additional $\overline{L}H$ suffixal sequence found in the indicative forms produces a $\overline{H}H$ contour on the verb which is simplified in such a way as to produce a lowering by one step of the object noun. The contrastive tonal pattern of the indicative sentences justifies this reconstruction, as seen in (60).

- (60) a. à kè tḥḥó's sḗŋ 'he called (only) a bird' (yest.)
 à kè tḥḥó's 'mḥ 'he called (only) a child' (yest.)
 à kè tḥḥó's kàŋ° 'he called (only) a squirrel' (yest.)
 à kè tḥḥó's nà 'he called (only) an animal' (yest.)
 b. à kè 'kḥḥó's sḗŋ 'he liked (only) a bird' (yest.)
 à kè 'kḥḥó's 'mḥ 'he liked (only) a child' (yest.)
 à kè 'kḥḥó's kàŋ° 'he liked (only) a squirrel' (yest.)
 à kè 'kḥḥó's nà 'he liked (only) an animal' (yest.)

The indicative forms in (59) are thus seen to derive from those in (60).

The remaining question concerns the nature of the additional $\overline{L}H$ suffix found only in the indicative. It turns out that the $\overline{L}H$ can be attributed to the class 1(a) object agreement marker /á/, which we have already seen. Whenever the object noun belongs to any class other than 1 or 1a, this $\overline{L}H$ is not observed.³² The tonal difference between the indicative and conditional, then, is restricted to the presence of an additional \overline{L} in the former which is not found in the latter. We thus observe the differences in (61).

| | INDICATIVE | CONDITIONAL | |
|---------|--------------------|--------------------|---------------------------|
| (61) a. | à kè tḥḥó mḥsḗŋ | à kè tḥḥó mḥ'sḗŋ | '(if) he called birds' |
| | à kè tḥḥó mḥm'bhé | à kè tḥḥó mḥm'bhé | '(if) he called dogs' |
| | à kè tḥḥó mḥŋkḥó? | à kè tḥḥó mḥŋkḥó? | '(if) he called roosters' |
| | à kè tḥḥó mḥndzì | à kè tḥḥó mḥndzì | '(if) he called leopards' |
| b. | à kè 'kḥḥó mḥsḗŋ | à kè 'kḥḥó mḥ'sḗŋ | '(if) he liked birds' |
| | à kè 'kḥḥó mḥm'bhé | à kè 'kḥḥó mḥm'bhé | '(if) he liked dogs' |
| | à kè 'kḥḥó mḥŋkḥó? | à kè 'kḥḥó mḥŋkḥó? | '(if) he liked roosters' |
| | à kè 'kḥḥó mḥndzì | à kè 'kḥḥó mḥndzì | '(if) he liked leopards' |

The nouns involved in (61) are /mḥsḗŋ'/ 'birds' (cl. 2), /mḥm'bhé'/ 'dogs' (cl. 6), /mḥŋkḥó°/ 'roosters' (cl. 2), and /mḥndzì°/

'leopards' (cl. 6). In (61) we observe that these nouns are pronounced as in isolation in the indicative forms, i.e. as L-H, L-'H, L-L°, and L-L, respectively. This is due to the fact that the verb tones in the indicative are /'tɔŋ'/ and /'kɔŋ'/ with the final ɔ keeping the prefix of the noun object L. In the conditional forms, on the other hand, where the verb forms are /'tɔŋ'/ and /'kɔŋ'/, the single floating ɔ is grounded to the right and we obtain, respectively, H-'H, H-'H, H-L°, and H-L. The conditional forms with 'call' thus correspond tonally to the associative forms [29] - [32] in Table XI, while the conditional forms with 'like' correspond tonally to associative forms [25] - [28].

3.2.2. The above discussion represents only a brief glimpse of the tonal intricacies found in Mbam-Nkam and Dschang verb tonology. Needless to say, much more work is needed in this complex part of the tonal grammar so as to permit us to reconstruct with certainty the tense, aspect, and mood markers present in Proto-Mbam-Nkam. Steps are now being taken to further research the structure of the verb in Mbam-Nkam, and we hope to be able to report on our findings in the near future.

NOTES

¹This study has been possible only with the help of a number of people. First, we would like to thank the following language consultants who provided the data on which this study is based: Christine Ngang (Mankon); Felix Ndiangang (Mbui); Thomas Mouzié (Bamenyan); Michel Nguélewou (Babandjou); Nicodeme Kanouou (Babete); Emmanuel Vavoua (Bati); Emmanuel Tetang (Bagam); Rigobert Demene (Batcham); Martin Douanla (Bangang); Grégoire Momo (Dschang); Peter Nkengasong, John Nkemka, Vincent Tandunkeng (Ngwe); Christophe Miaffo (Baloum); Michel Nguedia (Fomopea); Fr. André Tankou, Octavie Mafonou, and Jean-Jules Talla (Bamendjou); Jean-Pierre Ngnenpibéno (Baleng); Sébastien Tanye and Pascal Tuete (Bandjoun); Marcel Tchawou (Batie); François Wandji Mbueyongoué and Daniel Tchouanmo (Bangou); Justin Lowé (Batoufam); René Foyam and Marcel Djoudom (Potouni); Bernard Koungang (Fondjomekwet); Julienne Nguilembou (Fondanti); John Kando, Georges Tchokokam, and Casimir Datchoua (Fe²fe²). Additional information was provided by Jacqueline Leroy-Warnier (Mankon, Mundum I, Nkwen, Pinyin), Gabriel Nissim (Bandjoun), Jan Voorhoeve (Bangangte), and Jean-Marie Hombert (Bamoun). We would also like to thank the many Reverend Fathers who provided us hospitality and helped us locate language consultants: Fathers François Rietsch and Jacques Tadjoua (Dschang); François-Marie Tchamda (Bafang); Pierre (Nkongssamba); Ferdinand (Melong); Roger (Bandjoun); Louis and Gena (Bafoussam);

Guillaume and Borel (Mbouda), and many others. We would like especially to thank Gabriel Nissim, Jan Voorhoeve, and Jacqueline Leroy-Warnier, whose work has complemented our own and made this comparative study possible. The first author was supported in Cameroon by grants from the National Science Foundation, Wenner-Gren Foundation for Anthropological Research, and the Social Science Research Council, and was affiliated as a Postdoctoral Fellow of the Miller Institute for Basic Research in Science, University of California, Berkeley. Subsequent research on which this paper is based has been supported by a National Science Foundation Grant No. SOC 75-16487.

²A slightly enlarged typology of tone processes is presented in Hyman (in preparation); see also Schuh (in preparation).

³ \widehat{LM} simplifies to M in the speech of many, especially younger speakers of Fe²fe², as also noted by Gabriel Nissim. Please note that all transcriptions in this paper, except for specified reconstructions, are broad phonetic, except for tone. Thus, what appears between phonemic slashes is phonemic only with respect to tone, and not with respect to the segments.

⁴Notice how the associative marker has full syllabic status in Mbui, thereby revealing the source of the floating ɔ found in Babete and other dialects.

⁵Note that the L prefix cannot be factored out, since there are some nouns in Bandjoun which do not have a prefix, e.g. sán 'bird' (see Nissim, in press). A H tone noun in isolation, thus, reconstructs either as L-H-L or H-H. Those which derive from L-H-L become 'H after H, while those which derive from H-H, i.e. without a prefix, remain H after H.

⁶One area in need of further investigation is group G. While Bamoun, Bali, and some languages in the Ndop plain clearly belong together, the exact status of several Bamileke dialects (Bati, Bapi, Bagam, Bangangte) is not certain. These are indicated by a question mark, e.g. Bangangte (6G?).

⁷Several conventions are followed in this table. Notations such as -L and -H imply that there is only a homorganic nasal prefix in the language. Notice, also, how L° implies L-ɔ, but not vice-versa. That is, the presence of a L which does not fall in pitch before pause is taken to be evidence of a following floating ɔ tone. However, the presence of a floating ɔ tone does not necessarily mean that the word will be realized as L° before pause.

⁸The Limbum form is due to Jan Voorhoeve whose original transcription ɪsɔŋ has been reinterpreted here (at our own risk).

⁹It is interesting to note that L- \widehat{HL} is now in the process of being simplified to phonetic M-L, perhaps analyzed as L-'L. Thus, 'ashes' can be pronounced either əpfû or əpfû in Babadjou.

¹⁰The M of M-M may be realized slightly higher than the M of M-H. What is important here is that the M-M (analyzed as L-L°) of

Mbui is considerably higher in pitch than the L-L° of Dschang, for instance.

¹¹This noun actually reconstructs as L-H-H and is one which undergoes tone-spreading to become L-L-H and then merge with proto L-L-H. This needn't concern us here.

¹²This does not ignore the two Ngemba dialects which have L-L-L°. Similarly, Elimelech (1976) has shown for Kombe, a Zone A Bantu language, that underlying L-L-H is realized as L-L-L°. Such cases do naturally occur, although it would be difficult to show that they are necessarily involved in the derivation of L-L° in any particular language. The possibility must however be recognized, even if it is hard to support in Mbam-Nkam.

¹³In (8), CV stands for any syllable (CV, V, or N).

¹⁴Note that there is no class 4 reconstructed for Mbam-Nkam. The class 4 recognized for practical purposes in such works as Hyman (1972) is merely a variant of class 6.

¹⁵Since Bamenyan has L-L̄H and L-H̄L, there is no need for L-L-L̄ and L-H-H̄; cf. Table II.

¹⁶It is possible that the raising of the prefix tone represents a tonal assimilation. While it is sometimes difficult to determine effects due to floating tones vs. adjacent like (grounded) tones, the assimilation account here would find it difficult to explain why we do not obtain *[h̄kě p̄yè] in (11a).

¹⁷A similar phenomenon occurs in Feʔfeʔ (Hyman 1972:155). In this dialect, the LM which comes into being by tone-spreading is forced to surface as M when preceded by a H or M tone, e.g. [h̄kèē] 'monkey' vs. [wú h̄kèē] 'the thing of the monkey'.

¹⁸There are some problems with the Nun group which remain to be worked out. Otherwise the structure in (18) holds for Mbam-Nkam.

¹⁹There is some question of whether 'our' (exclusive) should be reconstructed as *-íkó or *-ísó, since reflexes of both are found. While [s] seems to have great frequency in Western Grassfields and perhaps outside Grassfields Bantu as well, it is hard to imagine how *s can develop into [k]. Other consonantal reflexes which are found include [t], [r], [ʔ], and ∅, which are also characteristic of the proto roots *-íkó or *-ísó 'fire' (cl. 3) and *-íkè or *-ísè 'eye' (cl. 5/6).

²⁰A similar process and constraint is reported for Engenni by Thomas (1974:16).

²¹Note how important the initial ɿ of 'child' is in the above derivation. If the second noun had not had this remnant of an earlier syllabic prefix, no uplifting would have occurred; cf. /b̄s̄r̄λ/ 'ball', which in the corresponding phrase is realized [àdiʔá b̄s̄r̄λ] 'the place of the ball'.

²²Welmers (1973:91) mentions an Ewe dialect where the initial H of a H-'H sequence will go up in pitch to anticipate the down-step interval (cf. Hyman 1976a:131).

²³Notice in (24a) how the sequence /ló + m̄/ is considered to constitute a HL falling tone. It is clear from several Mbam-Nkam dialects that the typical definition of a contour tone as involving two unlike tones assigned to the same syllabic unit will not do. Rather, we shall define as a contour, any two unlike tones not separated from each other by a nonsyllabic segment.

²⁴This /á/ object marker for class 1(a) appears in á k̄áŋλ 'a/the squirrel', which might be uttered in response to the question 'what did you see?' (cf. below for Dschang).

²⁵Note that L-H-H nouns can optionally be pronounced L-L̄H in the Bafou variant of Dschang before pause, e.g. [l̄àt̄ŋ] 'feather'.

²⁶One reason why this rule is not stated as a simplification of a LH contour is that the slow speech variant [l̄às̄ŋ è s̄ŋ] is apparently available to some speakers. In this case we simply have a case of L-H-H becoming L-L-H.

²⁷A similar constraint is found in Mankon, where uplifting of H to superhigh cannot take place on a nasal prefix. It must be postponed until the following stem syllable. Thus, from underlying /ábókíλ + á + h̄gúbλ/ 'the pocket of the chicken', we obtain [ábókíλ h̄gúbλ] as at least a variant of the expected [ábókíλ h̄gúbλ].

²⁸Note that HL̄ undergoes the same modifications after pause as it undergoes after H in Dschang. Thus, it is intermediate s̄ŋ s̄ŋ 'the bird of the bird' (underlyingly /s̄ŋ' + 's̄ŋ'/) which creates the 'H in [s̄ŋ 's̄ŋ] and intermediate s̄ŋ n̄ 'the bird of the animal' which undergoes absorption to become [s̄ŋ n̄].

²⁹In Dschang it is easy to demonstrate that class 7 alone has a segmental associative marker /á/. Tadadjeu (1977) has proposed that the remaining classes have /e/, although in most cases a ∅ segment would do just as well and thus may be a notational variant.

³⁰In addition, there is a "L (double-downstepped L) which appears in the vocative. Thus, compare from Table XII [h̄dzà "nà] 'the axe of the animal' [37] with the corresponding vocative form [h̄dzà "nà]. The difference is a single vs. double drop in pitch from the L of 'axe'.

³¹Instead of having lengthening conditioned by a tone contour, one might propose a final /e/ on verbs which causes a preceding vowel or nasal to lengthen (cf. Tadadjeu 1977). See also note 29.

³²The one complicating factor is that there definitely is a final H̄ tone on yesterday past tense verbal forms before pause, as we have seen in (53). Note, however, that the vowel /a/ is not involved or else we would obtain *[à k̄è t̄ŋ'ŋ] and *[à k̄è 'k̄ŋ'ŋ].

REFERENCES

- Asongwed, Tah, and Larry M. Hyman. 1976. Morphotonology of the Ngamambo noun (in this volume).
- Dunstan, Margaret E. 1966. Tone and Concord Systems in Ngwe Nominals. Unpublished Ph.D. Dissertation, University of London.
- Elimelech, Baruch. 1976. Noun tonology in Kombe (in this volume).
- Hombert, Jean-Marie. 1976. Difficulty of producing different F_0 in speech. Paper presented at the 92nd Meeting of the Acoustic Society of America, San Diego, November 15-19, 1976.
- Hombert, Jean-Marie. In press. Bamun and Bali. In Larry M. Hyman and Jan Voorhoeve (eds.), *Noun Classes in Grassfields Bantu*. Paris: Société d'Etudes Linguistiques et Anthropologiques de France.
- Hyman, Larry M. 1972. A Phonological Study of $Fe^?fe^?$ -Bamileke. *Studies in African Linguistics*, Supplement 4.
- Hyman, Larry M. 1973. The role of consonant types in natural tonal assimilations. In Larry M. Hyman (ed.), *Consonant Types and Tone*, 151-179. *Southern California Occasional Papers in Linguistics* No. 1, University of Southern California.
- Hyman, Larry M. 1976a. D'où vient le ton haut du bamileke- $fe^?fe^?$? In Larry M. Hyman, Leon C. Jacobson, and Russell G. Schuh (eds.), *Papers in African Linguistics in Honor of Wm. E. Welmers*, 123-134. *Studies in African Linguistics*, Supp. 6.
- Hyman, Larry M. 1976b. A reanalysis of tonal downstep. Paper presented at Annual Winter Meeting of the Linguistic Society of America, Philadelphia, December 28-30, 1976.
- Hyman, Larry M. In preparation. Historical tonology. To appear in Victoria A. Fromkin (ed.), *Tone: A Linguistic Survey*. New York: Academic Press.
- Hyman, Larry M. and Russell G. Schuh. 1974. Universals of tone rules: evidence from West Africa. *Linguistic Inquiry* 5. 81-115.
- Hyman, Larry M. and Jan Voorhoeve (eds.). In press. *Noun Classes in Grassfields Bantu*. Paris: Société d'Etudes Linguistiques et Anthropologiques de France.
- Nissim, Gabriel. In press. Quelques parlars du bamileke de l'est. In Larry M. Hyman and Jan Voorhoeve (eds.), *Noun Classes in Grassfields Bantu*. Paris: Société d'Etudes Linguistiques et Anthropologiques de France.
- Schuh, Russell G. In preparation. Tone rules. To appear in Victoria A. Fromkin (ed.), *Tone: A Linguistic Survey*. New York: Academic Press.
- Tadadjeu, Maurice. 1977. Vowel assimilation in Bamileke-Dschang. Manuscript, University of Southern California.
- Thomas, Elaine. 1974. Engenni. In John Bendor-Samuel (ed.), *Ten Nigerian Tone Systems*, 13-26. *Studies in Nigerian Languages* No. 4.

- Voorhoeve, Jan. 1971. Tonology of the Bamileke noun. *Journal of African Languages* 10.44-53.
- Voorhoeve, Jan. 1974. Locatives in Bangangte-Bamileke. *Studies in African Linguistics* 5.205-221.
- Warnier, Jacqueline and Jan Voorhoeve. 1975. Vowel contraction and vowel reduction in Mankon. *Studies in African Linguistics* 6.125-149.
- Welmers, William E. 1959. Tonemics, morphotonemics, and tonal morphemes. *General Linguistics* 4.1-9.
- Welmers, William E. 1973. *African Language Structures*. Berkeley and Los Angeles: University of California Press.

NOUN TONOLOGY IN KOMBE

BY

BARUCH ELIMELECH

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF CALIFORNIA
LOS ANGELES, CALIFORNIA 90024

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

0. INTRODUCTION

The purpose of this study is to give a tonal description of nouns in Kombe, a Bantu language spoken in Rio Muni (Equatorial Guinea).¹ In Guthrie's (1967) classification, Kombe (Ngumbi) is identified as A.33b. It is most similar to Benga (A.34) which is spoken in Gabon and Rio Muni. Both languages are listed under the Bube-Benga group (A.30).

1. PHONEMIC AND PHONETIC INVENTORY

While the focus of this study is on tone, a summary sketch of the segments which provide the necessary background for understanding the examples presented is given below.

1.1. Consonants

| | | | | |
|--------------|----------------|----------------|----|----|
| Stops | p ^h | t ^h | | k |
| | b | d' | ɟ | |
| Affricates | | | c | |
| Pre-nasal | mb | nd | nj | ng |
| Fricatives | β | s | ʒ | ɣ |
| Liquids | | l | r | |
| Nasals | m | n | ɲ | |
| Approximants | | | y | w |

1.2. Vowels

| | | | |
|------|---|---|---|
| High | i | | u |
| Mid | e | | o |
| | ɛ | | ɔ |
| Low | | a | |

2. PHONETIC TONES OF NOUNS IN ISOLATION

Nouns in isolation exhibit five tones, high [V̂], low [V̄], unreleased low [V̄°] (non-falling low in pre-pausal position), falling [V̂], and downstep [V̂], at the systematic phonetic level. Illustrations are given in (1). The realization of the pitch patterns are given to the right of each example. In these examples a contrast is observed between L, L°, D and F on the final syllable of nouns. Furthermore, there are no nouns in the lan-

guage that end in a high tone when occurring in isolation.

| | | | |
|-----|------|---------|-----------|
| (1) | tàbà | [_ ˩] | 'goat' |
| | L L | | |
| | èlè° | [_ _] | 'tree' |
| | L L° | | |
| | célé | [˩ ˩] | 'sand' |
| | H D | | |
| | kùbà | [˩ ˩] | 'chicken' |
| | F L | | |
| | èbô | [_ ˩] | 'hand' |
| | L F | | |

Observe also that there is a contrast between L, H and F on the initial syllable of nouns. This is not the case, however, with trisyllabic nouns. That is, there exists only a contrast between L and H (e.g. [ìlâlì] 'stone' and [ífbùmù] 'belly'). There are no occurrences of a rising tone in nouns cited in isolation. Furthermore, it will be seen in section 6 that the occurrence of rising tones in general is extremely rare.

3. ISOLATED NOUNS VS. NON-ISOLATED NOUNS

At the systematic phonetic level, Kombe displays an interesting tonetic variation between some nouns occurring in isolation or pre-pause position and those occurring in non-isolation or non-pre-pause position (e.g. identification construction), as seen in (2). Further illustrations of nouns in pre-pause position and non-pre-pause position in other constructions will be given in the Appendix.

| (2) | Isolation | Non-isolation (identification) |
|-----|-----------------|--|
| a. | tàbà 'goat' | tàbà ndìrà 'that's a goat' goat is that |
| b. | èlè° 'tree' | èlé ndìrà 'that's a tree' tree is that |
| c. | célé 'sand' | célé ndìrà 'that's sand' sand is that |
| d. | kùbà 'chicken' | kùbà ndìrà 'that's a chicken' chicken is that |
| e. | ífbùmù 'belly' | ífbùmù ndíjìrà 'that's a belly' belly is A that |
| f. | βìnbòní° 'bird' | βìnbòní ndíβìrà 'that's a bird' bird is A that |

| | | |
|----|---------------|---|
| g. | ìkáyí 'leaf' | ìkáyí ndíjìrà 'that's a leaf' leaf is A that |
| h. | ìlâlì 'stone' | ìlâlì ndíjìrà 'that's a stone' stone is A that |
| i. | ìlô 'ear' | ìlô ndíjìrà 'that's an ear' ear is A that |

The alternations which are observed in comparing the left and right columns of (2) are the following: L-L° vs. L-H (2b), H-D vs. H-H (2c), F-L vs. H-L (2d), H-F-L vs. L-L-L (2e), L-L-L° vs. L-L-H (2f), L-H-D vs. L-H-H (2g), and L-F-L vs. L-H-L (2h). The L-L of (2a) and the L-F of (2i) do not alternate.

Given the examples of (2), the exact phonological representation of these noun tones is not obvious. One possible solution would be to lexically represent each noun with its various allomorphs (e.g. /èlè°/ 'tree' in isolation; /èlé/ in the identification construction). Alternatively, as I will demonstrate in the following section, these tonal alternations are best accounted for by recognizing unique underlying forms for each set of tonal alternations and by positing general tonological rules to derive the different surface patterns.

4. SYSTEMATIC PHONEMIC TONES

It was observed in sections 2 and 3 that Kombe nouns exhibit five phonetic tones (H, L, L°, F and D). It will be argued in this section that only two of these tones (H and L) occur at the systematic phonemic level, and that the other three tones (F, L°, and D) are derived from these.

4.1. Falling Tone

It was observed in (2) that falling tones occur in penultimate position in some nouns. The relevant nouns are repeated in (3) for ease of reference:

| | | | |
|-----|----------------|-----|-----------------------------------|
| (3) | kùbà 'chicken' | cf. | à tóyèndì kùbà 'he saw a chicken' |
| | ìlâlì 'stone' | cf. | à tóyèndì ìlâlì 'he saw a stone' |

Note that the F tone occurs in penultimate position before a L tone followed by a pause. When the nouns of (3) no longer occur in isolation or pre-pause position (e.g. identification construction),

a F tone is no longer obtained. Instead, a H tone occurs in its place, as can be seen in (4):

- (4) kúbà ndírà 'that is a chicken'
 ìlálì ndíjìrà 'that is a stone'

The vowels where the F tone would normally occur when the nouns are in isolation or pre-pause position are underlined. In these examples, a H tone has taken the place of the F tone. Moreover, the same alternation holds for [ndírà] 'that is' (lit. is that). In this construction [ndi] 'is' has a F tone when its tone occurs in penultimate position before a L tone followed by a pause. On the other hand, [ndi] has a H tone when it is no longer in penultimate position. The F tone is realized on [jì] (a noun class agreement marker) in the second example of (4), since it is in penultimate position before a L tone followed by a pause.

In order to account for this general tonal alternation between a H tone (in non-isolation or non-pre-pause position) and a F tone (in pre-pause position or isolation), the H tone is posited as underlying with a rule of the form in (5):

- (5) H → F / ___ L || (where || = pause)

This rule states that a H tone becomes a F tone when in penultimate position before a L followed in turn by a pause. This rule accounts for the occurrence of F tones in examples (2d,e,h) and any other F tones found in the specified environment.

The remaining F tones of nouns are seen to occur on the final vowel, as in (2i). Such examples are extremely rare. A few of these nouns are given in (6):

- (6) èlú 'night' ìlô 'ear'
 ìbú 'ash' èbô 'hand'

Synchronically, such F tones will be treated as sequences of H followed by L on a single vowel. Historically, the nouns of (6) probably had three syllables of which one has been lost leaving behind only the tone. It will be noted in section 9 that these nouns behave similarly to nouns of the type /ìlálì/ 'stone'.

4.2. Unreleased Low Tone (L°)

An illustration of non-falling (or "unreleased") L tones was given in (2b, f). They are repeated here for clarity.

- (7) èlè° 'tree' cf. à tóyèndì èlè° 'he saw a tree'
 ßìpòni° 'bird' cf. à tóyèndì ßìpòni° 'he saw a bird'

Notice in (7) that the L° tone occurs on the final syllable after a L and followed by a pause. When the nouns of (7) no longer occur in isolation or pre-pause position (as in the identification construction) the unreleased L tone is no longer obtained. Instead, a H tone occurs in its place, as seen in (8):

- (8) èlé ndírà 'that's a tree'
 ßìpòni ndíβìrà 'that's a bird'

The vowels that concern us are underlined. Note that they have a H tone. Given that such nouns as in (8) have an underlying H tone on their final syllable, the L° tone observed in (7) can be derived by a rule of the form in (9):

- (9) H → L° / L ___ || (where || = pause)

This rule states that a H is lowered to a L° when preceded by a L and followed by a pause. This rule accounts for all occurrences of L° in the language.

4.3. Downstep Tone

Downstep occurs only on the final syllable of nouns, as illustrated in (10).

- (10) célé 'sand' cf. à tóyèndì célé 'he saw sand'
 ìkáyí 'leaf' cf. à tóyèndì ìkáyí 'he saw a leaf'

Observe that the D is preceded by a H tone and followed by a pause. Furthermore, as is observed in (11), the D fails to occur if the nouns are no longer in isolation or pre-pause position:

- (11) célé ndírà 'that's sand'
 ìkáyí ndíjìrà 'that's a leaf'

The vowels that concern us are underlined. Note that the D seen on these vowels in (10) has been replaced by a H in (11). Given that the underlying forms of the nouns in (10) are as they occur in (11),

i.e. ending with a H tone, the forms of (10) can be derived by a rule of the form in (12):

(12) H → D / H ___ ||

This rule states that a H tone becomes a D when preceded by a H and followed by a pause.

Since Kombe is characterized by the "downdrift" phenomenon, by which H tones are lowered as the result of intervening L tones which may or may not be deleted or assimilated, and also by the phenomenon of penultimate H becoming F before a L (rule 5), one can alternatively argue that the forms of (10) are derived in a similar fashion by an ordered set of rules as given in (13), (14), and (15).

(13) H → F / ___ T (where T stands for H or L tone)

This rule converts all penultimate H tones to F, thereby generalizing on rule (5).

(14) H → D / L ___

This rule lowers all H tones after L to a D. Thus, in a F-H sequence, where a F tone is followed by a H, the L portion of the F tone will effect a D onto the following H tone. This rule is ordered immediately after rule (13).

(15) F → H / ___ D

This rule simplifies a F tone to H when followed by a D, and is ordered immediately after rule (14). (The question of whether this rule is better interpreted as a deletion process, i.e. HL becomes H, is left open.)

A sample derivation of the operation of rules (13), (14), and (15) is given in (16):

| (16) Underlying | Rule (13) | Rule (14) | Rule (15) | |
|-----------------|-----------|-----------|-----------|-----------|
| /c'élé/ | c'élé | c'élé | [c'élé] | 'sand' |
| /kúβà/ | [kúβà] | ---- | ---- | 'chicken' |

Historically, this certainly must have been the case, since each stage is phonetically motivated. But from a synchronic point of view, it seems that positing a rule that converts a penultimate H

into a F tone which is always simplified to H before a D tone requires further justification.

5. AVOIDANCE OF POSSIBLE MERGER

It was observed in previous sections that an underlying H tone can be lowered to a L° tone when preceded by a L and followed by pause. Illustrations are given in (17):

(17) /d'icé/ → [d'icé°] 'egg'
 /βipòní/ → [βipòni°] 'bird'

Furthermore, the derived L° was noted to remain distinct from underlying final L, as seen in (18):

(18) /tábà/ → [tábà] 'goat'
 /pèlèlè/ → [pèlèlè] 'termite'

The distinction between the final tones of (17) and (18) is one of non-falling vs. falling L tone, respectively. The realization of the pitch patterns of these nouns is given in (19):

(19) d'icé° → [_ _]
 βipòni° → [_ _ _]
 tábà → [_ _]
 pèlèlè → [_ _ _]

This distinction is apparently maintained to avoid a possible merger between the tone sequences L-H vs. L-L, and L-L-H vs. L-L-L.

In addition, a trisyllabic noun with an underlying tone pattern of L-L-L can further distinguish itself from the derived tone pattern of L-L-H by becoming H-H-L. This process would seem to require a rule of the form in (20):

(20) L-L-L → H-H-L

The form right of the arrow further undergoes rule (5) to surface phonetically as H-F-L.

A noun of the tone class L-L-L can undergo a rule of the type posited in (20) since there are no underlying H-H-L nouns for L-L-L to merge with. (Note that the resulting phonetic H-F-L remains distinct from underlying L-H-L/surface L-F-L by the tone of its prefix.) On the other hand, a disyllabic L-L noun cannot

undergo a rule similar to (20) to become H-L, since it would merge with underlying H-L nouns. There thus seems to be an attempt to avoid mergers.

6. THE RISING TONE

Rising tones (R) are extremely rare with only two instances having been found in the data. None were found to occur in pre-pause position or isolation. They occur, however, in non-pre-pause position or non-isolation, as seen in (21):

- (21) èkò ndîrà 'that's a leg'
leg is that

Note that the R tone occurs on the final syllable of [èkò] when in non-pre-pause or non-isolation. If in isolation, however, there is no R (i.e. [èkò°]). This seems to suggest that the R tone is a sequence of L followed by H on a single vocalic segment, and that when the H tone is preceded by L and followed by pause, it undergoes rule (9). Again, such a tone sequence of L followed by H was probably on two syllables, perhaps separated by an intervening consonant, historically.

7. REDUPLICATION

In the Kombe equivalent of English noun phrases with the adjective 'every' (e.g. 'every egg'), the noun is reduplicated. Noun reduplication is characterized by a full repetition of the segments, with /té/ (a marker that indicates noun repetition) occurring between the two identical forms. Tonal alternations which affect nouns before pause are also observed. For the purpose of clarity, examples are given in (22) of nouns that begin with initial consonants. In this way the tone alternations are predictable by the rules already given.

- (22) a. /tàbà + té + tàbà/ → [tàbàtétàbà]
goat goat 'every goat'
b. /ďícé + té + ďícé/ → [ďícétéďícé°]
egg egg 'every egg'
c. /βìpòní + té + βìpòní/ → [βìpònítéβìpòní°]
bird bird 'every bird'
d. /kúfà + té + kúfà/ → [kúfàtékúfà]
chicken chicken 'every chicken'

- e. /mòlémà + té + mòlémà/ → [mòlémàtémòlémà]
heart heart 'every heart'
f. /pèlèlè + té + pèlèlè/ → [pèlèlètépèlèlè]
termite termite 'every termite'
g. /célé + té + célé/ → [célétécélé]
sand sand 'every sand'
h. /mònángá + té + mònángá/ → [mònángátémònángá]
star star 'every star'

The underlying forms are given in the first column. In (22a), note that there is no tonal alternation when the noun is bisyllabic L-L. In (22b,c), the final H tone is lowered to L° by rule (9). In (22d,e,f), the penultimate H tone becomes a F tone by the application of rule (5). In (22f), L-L-L becomes intermediate H-H-L by rule (20) and then H-F-L by rule (5). In (22g,h), the final H tone is lowered to a D by rule (12).

/té/ and the noun are contracted if the noun begins with an initial vowel, as seen in (23). Therefore, the process is complicated by the fact that the vowel of /té/ is deleted, but its tone remains.

- | (23) | (1) | (2) | (3) | (4) |
|------|-----------------------------------|----------------|---------------|-----------------------------------|
| a. | /èlè+té+èlè/ tree tree | èlètèèlè | èlètèlè | [èlètèlè] 'every tree' |
| b. | /ìyùngá+té+ìyùngá/ tooth tooth | ìyùngátèìyùngá | ìyùngátìyùngá | [ìyùngátìyùngá°] 'every tooth' |
| c. | /ìlálì+té+ìlálì/ stone stone | ìlálìtèìlálì | ìlálìtìlálì | [ìlálìtì'lálì] 'every stone' |
| d. | /ìkáyì+té+ìkáyì/ leaf leaf | ìkáyìtèìkáyì | ìkáyìtìkáyì | [ìkáyìtìkáyì] 'every leaf' |
| e. | /èbò+té+èbò/ hand hand | èbòtèèbò | èbòtèbò | [èbòtè'bò] 'every hand' |
| f. | /èkò+té+èkò/ leg leg | èkòtèèkò | èkòtèkò | [èkòtèkò°] 'every leg' |

The underlying forms are given in column (1). Vowel deletion applies to /té/ in column (2). Rule (14) creating a D tone can apply to column (2) or (3). In column (3) the H tone of /té/ and the L tone of the noun prefix are joined together to form a F tone. The L tone portion of the F tone is deleted by rule (15) in (23a, c, e) in column (4). The remaining F tones of (23b, f) are simplified to H by a tone simplification rule to be given below. Note,

however, that rule (9), which creates the L° tone, fails to apply to (23a), column (4), since the tone sequence is H-D and not L-H. The final H of (23b,f) are, nevertheless, lowered to L° by rule (9). The penultimate H tone of (23c), column (4) undergoes rule (5). The final H of (23d), column (4), undergoes rule (12).

Nouns of the tone class L-L-L that contract with /té/ undergo a process seen in (24):

| | | | | |
|------|------------------|---------------------------|---------------------------|-----------------------------|
| (24) | /ibùmù+té+ibùmù/ | ibùmùt ^h ibùmù | ibùmùt ^h ibùmù | [ibùmùt ^h ibùmù] |
| | belly belly | | | 'every belly' |

The underlying form is given in the first column. In the second column, the vowel of /té/ is deleted, and the tones of the noun to the right of /té/ are raised by rule (20). Then, the tone of /té/ and that of the prefix of the noun are joined together on a single vocalic segment. The two H tones on the one vocalic segment are then reduced to a single H tone by the application of a rule to be given below. The penultimate H which results becomes a F by the penultimate rule (5).

| | | | | | | | | | |
|------|---|---|---|---|---|-----|---|---|--------------------|
| (25) | L | → | ∅ | / | H | ___ | L | T | (where T = H or L) |
|------|---|---|---|---|---|-----|---|---|--------------------|

This rule deletes the L portion of a F tone as illustrated in (23b, f), column (4).

| | | | | | | |
|------|---|---|---|---|---|-----|
| (26) | T | → | ∅ | / | T | ___ |
|------|---|---|---|---|---|-----|

This rule deletes one of two identical tones occurring on a single vocalic segment, as illustrated in (24), column (4).

8. 'WHICH' CONSTRUCTIONS

The interrogative construction involving 'which' is characterized by the affixes /rá...é/, morphotonemic alternations whereby the L tones of all nouns are replaced by H, penultimate vowel lengthening, and vowel contraction. Illustrations are seen below.

| | | | | | |
|------|--------------------------|-------------|------------------------|-------------------------|---|
| (27) | (1) | (2) | (3) | (4) | (5) |
| a. | /rá+tábà+é/ goat | rá tábá é | rátáb ^h é | rátááb ^h é | [rátááb ^h é] 'which goat?' |
| b. | /rá+nèlèlè+é/ termite | rá nèlélé é | ránélél ^h é | ránéléél ^h é | [ránéléél ^h é] 'which termite?' |
| c. | /rà+dícé+é/ egg | rá dícé é | rádíc ^h é | rádífic ^h é | [rádífic ^h é] 'which egg?' |

| | | | | | |
|----|------------------------|-------------|------------------------|-------------------------|---|
| d. | /rá+βìpòní+é/ bird | rá βìpóní é | ráβìpón ^h é | ráβìpón ^h é | [ráβìpón ^h é] 'which bird?' |
| e. | /rá+kúfà+é/ chicken | rá kúfá é | rákúf ^h é | rákúúf ^h é | [rákúúf ^h é] 'which chicken?' |
| f. | /rá+mólémá+é/ heart | rá mólémá é | rámólém ^h é | rámóléém ^h é | [rámóléém ^h é] 'which heart?' |
| g. | /rá+célé+é/ sand | rá célé é | rácél ^h é | rácéél ^h é | [rácéél ^h é] 'which sand?' |
| h. | /rá+úpólú+é/ chief | rá úpólú é | rópól ^h wé | rópóól ^h wé | [rópóól ^h wé] 'which chief?' |
| i. | /rá+éβó+é/ hand | rá éβó é | ráb ^h wé | rááb ^h wé | [rááb ^h wé] 'which hand?' |
| j. | /rá+ékò+é/ leg | rá ékò é | rák ^h wé | ráák ^h wé | [ráák ^h wé] 'which leg?' |

The underlying forms are given in column (1). In column (2), the L tones of the nouns are replaced by H. Vowel contraction takes place in column (3) in conjunction with tone deletion. Note that the final vowel of a noun is deleted unless it is /u/, /o/ or /ɔ/, which become a glide [w], as seen in (27h,i,j). Furthermore, note that the initial vowel of a noun coalesces with the vowel of /rá.../ (e.g. a + u → ɔ in (27h,i,j)). In column (4), penultimate vowel lengthening takes place in conjunction with H tone copying. Finally, in column (5), the final H tone undergoes the change to D by rule (12).

9. ASSOCIATIVE CONSTRUCTIONS

The associative constructions (noun-noun, noun-possessive pronoun) are next to be considered. These constructions are characterized by some morphotonemic alternations that affect nouns, and the occurrence of an associative morpheme between two nouns or a noun and a possessive pronoun.

9.1. Noun-Noun in Association

The examples of (28) illustrate the tonal alternations which occur in possessive constructions in which N₁ is the possessed noun and N₂ the possessor. The associative morpheme is represented by /a/, which can have either H or L tone (the latter with noun classes 1 and 9). With some noun classes a consonantal concord shows up on the associative morpheme.

| | | | |
|---------|---|---|---|
| (28) a. | /d̄fɪnà + jǎ + mwánà/ name of child | → | [d̄fɪnǎjǎmwánà] 'a child's name' |
| b. | /ɪkɔ́dù + jǎ + tàbà/ neck of goat | → | [ɪkɔ́dùjǎtàbà] 'a goat's neck' |
| c. | /èb̄s̄ + á + mwánà/ hand of child | → | [èb̄s̄ámwánà] or [èb̄wámwánà] 'a child's hand' |
| d. | /ìb̄àyi + jǎ + tàbà/ liver of goat | → | [ìb̄àyìjǎtàbà] 'a goat's liver' |
| e. | /ìkáyí + jǎ + mwánà/ leaf of child | → | [ìkáyíjǎmwánà] 'a child's leaf' |
| f. | /ìyùngá + jǎ + mwánà/ tooth of child | → | [ìyùngájǎmwánà] 'a child's tooth' |
| g. | /èk̄ò + á + mwánà/ leg of child | → | [èk̄òámwánà] or [èkwámwánà] 'a child's leg' |
| h. | /wéyi + à + mwánà/ fish of child | → | [wéyiamwánà] 'a child's fish' |
| i. | /kúbà + à + mwàd̄ó/ chicken of woman | → | [kúbà(à)mwàd̄ò°] 'a woman's chicken' |
| j. | /tàbà + à + mwàd̄ó/ goat of woman | → | [tàbà(à)mwàd̄ò°] 'a woman's goat' |

Observe in examples (28a,b,c) that the H tone associative morpheme has a tone raising effect on the final L of N₁. Given only the examples (28a,b,c), one might suggest that the H tone associative morpheme raises the final L of all nouns in N₁ position. Note, however, that (28d) shows that when a L-L-L noun occurs as N₁ before a H tone associative morpheme, all L tones remain L (i.e. there is no L tone raising). Moreover, notice in examples (28e,f,g) that final H tones of N₁ remain unaffected. Finally, in examples (28h,i,j) the final L of N₁ remains unaffected if the associative morpheme also has L tone.

Consequently, the examples in (28) appear to suggest that the conditioning factor for L tone raising is a tone sequence of H followed by L to occur before the H tone associative morpheme. The tone sequence of H followed by L can occur over two syllables as observed in (28a,b) or on a single syllable as seen in (28c).

Thus, the examples of (28a,b,c) are accounted for by rule (29):

(29) L → H / H — assoc [H

Finally, it should be noted that N₂ of examples (28a,c,e,f,g,h)

undergoes rule (5), deriving a F tone in penultimate position. Also, in examples (28i,j), N₂ undergoes rule (9) to derive L°.

9.2. Noun-Possessive Pronoun in Association

The noun-possessive pronoun construction is characterized by the same tonal alternations as seen in the noun-noun associative construction. Illustrations are given in (30).

| (30) | (1) | (2) | (3) |
|------|------------------------------------|-------------|-----------------------------|
| a. | /d̄fɪnà + jǎ + àmè/ name of my | d̄fɪnàjǎǎmè | [d̄fɪnǎjǎmè] 'my name' |
| b. | /ɪkɔ́dù + jǎ + àmè/ neck of my | ɪkɔ́dùjǎǎmè | [ɪkɔ́dùjǎmè] 'my neck' |
| c. | /ìb̄àyi + jǎ + àmè/ liver of my | ìb̄àyìjǎǎmè | [ìb̄àyìjǎmè] 'my liver' |
| d. | /ìkáyí + jǎ + àmè/ leaf of my | ìkáyíjǎǎmè | [ìkáyíjǎmè] 'my leaf' |
| e. | /ìyùngá + jǎ + àmè/ tooth of my | ìyùngájǎǎmè | [ìyùngájǎmè] 'my tooth' |
| f. | /kúbà + à + àmè/ chicken of my | kúbààǎmè | [kúbà(à)mè] 'my chicken' |
| g. | /tàbà + à + àmè/ goat of my | tàbààǎmè | [tàbà(à)mè] 'my goat' |

The underlying forms are given in column (1). In these derivations the same basic processes are observed as before: first, vowel deletion in column (2), and then the various tonal operations captured by the rules discussed above. It is suggested that these processes will have generality not only for other aspects of the Kombe noun phrase, but also in the verb phrase.

NOTE

1. The data for this study was collected during the academic year by the author and Linda Arvanites for a seminar project in Bantu Tonology conducted by Professor Larry Hyman at the University of Southern California. I am very grateful to Mr. and Mrs. Thomas and Pilara Malango, who served as language consultants. Without them, this study would not have been possible. I am very much indebted to Professor Hyman for his many suggestions and comments on earlier drafts of this paper. In addition, thanks are also due to the members of the seminar in Bantu Tonology for their comments and suggestions during my class presentation of a preliminary draft of this paper. I alone, of course, am responsible for any shortcomings which may appear in the actual analysis.

| Underlying Tone Patterns | Nouns in Isolation | Demonstrative Construction | Demonstrative Construction | Demonstrative Construction | Identification Construction | Identification Construction |
|--------------------------|--------------------|----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|
| L-L | tàbà 'goat' | tàbà mènì | tàbà mèrà | tàbà ndínì | tàbà ndírà | tàbà ndírà |
| L-L-L | fùmù 'belly' | ìbùmù méjì | ìbùmù méjírà | ìbùmù ndíjì | ìbùmù ndíjírà | ìbùmù ndíjírà |
| L-H | èlè 'tree' | èlè mènì | èlè mèrà | èlè ndínì | èlè ndírà | èlè ndírà |
| L-L-H | βìnònì° 'bird' | βìnònìf mèjì | βìnònìf mèjírà | βìnònìf ndíjì | βìnònìf ndíjírà | βìnònìf ndíjírà |
| H-L | kùbà 'chicken' | kùbà mènì | kùbà mèrà | kùbà ndínì | kùbà ndírà | kùbà ndírà |
| L-H-L | ìlálì 'stone' | ìlálì méjì | ìlálì méjírà | ìlálì ndíjì | ìlálì ndíjírà | ìlálì ndíjírà |
| H-H | célé 'sand' | célé mènì | célé mèrà | célé ndínì | célé ndírà | célé ndírà |
| L-H-H | ìkáyì 'leaf' | ìkáyìf mèjì | ìkáyìf mèjírà | ìkáyìf ndíjì | ìkáyìf ndíjírà | ìkáyìf ndíjírà |
| | | 'this X' | 'that X' | 'this is a X' | 'that is a X' | |

TABLE OF NOUNS IN PRE-PAUSE AND NON-PRE-PAUSE POSITION (i)

| Object of the verb 'to see' | Followed by 'yesterday' | Adjectival | Adjectival | Adjectival | Adjectival | Numeral |
|-----------------------------|-------------------------|--------------------|--------------------|--------------------|------------------|-------------------|
| à tóyèndì tàbà | à tóyèndì tàbà kólò | tàbà nèžèpì | tàbà étúbwè | tàbà nèb̀̀̀lò | tàbà nèb̀̀̀lò | tàbà èpókò |
| à tóyèndì fùmù | à tóyèndì fùmù kólò | màbùmù màžèpì | ìbùmù f̀̀̀túbwè | màbùmù màb̀̀̀lò | ìbùmù màb̀̀̀lò | ìbùmù ipókò |
| à tóyèndì èlè | à tóyèndì èlè kólò | b̀̀̀elè b̀̀̀fèžèpì | èlè étúbwè | b̀̀̀elè b̀̀̀b̀̀̀lò | èlè b̀̀̀b̀̀̀lò | èlè èpókò |
| à tóyèndì βìnònì° | à tóyèndì βìnònìf kólò | ìnònìf lèžèpì | βìnònìf b̀̀̀étúbwè | ìnònìf lèb̀̀̀lò | ìnònìf lèb̀̀̀lò | βìnònìf p̀̀̀epókò |
| à tóyèndì kùbà | à tóyèndì kùbà kólò | kùbà nèžèpì | kùbà étúbwè | kùbà nèb̀̀̀lò | kùbà nèb̀̀̀lò | kùbà èpókò |
| à tóyèndì ìlálì | à tóyèndì ìlálì kólò | màlálì màžèpì | ìlálì f̀̀̀túbwè | màlálì màb̀̀̀lò | ìlálì màb̀̀̀lò | ìlálì ipókò |
| à tóyèndì célé | à tóyèndì célé kólò | céle nèžèpì | ----- | céle nèb̀̀̀lò | céle nèb̀̀̀lò | ----- |
| à tóyèndì ìkáyì | à tóyèndì ìkáyìf kólò | màkáyìf màžèpì | ìkáyìf f̀̀̀túbwè | màkáyìf màb̀̀̀lò | màkáyìf màb̀̀̀lò | ìkáyìf ipókò |
| 'he saw a X' | 'he saw a X yesterday' | 'all of X' | 'big X' | 'many/much X' | 'one X' | |

TABLE OF NOUNS IN PRE-PAUSE AND POST-PAUSE POSITION (ii)

REFERENCE

Guthrie, Malcolm. 1967. Comparative Bantu, Vol. I. Farnborough Heights: Gregg International Publishers.

STUDIES IN BANTU TONOLOGY
Southern California Occasional Papers
in Linguistics No. 3, December 1976
Edited by Larry M. Hyman

KIMBUNDU NOMINALS: TONE PATTERNS IN TWO CONTEXTS

BY

LINDA ARVANITES

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF CALIFORNIA
LOS ANGELES, CALIFORNIA 90024

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

For this preliminary investigation of tonal data in Kimbundu,¹ nominals were elicited in three different contexts: in isolation, in pre-L (low) position, and in pre-H (high) position. Nominals did not change their isolation tone patterns when followed by the L-toned possessive marker /-è/ 'his/her'. Tone patterns did change before the HD (high followed by downstep) possessive marker /-éé/ 'your (sg.)'. Hence, we shall consider two sets of tone patterns: "surface" or isolation and pre-L (-è) patterns versus "underlying" or pre-H (-éé) patterns.

The four tone patterns found in isolation and pre-L contexts on prefixed, disyllabic roots are as given in (1).

- (1) H-LL H-MM H-ML L-HL

These patterns correspond to the following pre-H patterns in (2).

- (2) L-LH L-HH L-HL L-LL²

These latter patterns are termed "underlying", in line with comparative Bantu data.

The following table summarizes the underlying (pre-H) tone pattern distribution for stems. Prefixes, which are historically L, are omitted as they are uniformly L in this context (cf. (2)).

| Tone patterns | Syllable Structure (Prefix-)Stem | | | | |
|---------------|----------------------------------|-------|-------|--------|---------|
| | CV-CV | ∅CVCV | C-VCV | N-CVCV | CV-CVCV |
| 1 | L | L L | L L | L L | L L |
| 2 | H | L H | L H | L H | L H |
| 3 | | H H | H H | H H | H H |
| 4 | | | L̂H L | | H L |

TABLE I: Distribution of Underlying Tone Patterns

Table I shows the expected patterns for monosyllables (either H or L in an underlying two-tone system). The possible combinations of these two tones on two moras in disyllabic forms are also seen.

In Table II below, however, the syllable structure breakdown of surface (i.e. isolation and pre-L) tone patterns reveals greater tonal variety than in the underlying patterns. Note that the first four columns, rows 2-4, contain falling tone prefixes for morphologically marked structures: these falling tones stretch out, or

| Tone patterns | Syllable Structure (Prefix-)Stem | | | | |
|---------------|----------------------------------|--------------------|--------------------|--------------------|---------|
| | CV-CV | ∅CVCV | C-VCV | N-CVCV | CV-CVCV |
| 1 | H- L | H L | H L | H L | L- H L |
| 2 | L̂L L | L̂L L | L̂L L | L̂L L | H- L L |
| 3 | | ĤM M ³ | ĤM M ³ | ĤM M ³ | H- M M |
| 4 | | | ĤM L ³ | | H- M L |

TABLE II: Distribution of Surface Tone Patterns

are accommodated one tone per mora in the larger syllable structure in column 5. Notice that the underlying H of CV-CV in Table I is identified with underlying L-H rather than H-H, since it involves the same HL falling contour as the surface realization of L-H in Table II (cf. rows 2 and 3 in the two tables).

Table III illustrates the various tonal alternations in reverse; that is, from "surface" to "underlying" patterns.

As a first general observation, note that surface M corresponds to underlying H. In fact, any sequence HH will dissimilate in a manner as shown in (3),

- (3) H → M / H ____

where M (mid tone) may ultimately be reanalyzed as a 'H or D (downstep).⁴ Rule (3) accounts for the seemingly anomalous HD pronoun -éé, in a system of L or HL possessive stems. It also accounts for the difference between the penultimate (underlined) and antepenultimate syllable in (4),

- (4) kù bá tú là kw éé 'your cutting'
 15 cutting 15 your
 L H D L HD

where the (word-) penultimate syllable is slightly lower than the preceding H. (Vowels in penultimate position are routinely lengthened as well.) One may effectively attribute the peculiarities of the penultimate syllable to a factor such as stress. Stress could account for the sole L-initial surface pattern, L-HL. Not only is this pattern unique among surface tone patterns due to its initial L, it is also the only pattern to contain an unlowered H (=M) in non-initial position. One could argue that stress accounts for this H in that it pulls the H of the surface prefix to penulti-

| Underlying tone pattern | Noun in isolation | Noun + his/her pre-L (-è) | Noun + your (sg.) pre-H (-éé) | Gloss | Pre-H to pre-L correspondence |
|-------------------------|-------------------|---------------------------|-------------------------------|------------------------------|-------------------------------|
| L | CV-CV | mú-tù w-è | mùtù w-éé | 1. person | L-L → H-L |
| LL | ØCVCV | hínà y-è | hinà y-éé | 2. louse | |
| | C(G)VCV | mwíjì w-è | mwíjì w-éé | 3. family | |
| | N-CVCV | m-búdi y-è | mbúdi y-éé | 4. sheep | |
| | CV-CVCV | di-vúmbù dy-è | divúmbù dy-éé | 5. pile of grass for burning | L-LL → L-HL |
| H | CV-CV | dí-fè dy-è | difé dy-éé | 6. leaf | L-H → HL-L |
| LH | ØCVCV | kùkù y-è | kúkù y-éé | 7. grandfather | LH → HL L |
| | C(G)VCV | dy-éjì dy-è | dyéjì dy-éé | 8. moonlight | |
| | N-CVCV | n-géla y-è | ngéla y-éé | 9. horn | |
| | CV-CVCV | dí-kwákù dy-è | dikwákù dy-éé | 10. hand | L-LH → H-LL |
| HL | C(G)VCV | kw-àlà kw-è | kwàlà kw-éé | 11. being | HL L → HL L |
| | CV-CVCV | má-pyíngà m-è | mányingà m-éé | 12. blood | L-HL → H-ML |
| | N-CVCVCV | n-dúulù y-è | ndúulù y-éé | 13. liver | LHL → HML |
| | CV-VVCV | kw-ímànà kw-è | kwimànà kw-éé | 14. standing up | |
| | CV-CVCVCV | kú-bátulà kw-è | kubátulà kw-éé | 15. cutting | L-HHL → H-MML |
| HH | ØCVCV | dímí dy-è | dímí dy-éé | 16. tongue | HH → HM M |
| | CV-VCV | dí-álā dy-è | díalā dy-éé | 17. male | L-HH → H-MM |
| | N-CVCV | m-béjì y-è | mbéjì y-éé | 18. moon | HH → HM M |
| | CV-CVCV | dí-jínā dy-è | díjinā dy-éé | 19. name | L-HH → H-MM |

TABLE III: Isolation, Pre-L and Pre-H Tone Pattern Distribution in Kimbundu Nominals

NOTES: (1) Those H-LL nouns which become L-HH (instead of L-LH) (see examples 7-10) before -éé are excluded here. See tone class (2d) in text.

(2) Monosyllabic stems in underlying H are not joined to any of the following tone classes. That is, example 6 appears by itself because it probably represents a neutralization of LH, HL and HH on monosyllabic stems.

(3) Examples 1-6 diverge from examples 7-19 because the former encompass monosyllabic stems while the latter represent tone patterns which must be realized on two or more moras, excluding the L of the prefix.

mate position in those patterns which are otherwise unmarked, i.e. all L-toned.

This leads to the question of why an underlying L on the prefix gets realized in isolation or pre-L position as a H. A possible cause is "dissimilation from the preceding pause", but an even more explanatory, and diachronically more convincing reason is that the H is evidence of the (lost) preprefix, a historically H-toned morpheme (suggested by Larry Hyman, personal communication). This would-be "floating tone" (the preprefix being segmentally absent in this corpus, if not in the language as a whole) is realized on the prefix of most surface tone patterns (cf. (1) and Table I). The sole exception to this, L-HL, is an underlying L-LL pattern. Stress-attraction of the H of the preprefix has just been offered as an extenuating factor causing the asymmetry seen in Table I (row 1, column 5) among otherwise H-initial surface tone patterns.

In the following illustration of the different tone classes and tonal alternations, the rules given are assumed to operate in the two environments, pre-L and pre-pause.

Tone Class 1: Underlying L series

a. L-L → H-L

| | | | |
|---------|--------------|----------|--------------|
| mu tu | 'person' | kw a mba | 'saying' |
| mu dya | 'intestine' | kw a za | 'scratching' |
| mu ji | 'belly' | kw e nda | 'walking' |
| di ju | 'tooth' | kw i vwa | 'hearing' |
| hi na | 'louse' | kw i za | 'coming' |
| sa nji | 'fowl' | m bu di | 'sheep' |
| mw i ji | 'family' | m bu ndu | 'seed' |
| ky a la | 'fingernail' | n ji la | 'road' |
| ky a ma | 'animal' | | |

b. L-LL → L-HL

| | | | |
|------------|-----------------------------|-----------|------------------------|
| mu di ngi | 'clay pot' | ku ba nga | 'fighting' |
| mu ji tu | 'guest' | ku di la | 'crying' |
| mu ko nji | 'giant' | ku di ma | 'farming' |
| mu mbu ndu | 'black person' | ku fu nda | 'bartering/burying' |
| ma lu vu | 'palm wine' | ku fu nga | 'mixing' |
| ki ko nda | 'skin' | ku ji ba | 'killing' |
| ki ma nga | 'box' | ku ko ka | 'cutting down' |
| ki xi nji | 'root' | ku lo nga | 'teaching' |
| lu mbu ndu | 'single seed' | ku lu ka | 'being similar' |
| u mbu ndu | 'prostitution' | ku lu la | 'being bitter tasting' |
| di vu mbu | 'pile of grass for burning' | ku lu nga | 'being right' |
| | | ku mi nya | 'swallowing' |
| | | ku ne na | 'defecating' |
| | | ku nu ha | 'stinking' |

c. L-LL → L-HL

| | | | |
|-----------|-------------------|-----------|-----------------|
| ku sa nga | 'meeting/dancing' | ku su nga | 'pulling' |
| ku sa sa | 'raising' | ku wa na | 'dividing' |
| ku se ta | 'carving' | ku wi ma | 'breathing' |
| ku so nga | 'whittling' | ku za la | 'spreading out' |
| ku so ta | 'searching' | ku zwe la | 'speaking' |

Tone Class 2: Underlying H (monosyllabic) and LH (bisyllabic) stem series

a. L-H → HL-L

| | | | |
|--------|-----------|--------|------------------|
| mu twe | 'head' | ku ba | 'giving' |
| mu xi | 'tree' | ku bwa | 'falling' |
| di fe | 'leaf' | ku bya | 'burning' |
| di su | 'eye' | ku dya | 'eating' |
| di twi | 'ear' | ku fwa | 'dying' |
| di xi | 'smoke' | ku nwa | 'drinking' |
| im bwa | 'dog' | ku ta | 'putting/giving' |
| in zo | 'house' | ku ya | 'going' |
| i xi | 'land' | | |
| ma la | 'viscera' | | |
| ma te | 'saliva' | | |
| tu bya | 'fire' | | |

b. LH → HL L⁵

| | | | |
|----------|----------------------|----------|---------|
| ko lo | 'cup' | w a lwa | 'beer' |
| ku ku | 'grandfather' | n de mba | 'hair' |
| ma ma | 'mother' | n ge la | 'horn' |
| so ba | 'chief' | n ge nji | 'guest' |
| ta ta | 'father' | n gi ji | 'river' |
| mw a di | 'husband' | n go ji | 'rope' |
| mw a mwa | 'feather' | n gu bu | 'spear' |
| mw a nya | 'sun' | | |
| mw i mbi | 'singer' | | |
| mw o na | 'child' (pl. a-a na) | | |

c. L-LH → H-LL

| | | | |
|-----------|-------------------------------|------------|-----------------------|
| mu lo nde | 'bridge' | ki ba ba | 'wing' (also di-baba) |
| di kwa ku | 'hand' (pl. ma-a ku) | lu kwa ku | 'arm' (pl. ma-a ku) |
| di ta bu | 'stream' | lu nde mba | 'single hair' |
| di ta nga | 'kind of melon' | u to kwa | 'ash' |
| di to kwa | 'end of mourning celebration' | ku ba nga | 'making' |

Note that there are some surface H-LL nouns which do not correspond to underlying L-LH but rather to underlying L-HH. These are troublesome in that it is not possible to say which H-LL on the surface are realizations of which underlying pattern. These exceptional nouns are given below as tone class (2d). They should however also be compared with tone class (4c) below.

d. L-HH → H-LL⁶ (cf. 4c below)

| | | | |
|-----------|---------------|--------------|-------------|
| mu ha tu | 'wife' | te te mbwa | 'star' |
| ki zu wa | 'day' | ki se ke le | 'sand dune' |
| ka mbu ta | 'dwarf' | ki se ke nya | 'sand' |
| ku bi ta | 'passing' | | |
| ku lo nga | 'dispatching' | | |

Tone Class 3: Underlying HL series

a. LH L → HM L

| | |
|---------|---------|
| kw a la | 'being' |
|---------|---------|

b. L-HL → H-ML

| | | | |
|------------|----------------------|------------|-----------------|
| ma nyi nga | 'blood' | kw e le la | 'laughing' |
| ku ba na | 'giving' | kw i ji ya | 'knowing' |
| ku be ka | 'bringing' | kw i ma na | 'standing up' |
| ku bu la | 'breaking' | kw i za la | 'becoming full' |
| ku bu sa | 'blowing' | n du lu lu | 'liver' |
| ku dya ja | 'scratching oneself' | | |
| ku kwa ma | 'being wounded' | | |
| ku kwa ta | 'seizing' | | |
| ku nju wa | 'dreaming' | | |
| ku nya na | 'stealing' | | |
| ku swe ka | 'hiding' | | |
| ku tu ka | 'jumping' | | |
| ku tu la | 'depositing' | | |
| ku vwa la | 'giving birth' | | |
| ku ze ka | 'lying down' | | |
| ku zwa ta | 'dressing oneself' | | |

c. L-HHL → H-MML

| | | | |
|--------------|------------------------|---------------|----------------|
| ku ba tu la | 'cutting' | ku lu ma ta | 'biting' |
| ku be ta ma | 'bending' | ku ngo ngo na | 'snoring' |
| ku fu ngu la | 'stirring' | ku su ku la | 'washing' |
| ku ji ka ta | 'burning boiling food' | ku su mbi sa | 'selling' |
| ku ji ma ta | 'burning frying food' | ku ta mbwi ja | 'answering' |
| ku ka ye la | 'following' | ku te me sa | 'boiling' |
| ku ku lu la | 'skinning' | ku wa be la | 'desiring' |
| ku lo lo ka | 'swearing' | ku wa vu la | 'crawling' |
| | | ku xi ka ma | 'sitting down' |

Tone Class 4: Underlying HH series (N.B. no monosyllabic stems)

a. HH → HM M

| | | | |
|--------|-----------------------|----------|------------|
| tu mbu | 'navel' (3/4, not 13) | m be ji | 'moon' |
| ho mbo | 'goat' | m bi ji | 'fish' |
| ku ngu | 'crab' | m vu la | 'rain' |
| pa nge | 'sibling' | n ga na | 'senhor' |
| xi ngu | 'neck' | n yo ka | 'snake' |
| xi tu | 'meat' | n za mba | 'elephant' |
| di mi | 'tongue' (5/6+5) | | |

b. LHH → HMM

di a la 'male'

c. L-HH⁷ → H-MM⁸

| | | | |
|-----------|---------------------|-----------|-----------------|
| mu ki la | 'tail' | ku ka ma | 'squeezing' |
| mu le nge | 'wind' | ku ku la | 'growing' |
| mu xi ma | 'heart' | ku lo za | 'shooting' |
| di ji na | 'name' | ku mo na | 'seeing' |
| di ta di | 'stone' | ku no ka | 'raining' |
| di zu nu | 'nose' | ku su mba | 'buying' |
| ki fu ba | 'bone' | ku ta mba | 'fishing' |
| ki lu mba | 'girl' | ku ta nga | 'reading' |
| ki ta nga | 'suppurating wound' | ku te ka | 'drawing water' |
| u su ku | 'night' | ku tu ma | 'sending' |
| | | ku tu nga | 'sewing' |
| | | ku zo la | 'loving' |

Summary. 1) Surface tones are H, \widehat{HL} , L and M. Falling tones occur on prefixes only. Surface prefixes are either H or \widehat{HL} . Surface \widehat{HL} prefixes mark an underlying H-containing stem (see Table III). Surface H prefixes signal an underlying L root: for monosyllables only. The usual H surface prefix has skipped to penultimate position in underlying L-LL nouns. 2) M occurs medially only, as the surface allotone of H--which also occurs medially only, as the class prefix and nominal suffixes are L-toned, for the most part. 3) Sequences of H (and thus, of its allotone, M) lower (HM = H'H). 4) Tone class (2d) constitutes an inexplicable set of surface medial L's which correspond not to L, but to underlying H. 5) Underlying \widehat{LH} , occurring once in the corpus on kwàlà 'to be', belongs to the set L-HL, and is thus not tonemic. The system contains underlying L and H--that is, this is an underlying two tone system (cf. Table III, column 6a).

NOTES

¹I would like to thank Mr. Joao Sodre David Goncalves da Costa, on whose speech this study is based. Comments and suggestions from Larry M. Hyman have been an essential part of the development of this paper. I hereby express both thanks and acknowledgement.

²Some H-LL nouns contextualized unexpectedly as L-HH, instead of the L-LH pattern shown (see tone class 2d below).

³Marked \widehat{HM} as a convenience: a falling tone (^) was heard for these initial syllables. They were not heard as distinct from

initial syllables whose falling tone is \widehat{HL} . Only their underlying pattern indicates the series they belong to: the fall, whether \widehat{HM} or \widehat{HL} , can be seen as evidence for neutralization of tone patterns for less than disyllabic, prefixed structures. Of course, row 2 is distinguished from row 4 by L versus M as the post-H tone.

⁴The notation M assumes that there is no successive lowering of H tones within the phrase, a property inherent in the 'H or D' notation. Unfortunately the data are lacking to test if such lowering exists or not. Thus, the aptness of M vs. 'H or D' cannot be resolved here; HD is used only for the pronoun /-éé/ 'your (sg.)', since the interval seems smaller than the HM falling tone observed in surface noun patterns.

⁵One token, njílà 'bird' is exceptional in this environment. The form njílà yéé 'your bird' shows a HL instead of a LH pattern. Compare njílà 'road'.

⁶Still another HLL word with a surprising pattern before -éé is mesene 'teacher'. A borrowing from the Portuguese, the pattern is HLH before 'your'. This word has no prefix; neither does tetembwa 'star' above. All other HLL words are prefixed.

⁷Note the compound sékūlū 'grandfather' (se 'his father' + kulu 'great/big') which is HHH before -éé.

⁸One HMM noun is problematic: kujima 'extinguishing' is LLL before -éé.

TONE REVERSAL IN CILUBA--A NEW THEORY

BY

IAN MADDIESON

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF CALIFORNIA
LOS ANGELES, CALIFORNIA 90024

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

1. INTRODUCTION

Since the publication of Hulstaert's (1941) comparative paper on the tonology of Lomongo and Ciluba, it has generally been accepted that the tones in Ciluba have been "reversed" from their values in Proto-Bantu (PB); in other words, PB high tone has become Ciluba low tone and PB low tone has become Ciluba high tone. The detailed monograph by Coupez (1954) states this view simply ("à un ton haut du Bantou correspond un ton bas du Luba, et vice-versa"), while elsewhere in the literature (e.g. Carter 1973) references are made to the "reversive" tone system of Ciluba.

There are obvious difficulties in conceiving how a change which reverses all cases of a binary opposition can take place.¹ In 1971, van Spaandonck attempted to provide a more plausible linguistic explanation for the tonal situation in Ciluba than a straightforward reversal. His approach was first to minimize the extent of the reversal, pointing to cases where Ciluba and Lomongo do not have opposite tones and suggesting that just "a few vocabulary items have created the impression of a reversive system". He then proposed a series of ordered rules, based on rules of tonal displacement, etc., found in other Bantu languages, to explain how an apparent reversal of tones could develop.²

The present paper will 1) seek to establish the extent of the tonal reversal in Ciluba, and 2) propose a theory of the source of the reversed tone values.

2. COMPARISON OF TONES

A comparison of the tones of Ciluba with the tones of one other language, such as Lomongo, risks greater influence from accidental factors and individual word histories than a comparison with the tones of elements reconstructed for PB. Coupez used this more revealing kind of comparison in reaching his conclusion quoted above. Since 1954, however, a great deal of new work on the tones of PB has appeared. In particular, Guthrie added tones to his formulae for "Common Bantu" stems and published these in his massive Comparative Bantu (1967-70). Guthrie's work is weakened by the absence of a sound historical perspective on language but his list is the most extensive source of reconstructed PB stems in the pub-

lished literature. For this reason the items in Comparative Bantu will form the principal basis of the comparison of stems in this paper. Only those forms attributed by Guthrie to his PB-X will be used. Guthrie finds grounds for an early division of PB into Eastern and Western branches. His PB-X is the common ancestor of these two branches and only those roots with both an Eastern and Western distribution are attributed to the PB-X stage. In addition, the forms reconstructed by Greenberg (1948) will be cited. Greenberg has a sounder grasp of diachronic processes in language than Guthrie, but was working from a much smaller data base. Nevertheless, despite these differences, Guthrie and Greenberg are in essential agreement in most of the cases where both offer reconstructions.

In the comparative lists below, the columns contain 1) an English gloss; 2) Guthrie's Common Bantu reconstructed stem, cited with the omission of the unnecessary subscripts on vowels; 3) Greenberg's PB reconstructed stem where available; 4) the cognate word in Ciluba, with an additional gloss if the meaning is substantially different from the gloss of the PB stem. In searching for Ciluba cognates I have used the assistance of two speakers of the language, Batubenge Muamba³ and F. Muyumba Nkongola, as well as published works by Burssens (1939), Coupez (1954), and de Clercq (1960). In addition the dictionary of the sometimes divergent Kiluba dialect by van Avermaet (1954) has been used. Items found only in this source are identified by K. Doubtless a more diligent search would identify a larger number of PB stems with Ciluba cognates, but the number identified here is sufficient to justify strong confidence in the validity of the patterns of correspondence which emerge.

2.1. Noun Stems

Monosyllabic noun stems with both high (H) and low (L) tones have been reconstructed for PB. Those with PB H tone found to have cognates with L tone in Ciluba are given in (1a) below. Two items have PB H tone unchanged in Ciluba, as seen in (1b). In these and subsequent examples, H tone is marked by (´) and L tone by (̀) or zero.

(1) a. PB *H → Ciluba L

| | | | |
|-----------|------|----|------------------------------|
| 'excreta' | -Bí | bí | túmvi ⁴ |
| 'termite' | -CÓÁ | | nswa |
| 'ground' | -CÉ | sé | nshi |
| 'fish' | -CÚ | | kísu K. 'basket for fishing' |
| 'knee' | -DÚ | | cínu |
| 'death' | -KÚ | | lúfu |
| 'duiker' | -KÍÁ | | lúja |
| 'war' | -TÁ | | mvíta |
| 'bow' | -TÁ | tá | búta |
| 'saliva' | -TÉ | tá | lúta |
| 'tree' | -TÉ | té | múci |
| 'head' | -TÓ | tó | mútu |
| 'ear' | -TÓ | | dfcu |
| 'ashes' | -TÓ | | bútu |
| 'pygmy' | -TÓÁ | | mútuwa |

b. PB *H → Ciluba H

| | | | |
|------------|-----|--|-------|
| 'mosquito' | -BÓ | | kámwá |
| 'mortar' | -NÚ | | cínu |

A smaller number of monosyllabic noun stems have been reconstructed with L tone in PB. Among those with H tone cognates in Ciluba are those shown in (2a). There is one unchanged PB L tone item given in (2b).

(2) a. PB *L → Ciluba H

| | | | |
|--------------|------|-------|-------------|
| 'stone' | -BOÉ | boe | dfbwé |
| 'intestines' | -DA | da | ndá, ndâ K. |
| 'root' | -DI | di | múzí |
| 'fly' | -GI | gi | lúzízfí |
| 'finger' | -NOÉ | (noé) | múnú |
| 'person' | -NTO | nto | múntú |

b. PB *L → Ciluba L

| | | | |
|-----------|-----|--|------|
| 'stomach' | -PU | | dfcu |
|-----------|-----|--|------|

All of the four possible sequences of the two tones of PB have been reconstructed as occurring in disyllabic noun stems. Of the four (HH, HL, LL, LH), the HL pattern is the most frequent. Among the PB HL stems with LH reflexes in Ciluba are those given in (3a).

(3) a. PB *HL → Ciluba LH

| | | | |
|------------|--------|--------|------------------------------|
| 'breast' | -BÉÉDÉ | béde | díbelé |
| 'goat' | -BÓDI | bódi | mbuzí |
| 'arm' | -BÓKO | bóko | díbokó |
| 'rain' | -BÚDA | búda | mvulá |
| 'bat' | -DÉMA | | -dimá (stem cited by Coupez) |
| 'tongue' | -DÉMI | déme | lúdimí |
| 'man' | -DÓME | dóme | múlumé |
| 'name' | -GÍNA | gína | díná |
| 'tooth' | -YÍNO | gíno | díènú |
| 'eye' | -YÍCO | gísó | díísú |
| 'smoke' | -YÓKI | góki | múíjí |
| 'bee' | -YÓKE | góke | lúnyikí |
| 'sun' | -JÓBA | zóba | dííbá |
| 'charcoal' | -KÁDA | káda | díkalá |
| 'woman' | -KÁDI | (kádí) | múkazí (Coupez gives -kaji) |
| 'tail' | -KÉDA | kéda | múkilá |
| 'monkey' | -KÉMA | kéma | ncimá |
| 'ten' | -KÓMI | kóme | díkumí |
| 'firewood' | -KÓNI | kóni | nkunyí |
| 'bone' | -KÚPA | | múfubá |
| 'snake' | -NYÓKA | zóka | nyoká |
| 'rat' | -PÓKO | póko | mpukú |
| 'platform' | -TÁDA | | kítalá |
| 'buttocks' | -TÁKO | táko | dítakú |
| 'cheek' | -TÁMA | táma | dítamá |
| 'heart' | -TÉMA | téma | múcimá |
| 'canoe' | -YÁTO | | búátú |
| 'thief' | -YÍBI | | múíbí |
| 'child' | -YÁNA | | múàná |
| 'leaf' | -YÁNI | | díàní |
| 'nose' | -JÓDO | | díùlú |

There are also a few cases of other reflexes of PB HL stems. The Ciluba words in (3b) have LL tones.

(3) b. PB *HL → Ciluba LL

| | | | |
|---------------|--------|-------|-------|
| 'guinea fowl' | -KÁNGA | kánga | nkaṅa |
| 'anteater' | -KÁKA | | nkaka |

One example, given in (3c), has been found where the reflex of PB HL is Ciluba HH.

(3) c. PB *HL → Ciluba HH

| | | | |
|--------|--------|--|---------|
| 'song' | -YÉMBO | | músámbú |
|--------|--------|--|---------|

And in a couple of cases, given in (3d), the Ciluba reflexes show a tone pattern unchanged from PB.

(3) d. PB *HL → Ciluba HL

| | | | |
|------------|-------|------|--------|
| 'shame' | -CÓNI | sóni | nsóni |
| 'oil, fat' | -KÚTA | kúta | mafúta |

The next largest number of reconstructed disyllabic nouns have LL tones in PB. The majority of these with Ciluba reflexes show a HH pattern, as in (4a).

(4) a. PB *LL → Ciluba HH

| | | | |
|----------------|--------|--------|-------------------------------|
| 'animal' | -YAMA | ama | nyámá |
| 'body' | -BEDE | bede | múbídí |
| 'bridge' | -DADÓ | | cílalú |
| 'fire' | -DEDÓ | dedó | múdílú |
| 'river' | -DONGA | | díflúgá 'name of a waterfall' |
| 'medicine' | -GANJA | ganga | búáṅá |
| 'palm of hand' | -GANJA | | cíánzá |
| 'sky' | -GODO | | díúúlú |
| 'drum' | -GOMA | goma | ḡómá |
| 'stranger' | -GENI | geni | múényí |
| 'cattle' | -GOMBE | gombe | nómbé |
| 'hunger' | -JADA | zada | nzálá |
| 'rubbish-heap' | -JADA | | díálá |
| 'path' | -JEDA | (zedá) | nzíílá |
| 'banana' | -KONDE | | díkóndé |

| | | | |
|----------------|--------|------|-------------------------------|
| 'nape of neck' | -KOTI | | díkóǰí |
| 'blind person' | -POKU | popu | mpófó |
| 'heap' | -TONDA | | -túndá (stem cited by Coupez) |
| 'mushroom' | -YOGA | | bówá |
| 'thigh' | -BEDO | | cfbélú |

There is also at least one example, given in (4b), where PB *LL has a Ciluba HL cognate.

(4) b. PB *LL → Ciluba HL

| | | | |
|--------|-------|--|-------|
| 'back' | -YIMA | | nyíma |
|--------|-------|--|-------|

And a couple of cases where the PB tone pattern is unchanged in Ciluba, given in (4c).

(4) c. PB *LL → Ciluba LL

| | | | |
|---------|-------|-----------|--------|
| 'leg' | -GODO | | múkolo |
| 'beard' | -DEDU | dédu/dédu | múyedi |

No cases were found where PB *LL corresponded with Ciluba LH.

A substantial number of reconstructed PB disyllabic nouns have a LH pattern. The largest number of these with reflexes in Ciluba have a HL pattern, including those in (5a).

(5) a. PB *LH → Ciluba HL

| | | | |
|----------------|--------|------|--------------------|
| 'buffalo' | -BOGÓ | bogó | mbówa |
| 'hair' | -COKÉ | | lúsúki |
| 'hippopotamus' | -GUBÓ | gubó | ǰúvu |
| 'partridge' | -KOADÉ | | nkwádi |
| 'father' | -TAATÁ | tatá | tá.tu |
| 'frog' | -YODÁ | | cfúla |
| 'knife' | -YEDÉ | | múéle |
| 'girl' | -YADÉ | | múádi 'first wife' |
| 'brain' | -YONGÓ | | bóǰo |

There is at least one example, given in (5b), of a HH reflex of a LH PB stem.

(5) b. PB *LH → Ciluba HH

| | | | |
|--------------|-------|--|--------|
| 'palm-frond' | -DADÁ | | múlálá |
|--------------|-------|--|--------|

And in (5c), an example is given where PB *LH corresponds with

Ciluba LL.

(5) c. PB *LH → Ciluba LL

| | | | |
|----------|--------|--|-------|
| 'mother' | -MAAMÁ | | máamu |
|----------|--------|--|-------|

No examples were found with a tone pattern unchanged from PB *LH.

Disyllabic nouns with a HH pattern are the most rarely encountered and most open to dispute in PB. Stems that are assigned to the HH group seem to occur with almost equal frequency in two tone patterns in Ciluba: LL (6a) and HH (6b).

(6) a. PB *HH → Ciluba LL

| | | | |
|----------|-------|--------|------------------------------|
| 'crab' | -KÁDÁ | kádá | nkala |
| 'impala' | -PÁDÁ | (padá) | -pala (stem cited by Coupez) |
| 'well' | -TÍMÁ | | múǰimi |
| 'tick' | -KÓPÁ | | nkufa |

b. PB *HH → Ciluba HH

| | | | |
|----------------|-------|-------|---------------------|
| 'gall-bladder' | -DÓDÓ | | búlúlú 'bitterness' |
| 'chicken' | -KÓKÓ | kókó | cíkúkú |
| 'palm-tree' | | téndé | cíténdé |

In one case, given in (6c), the Ciluba reflex of PB *HH is LH.

(6) c. PB *HH → Ciluba LH

| | | | |
|---------------|-------|--|--------|
| 'lame person' | -DÉMÁ | | múlemá |
|---------------|-------|--|--------|

There are insufficient examples of reconstructed noun stems of three or more syllables to permit a meaningful examination of the tone correspondences in longer nouns. However, the item in (7) may be noted.

(7) PB *LLL → Ciluba HHH

| | | | |
|------------|---------|--|--------|
| 'bush-pig' | -GODOBE | | ǰúlúbé |
|------------|---------|--|--------|

2.2. Discussion of Tone Correspondences in Nouns

The evidence cited in the previous section shows that in an overwhelming majority of cases where tones have been reconstructed on PB noun stems and Ciluba cognates can be found, the Ciluba tones are opposite in value to the PB tones. For this reason, it does not seem adequate to say that only a few items are involved. The

predominant patterns are summarized in (8).

- (8) *H → L (1a) *LH → HL (4a)
 *L → H (2a) *LL → HH (5a)
 *HL → LH (3a) *HH → LL (6a)

In addition, the nominal prefixes, which are reconstructed as having L tones in PB by Greenberg, Guthrie, Meeussen (1967) and Kähler-Meyer (1968), are H-toned in Ciluba (with very few exceptions--e.g. *mafúta* 'fat, oil' with tones unchanged from PB). Therefore, typically, the whole of a Ciluba noun (prefix + stem) has a tone pattern with opposite tones from the PB source.

This reversal of tone could be described by a rule that simply reverses the value of a tonal feature, such as the rule in (9).

- (9) Tone Reversal [aRaised] → [-aRaised]

It is probably impossible for a historical change of this kind to take place in the direct fashion implied by (9). But a series of rules of displacement, coalescence, replacement etc. could cumulate to achieve the same effect through natural stages. Van Spaandonck's suggestion starts from the observation that a H tone preceding the prefixes of nouns would provide the environment where such natural rules could operate to reverse the tones. Given an initial H tone, a L tone noun prefix and PB stem tones, the pre-Ciluba tone patterns on the left in (10) correspond to the Ciluba tone patterns on the right.

- | (10) | <u>initial H</u> | <u>prefix</u> | <u>stem</u> | | <u>prefix</u> | <u>stem</u> |
|------|------------------|---------------|-------------|---|---------------|-------------|
| a. | H | L | H | → | H | L |
| b. | H | L | L | → | H | H |
| c. | H | L | HL | → | H | LH |
| d. | H | L | LH | → | H | HL |
| e. | H | L | LL | → | H | HH |
| f. | H | L | HH | → | H | LL |

Two rules, simpler than those proposed by van Spaandonck, are all that is required to relate these tone patterns. The first rule changes a tone to the same as a preceding tone of opposite value, when a tone of the same value or a word boundary follows. The effect of this rule is shown in (11).

- (11) a. H L $\left\{ \begin{array}{l} L \\ \# \end{array} \right\} \rightarrow$ H H $\left\{ \begin{array}{l} L \\ \# \end{array} \right\}$
 b. L H $\left\{ \begin{array}{l} H \\ \# \end{array} \right\} \rightarrow$ L L $\left\{ \begin{array}{l} H \\ \# \end{array} \right\}$

It is a variety of tone-spreading (cf. Hyman and Schuh 1974) whose effect is essentially to delay the timing of a change in tone (perseverative assimilation). A more formal presentation of this rule is given in (12).

- (12) [aRaised] → [-aRaised] / [-aRaised] — $\left\{ \begin{array}{l} [aRaised] \\ \# \end{array} \right\}$

The second rule is a conceptually simple but formally complex contraction rule which shortens the word by the loss of the initial tone-bearing unit and redistributes the tonal pattern over the remaining syllables. In effect the tone of the deleted element and all subsequent tones are moved to the right and the two final tones coalesce. As the final two tones of any pattern are identical to each other after the application of (12), the shape of the tonal contour is not altered by this change.⁵ A detailed formulation of this rule has been avoided because it would confront issues outside the scope of this paper. Instead, an example of the effect of the rule is illustrated in (13).

- (13) H L L → H L (see tone pattern 1 in (10) and (14))
 VCVCV CVCV

The application of these two rules is shown in the derivations in (14) for the six tone patterns seen earlier in (10). The tone-spreading rule applies from left to right to each environment that satisfies it, on one pass only.

- | (14) Original
Tones: | 1
HLH | 2
HLL | 3
HLHL | 4
HLLH | 5
HLLL | 6
HLHH |
|-------------------------|----------|----------|-----------|-----------|-----------|-----------|
| <u>Tone-Spreading</u> | | | | | | |
| a. HLL → HHL | | HHL | | HHLH | HLLL | |
| b. LHH → LLH | | | | | | HLLH |
| a. HLL → HHL | | | | | HHHL | |
| a. HL# → HH# | | HHH | HLHH | | HHHH | |
| b. LH# → LL# | HLL | | | HLLL | | HLLL |
| <u>Contraction</u> | HL | HH | HLH | HHL | HHH | HLL |

It will be noticed that the six tone patterns remain distinct from each other after the application of these rules. Following contraction, the tone pattern consists of the reverse of those tones after the initial H in the pre-Ciluba source. Thus, natural rules of tone-spreading and contraction can provide an explanation of the apparent process of tone reversal in nouns. It remains to suggest the source of the initial H tone which must be posited for these rules to operate.

Van Spaandonck proposed that the source of the initial H tone was the "copular morpheme" *ni which, although deleted, left its trace in a tonal effect on the following item. There are a number of reasons why this source is implausible. In the first place, it simply seems unlikely that nouns would have been preceded by a copula with such frequency that a tonally-modified form arising from this environment could become the regular form of the noun. Secondly, if nominal tone patterns are derived from deletion of the copula, the predicative form of nouns should show no difference from the basic form. However, a predicative form of nouns with a syllabic nasal prefix occurs in Ciluba, and the source of this prefix must be the copular morpheme in question. Thirdly, the *ni proto-copula may well not have had an original H tone. For example, in Bulu, one of the languages in Guthrie's Group A which have generally preserved the etymological tones of PB, this copular element is /nè/ (Alexandre 1966). For that matter, the syllabic nasal predicative prefix in Ciluba is L toned (except before the irregular L tone nominal prefixes). A further objection to the theory proposed by van Spaandonck will be mentioned when the discussion turns to word classes other than nouns. First, an alternative source for the initial H tone with nouns will be proposed.

The proposal rests on the distribution in the Bantu languages of nominal forms with a "preprefix" before the nominal prefix, leading to such forms as abantu beside the form lacking the preprefix bantu.⁶ The preprefix is also known as the augment, or simply as the initial vowel. De Blois (1970) has assembled extensive evidence that the augment occurred in PB, rather than being restricted, as Guthrie suggests, to the more easterly and southerly groups of Bantu languages in which its occurrence is most familiar. For

example, traces of the augment can be found in Northern and Western Bantu also, in languages that are included by Guthrie in his Western branch of the Bantu family. De Blois points out that there are languages in the "Central Northern" area (Zone D, data from field notes of Meeussen) where a "latent augment" can be detected by the presence of a H tone and a changed vowel. For example, in Northern Binja (D.24) the instrumental/comitative marker is /nà/ before proper names and kinship terms (class 1a nouns) and no tone change occurs on the nouns, but with common nouns a change does occur, as may be seen from the forms in (15)

| | <u>noun in isolation</u> | <u>noun in instrumental/comitative construction</u> | |
|--------------|--------------------------|---|----------------|
| proper noun | Kàsìsà (name) cl. 1a | nà Kàsìsà | 'with Kasisa' |
| common nouns | lùbàù 'knife' cl. 11 | nì lùbàù | 'with a knife' |
| | ngòmà 'drum' cl. 9 | nè ngòmà | 'with a drum' |
| | mwánà 'child' cl. 1 | ní mwánà | 'with a child' |

The augment even occurs in the Northwestern Bantu languages (Group A). Alexandre (1970) points out that Ewondo (Yaunde) and Fang nominals show a "pre-initial" element in various environments, and he elaborates on the occurrence of a "pre-initial high tone with various kinds of supporting elements" in Bulu (A.74), commenting that "Bulu prefixes with pre-initial high tone are quite comparable to the double prefixes encountered in so many Bantu languages in other zones". He gives examples such as those in (16).

| | <u>basic noun</u> | <u>noun with pre-initial</u> | <u>gloss</u> |
|---------------------------------|-------------------|------------------------------|--------------|
| with nonsyllabic nominal prefix | dís | édís | 'eye' |
| | fà | éfà | 'cutlass' |
| | nyóò | ényóò | 'snake' |
| with syllabic nominal prefix | álú | áílú | 'night' |
| | ngál | ngáíl | 'wife' |
| | élé | éilé | 'tree' |

From data such as these from Binja and Bulu we can conclude that the augment was found in the parent language of all the Bantu groups, and that in the parent language the augment had H tone.⁷

Meeussen (1967) suggests that the augment originally functioned as "a weak demonstrative ... in affirmative non-predicative

constructions". De Blois' survey provides additional grounds for believing in an original function of this kind. The role of the augment in the modern Bantu languages varies greatly. It is obvious that in many languages the augment has become restricted to a few specific environments or has even been lost entirely, especially in the more westerly languages. In other languages the occurrence of the augment has been extended to new environments. In a number of languages definite nouns in nearly all environments occur with the augment (de Blois 1970:131-132; cf. Bokamba 1971), and it is very frequent in Eastern Bantu languages such as Kirundi (Rodegem 1967) and Lumasaaba (Brown 1972). Particularly interesting are Cibemba and Uwulamba. These languages are members of the Bantu group to which the Luba cluster is most closely related (Henrici 1970, Heine 1973), although it does not appear so from Guthrie's geographically-based classification which assigns them to the Eastern branch of Bantu while Ciluba is placed in the Western branch. In Cibemba and Uwulamba the augment is very widely distributed in its occurrence. Givon (1969) suggests that all nouns with specific reference require the augment in Cibemba. Doke (1938:421) observes that "when nouns ... are exercising their function of subject, object, apposition or absolute [such as adjectival use] in any sentence, they retain their initial vowel" in Uwulamba. Yet apparently in Ciluba there is no sign of the occurrence of the augment and no contrast between augmented and unaugmented nouns.

Given the absence of overt signs of the augment in Ciluba, but its widespread occurrence in closely related languages, the following theory is suggested: rather than being lost because of the rarity of its occurrence in pre-Ciluba, the augment spread till the functional contrast of augmented and unaugmented nouns was largely obscured. Then a phonological reduction of the augmented form took place (along the lines seen with the latest augment in Binja and the nouns with syllabic prefixes in Bulu) after the tone-spreading rule discussed earlier had altered the tonal patterns. These processes produced the patterns seen in Ciluba today.

2.3. Verb Tones

It remains to be seen if the tonal reflexes in Ciluba of PB

forms other than nouns can be accounted for. If, say, verbal forms also show a tone reversal, then there is an additional problem for van Spaandonck's proposal that the copula *ní is responsible, as this copula is unlikely to have occurred before verbs. We will examine verbs as a representative of word-classes other than nouns.

With very rare exceptions the stems of verbs in Ciluba have a fixed tone which is retained no matter what affixes are added to the stem or what construction the verb is in. These fixed tones are also reversed from the PB stem tones in the large majority of cases, as will be shown below. PB verb stems are either H or L toned. Among the PB H tone stems with L tone reflexes in Ciluba are those given in (17a).

(17) a. PB *H → Ciluba L

| | | | | |
|-----------------|-------|------|---------|-----------------------|
| 'shine' | -BÁD | | kúbalá | |
| 'see' | -BÓN | bón | kúmoná | |
| 'sleep' | -DÁÁD | dád | kúlaalá | |
| 'eat' | -DÉ | dé | kúdia | |
| 'vomit' | -DÓK | | kúluká | |
| 'fish' | -DÓB | dób | kúlobá | |
| 'squeeze, milk' | -KÁM | kám | kúkamá | 'rub between fingers' |
| 'fry, roast' | -KÁŃG | | kúkaŋá | |
| 'dawn' | -KÉ | ké | kúcia | |
| 'do' | -KÉT | | kúketá | 'do perfectly' |
| 'become small' | -KÉÉP | | kúkeepá | |
| 'seize, hold' | -KÓÁT | | kúkwatá | |
| 'gather' | -KÓŃG | | kúkoŋá | |
| 'hammer' | -KÓM | | kúkumá | |
| 'fold' | -KÓNY | | kúkonyá | |
| 'die' | -KÚ | kú | kúfua | |
| 'curse' | -PÍŃG | píng | kúfiŋá | |
| 'drink' | -NÚ | nú | kúnua | |
| 'give' | -PÁ | pá | kúfa | |
| 'fill, pack' | -PÁK | | kúfaká | |
| 'burn' | -PÉ | pé | kúfia | |
| 'suck' | -PÍP | | kúfipá | |
| 'resemble' | -PÚÁN | | kúfwaná | |
| 'come, go' | -PÚM | | kúfumá | |

| | | | |
|-------------------|-------|-----|---------------------------|
| 'cut down, fell' | -TÉM | tém | kútemá |
| 'gather firewood' | -TÉÁB | | kúcabá |
| 'draw (water)' | -TÉK | ték | kúteká |
| 'pound' | -TÓ | | kútua |
| 'send' | -TÓM | tóm | kútumá |
| 'forge' | -TÚD | túd | kútulá |
| 'stand' | -YÉM | | kúimá 'stand still, stop' |
| 'steal' | -YÍB | | kúibá |
| 'get dark' | -YÍD | | kúilá |

Among a few examples where PB H tone is unchanged in Ciluba are those in (17b).

(17) b. PB *H → Ciluba H

| | | | |
|---------------|-------|-----|-----------------------|
| 'dream' | -DÓÓT | dót | kúlótá |
| 'grow large' | -KÓD | kód | kúkólá |
| 'thread on' | -TÓNG | | kútúhá |
| 'sing' | -YÉMB | | kúimbá (kúimbá in K.) |
| 'bathe, wash' | -YÓG | | kúowá (kúowá in K.) |

The large majority of PB verb stems with L tone have reflexes in Ciluba with H tone, including those in (18a).

(18) a. PB *L → Ciluba H

| | | | |
|----------------|-------|------|----------|
| 'count' | -BAD | bad | kúbálá |
| 'rot' | -BOD | bod | kúbólá |
| 'mix, meet' | -CANG | sang | kúsáhá |
| 'sharpen' | -CONG | | kúsóhá |
| 'wash' | -CUK | | kúsúkúlá |
| 'cry, wail' | -DED | ded | kúdíflá |
| 'shut, block' | -DIB | | kúdífbá |
| 'cultivate' | -DEM | dem | kúdífá |
| 'become heavy' | -DEM | | kúnémá |
| 'bury' | -DIIK | | kúdífiká |
| 'fight' | -DO | do | kúílúá |
| 'plait' | -DOK | dok | kúílúká |
| 'bewitch' | -DOG | dog | kúílówá |
| 'finish' | -MAD | mad | kúmáná |
| 'sprout, grow' | -MED | med | kúmáná |
| 'swallow' | -MID | med | kúmíná |

| | | | |
|----------------|--------|-----|---------|
| 'defecate' | -NI | | kúnyíná |
| 'stink, smell' | -NUNK | nok | kúnúnká |
| 'arrive' | -PIK | pik | kúffká |
| 'cut' | -TĚET | | kútéétá |
| 'dwell' | -YIKAD | | kúíkálá |

Among the few cases where PB L tone verb stems have Ciluba reflexes with L tone are those given in (18b).

(18) b. PB *L → Ciluba L

| | | | |
|----------------|-------|-----|------------------------|
| 'laugh' | -CĚK | sck | kúseká |
| 'saw' | -KĚK | | kúkeká 'cut in slices' |
| 'spread, stew' | -TAND | | kútandá |

From the above it is clear that the normal reflex of PB tones on verbs in Ciluba is the reversed tone. These superficial tone reversals occur with verb stems of all the known syllabic structures in PB.

2.4. Discussion of Tone Correspondences in Verbs

The Ciluba verbs above have been quoted in infinitive forms. Since these are nominal forms, it may also be assumed that they occurred with the augment at some earlier stage. Infinitives in Kirundi, Cibemba, Luganda etc. are usually found with the augment, and Kähler-Meyer (1968) discusses the reconstruction of a H tone preprefix in infinitives from Xhosa evidence. Given the reconstruction of the final vowel as L toned (Meeussen 1967, Kähler-Meyer 1968), the infinitive forms would have had earlier tone patterns as in (19).

| | | | | |
|------|----------------|---------------|--------------|--------------------|
| (19) | <u>augment</u> | <u>prefix</u> | <u>stem</u> | <u>final vowel</u> |
| | H | L | { H L} | L |

These tone sequences are the same as the sequences in (10c) and (10e). These patterns become HLH and HHH by the tone-spreading and contraction rules proposed. Thus we would have derivations like those in (20).

| | | | | | |
|------|----------|---|--------|---------|-------|
| (20) | *úkubáda | → | kúbálá | 'shine' | (17a) |
| | *úkubada | → | kúbálá | 'count' | (18a) |

The same rules will correctly derive tone patterns of the infini-

tives of longer verbs, including verbs with extensions. The extensions do not add tonal contrasts as they probably carried the same tone as the stem, though Kähler-Meyer suggests they were uniformly L-toned.

As far as finite forms of verbs are concerned, the preverbal subject concord prefixes had H tone in PB for all the nominal classes but L tone for the first and second persons. In Ciluba these forms are also reversed in tone; all subject concords for classes are L-toned while the first and second person prefixes are H-toned. Ciluba subject prefixes are illustrated in (21) with the copula *-di*.

| | | | | | | | |
|------|---------|-------|----------------|---------|-------|------------|------|
| (21) | cl. 1 | u-dí | 'he/she/it is' | cl. 2 | ba-dí | 'they are' | |
| | cl. 3 | u-dí | " | cl. 4 | i-dí | " | |
| | cl. 5 | di-dí | " | cl. 6 | a-dí | " | etc. |
| | 1st sg. | ń-dí | 'I am' | 1st pl. | tú-dí | 'we are' | |
| | 2nd sg. | ú-dí | 'you are' | 2nd pl. | nú-dí | 'you are' | |

In Ciluba relative clauses the preverbal class prefixes are L-toned except for classes 1 and 9. These again are the reverse of the tones reconstructed for PB where the "pronominal prefix" used in relative clauses was H-toned everywhere except in classes 1 and 9 (cf. Meeussen 1971). As the stem tones of verbs are reversed from the PB values the whole of a finite verb form, relative or nonrelative, shows a superficial reversal from PB. In the majority of cases relatives and nonrelatives are not distinct. A sample is illustrated in (22).

| | | | | |
|------|------------------------|--------|--------|--------|
| (22) | 'people cultivate' | PB | *bantu | bádema |
| | | Ciluba | bántú | badímá |
| | 'people who cultivate' | PB | *bantu | bádema |
| | | Ciluba | bántú | badímá |

The situation with relative verb forms will be considered first. In the two languages closely related to Ciluba, a major mark of the relative construction is the use of the augment with verbal prefixes. Doke (1938) gives examples from Uwulamba, as in (23).

| | | | | |
|------|-------------|---------|-----------|--------------------------|
| (23) | nonrelative | ututemo | tukafika | 'axes will arrive' |
| | relative | ututemo | utukafika | 'axes which will arrive' |

The majority of the augmented relative concord prefixes are VCV in shape, the remainder being long vowels. Nonrelative subject concords are CV or short vowel in form (pp.388-389). Unfortunately, Doke's brief note on tone in Uwulamba does not give the tones on these concord elements.

In Cibemba the subject concords in non-restrictive ("non-defining") relative clauses also have the augmented VCV form (Givón 1969). Again, it is unfortunate that even in Givón's more up-to-date work the tonal pattern on these prefixes is not given. However, in restrictive ("defining") relative clauses the subject prefixes are L-toned (it is not known if this is true of classes 1 and 9) and lack the augment. By contrast, the subject concord prefixes on non-relative verbs are H-toned, as the examples in (24), drawn from Givón (1969:88) show (unmarked tones are unknown).

| | | | |
|------|-----------------|-------------------|--|
| (24) | iǰilu | lǰaiǰile | 'the lunatic who came' (cl. 5) |
| | iǰilu | lǰaliile | 'the lunatic left' |
| | iǰilu na imfumu | bǰaiǰile bǰaliile | 'the lunatic and the chief who (both) came left' (cl. 2) |

Sharman and Meeussen (1966) also mention the L-toned relative prefix in Cibemba, and they make clear that the nominal prefixes are L-toned and the augment before nominal prefixes has a basic H tone. In other words, Cibemba shows a change from PB in prefix tone in only one category. PB and Cibemba prefix tones are compared in (25).

| | | | |
|------|--|-----------------|----------------|
| (25) | | <u>PB</u> | <u>Cibemba</u> |
| | nominal prefix | *L | L |
| | nominal augment | *H | H |
| | verbal subject concord (nonrelative) | *H | H |
| | relative subject concord ("pronominal prefix") | *H | L |
| | | (ex. cl. 1 & 9) | |

It is proposed here that the change from PB H tone prefix to L tone in Cibemba restrictive relatives can be explained as a reduction from a pattern in which the original H tone prefix was preceded by a L tone augment, as in (26).

| | | | |
|------|---------------------|---|-------------------|
| (26) | *ǰCǰ'-relative verb | → | Cǰ'-relative verb |
|------|---------------------|---|-------------------|

It is suggested that the nonrestrictive relatives in Cibemba, with

the augment, are a survival of an earlier stage in which the augment preceded verbs in all relative clauses. Because of the parenthetical coordinate relationship to the matrix sentence, nonrestrictive relatives may well be less subject to phonological attrition.

Because the tonal data from Cibemba and Uwulamba are incomplete it is necessary to look to languages less close to Ciluba for evidence of the L tone on the augment before verbs. In Ciyao (Zone P), Whiteley (1966:56) notes the occurrence of relative forms with the augment. This relative preprefix has L tone; the subject concord prefix following it has H tone. Examples of the use of the preprefix taken from Whiteley's Yao texts include those in (27).

- (27) *vaanáce uváice* 'the children who came'
mundu jwámleeú juváicé 'the tall man who came'
moolá gagájmbagá 'the frogs which were croaking'
 (cl. 6 ma-ulá)

Now, in Ciyao the basic tones of prefixes are essentially unchanged from PB--nominal prefixes are L, verbal prefixes are best regarded as underlyingly H.⁸ The occurrence of L tone on the relative preprefixes in Ciyao therefore supports the desired reconstruction of L tone on the augment before verbs in relative clauses.

The occurrence of a L tone augment before the H tone verbal prefix but a H tone augment before the L tone nominal prefix can be subsumed under the general statement that the augment has the opposite tone to the prefix that follows. This rule of polarity also operates in Dzamba. Bokamba (1971:218) gives very little information on tone, but does cite the tonal patterns of a few nouns with class 2 prefixes. The forms, with and without the definitizing augment, are given in (28), where unmarked tones are unknown.

- (28) *báto* 'people' *bákonzi* 'chiefs'
babáto 'the people' *bákonzi* 'the chiefs'
 (derived from *babákonzi)

The H tone on the prefix is surprising but it presumably does not arise from the loss or latency of the augment as the augmented form of a word such as *báto* appears in full. However, with noun stems that are not monosyllabic or vowel-initial there is a L tone "latent augment". In place of the polarity of tone seen in the successive

syllables of *babáto*, the replacement of H tone by L has become the paradigmatic sign of the augment in *bákonzi*. This Dzamba process is directly analogous to the reduction in the relative verb forms proposed for Cibemba in (26).

Now, accepting the evidence for a polar L tone on the augment before the verbal prefix, the sequences of verbal tones seen in (29) would have characterized relative verb forms in pre-Ciluba, apart from classes 1 and 9.

- (29) augment prefix verb stem final vowel
 L H {H
 L}

If the tone-spreading and contraction rules discussed in connection with nouns are applied to these sequences, the derivations shown in (30) are obtained.

- (30)
- | | | |
|-----------------------|-------------|-------------|
| | <u>LHHL</u> | <u>LHLL</u> |
| <u>Tone-spreading</u> | ↓ | ↓ |
| b. LHH → LLH | LLHL | LHLL |
| a. HLL → HHL | ↓ | LHHL |
| a. HL# → HH# | LLHH | LHHH |
| <u>Contraction</u> | LLH | LHH |

Thus, from posited earlier forms such as those on the left in (31), the correct Ciluba reflexes on the right would be derived.

- (31) *abátóma → batumá 'they who send'
 *abádema → badímá 'they who cultivate'

The Ciluba forms show a superficial reversal of the last three tones of the posited earlier forms.

As for the relative forms with classes 1 and 9 which had a L tone prefix in PB, the rule of tonal polarity would assign a H tone to the augment. The tonal patterns are thus HLHL and HLLL, the same patterns as are obtained on the infinitives of verbs with monosyllabic stems. These patterns also yield superficial tonal reversals as detailed above.

Nonrelative verb forms in Ciluba, with L tone prefixes in all classes, must also be presumed to have had an augment with a tone

opposite to the PB H tone on the prefix for the superficial reversal in these cases to be accounted for by the rules posited here. There is less direct evidence for this supposition than for the other steps in this argument. However the fact that predicative adjectives and relative verb forms do have the augment in a number of Bantu languages provides some basis for the belief that the augment occurred with all verbal forms in some predecessor of Ciluba. De Blois (1970) finds "at least six" languages (Gusii, Fipa, Dzindza, Kwanyama, Ndonga, Herero) in which the augment is used with predicative adjectives, adjectives at their most verb-like. He records relative verb forms with the augment in 16 languages and a further six use the augment in headless relatives only. Ciluba lacks any overt sign of the augment with verbs in any form. Again it is suggested that the use of the augment became widespread with verbs in pre-Ciluba; and subsequently the augment was subject to contraction, leaving its trace behind in the tonal patterns.

3. CONCLUSION

This paper has demonstrated that the superficial reversal of PB tones is pervasive in nouns and verbs in Ciluba. It may also be noted that the same is true of adjectives, although the evidence is not included here. Thus all the major word classes are involved in the reversal. An account of the change as the result of the attrition of initial syllables and a simple, natural rule of tone-spreading is proposed. The initial syllable involved is the "augment" or "preprefix". It is proposed that the augment was a functional element in Proto-Bantu, and that the tone of the augment was opposite to that of the prefix it preceded. In many languages the use of the augment became widely extended. This extensive use of the augment is evident in some of the languages most closely related to Ciluba. In pre-Ciluba the augment was so extensively used that it preceded nearly all major lexical items. Perhaps because of its increasing redundancy, the syllabic sign of the augment was lost at some time before modern Ciluba emerged. Tones were reassigned to the remaining syllables and subject to a spreading rule. The result is a language with reversed tones that shows no overt trace of the augment.

NOTES

¹A diachronic reversal in all contexts is quite distinct from a synchronic "flip-flop" in restricted contexts. See Wang (1967) and Hashimoto (1972) for some examples and discussion. Because of the difficulty of conceiving how a context-free diachronic reversal could originate, nonlinguistic influences have been adduced. Van Spaandonck (1971) mentions van Caeneghem and Meeussen's suggestion that tones may have become reversed because "the Baluba like to reverse tones in their mourning songs". But Mufuta (1969) shows that, although H tones may be replaced by L and L by H in Kásàlà chants, this is only a sporadic occurrence and it does not look like a conservative retention. In fact these tone replacements generally level away the tonal contrasts on several adjacent syllables, usually by replacing H tones with L tones. Consecutive reversals in opposite directions are not found. A similar puzzling case of tone reversal in Loma has also been given a putative socio-linguistic explanation by Dwyer (1975).

²Although van Spaandonck draws attention to a number of "exceptions" to the reversed tonal correspondences between Ciluba and Lomongo, his proposal does not account for the occurrence of such exceptions. They remain exceptions to the rules he proposes.

³I met with Mr. Muamba jointly with Saeed Ali of U.C.L.A., who had a major role in planning and conducting these working sessions.

⁴Transcription of Ciluba is based on the orthography. The following may be noted: /c/ represents a palatal affricate elsewhere spelled "tsh"; /f/ represents a voiceless bilabial fricative which is in complementary distribution with /p/; /w/ has been used for an underlying /u/ which occurs in a stem and which has no separately assignable tone. Adjacent vowels with like tones, including long vowels, are regarded as forming only one syllable.

⁵Rule (12) has been formulated so that it levels the contrast of final tones (in the sequences LH# and HL#) for reasons of naturalness. If (12) effected no change in tones before word boundary, then the contraction rule would be required to straightforwardly delete the final tone. However if tone-spreading does apply in this environment, the contraction rule does not remove any contrastive tones. A contraction rule may be considered more natural and inherently more probable if it preserves the shape of the tonal contour. Note that there is no sign of the creation of floating tones following Ciluba nouns.

⁶Larry Hyman independently suggested that the augment is a better source of an initial H tone than the copula /ni/ in his comments on van Spaandonck's 1971 paper to the seminar on Comparative Bantu Tonology.

⁷Byarushengo, Hyman, and Tenenbaum (1976) argue for an original H tone augment from their observations on tonal alternations in Kihaya nouns.

⁸Whitely suggests that the verbal prefixes are basically L-toned in nonrelative sentences in Ciyao and only H in relative

cases. However, given the extensive system of rules that move H tones to the right in Ciyao, and the fact that there are cases where absolute initial verb prefixes are H, it is more likely that the tone is basically H but subject to a rightward shift.

REFERENCES

- Alexandre, Pierre. 1966. *Système Verbal et Prédicatif du Bulu*. Paris: Klincksieck (Langues et Littératures de l'Afrique Noire 1).
- Alexandre, Pierre. 1970. Pre-initial elements in Bulu (A.74). *African Language Studies* 11.5-11.
- Bokamba, G. D. 1971. Specificity and definiteness in Dzamba. *Studies in African Linguistics* 2.217-237.
- Brown, Gillian. 1972. *Phonological Rules and Dialect Variation: A Study of the Phonology of Lumasaaba*. Cambridge: University Press (Cambridge Studies in Linguistics 7).
- Burssens, Amaat. 1939. *Tonologische Schets van het Tshiluba*. Antwerp: De Sikkell (Kongo-Overzee Bibliothek 2).
- Byarushengo, Ernest, Larry M. Hyman, and Sarah Tenenbaum. 1976. Tone, accent, and assertion in Haya (in this volume).
- Carter, Hazel. 1973. Tonal data in Comparative Bantu. *African Language Studies* 13.36-52.
- Coupez, A. 1954. *Etudes sur la Langue Luba*. Annales du Musée Royal du Congo Belge, Série-in-8°, Sciences de l'Homme, Linguistique 8.
- De Blois, K. F. 1970. The augment in the Bantu languages. *Africana Linguistica* 4.85-167. Annales du Musée Royal de l'Afrique Centrale, Tervuren, Série-in-8°, Sciences Humaines 68.
- De Clercq, August. 1960. *Dictionnaire Tshiluba-français* (new edition revised and expanded by E. Willems). Léopoldville: Société Missionnaire de St. Paul.
- Doke, Clement M. 1938. *Text Book of Lamba Grammar*. Johannesburg: Witwatersrand University Press.
- Dwyer, David L. 1975. Loma, a language with inverted tones. *Michigan State University Working Papers in Language and Linguistics* 1.17-27.
- Givón, Talmy. 1969. *Studies in ChiBemba and Bantu Grammar*. *Studies in African Linguistics, Supplement 3*.
- Greenberg, Joseph H. 1948. The tonal system of Proto-Bantu. *Word* 4.196-208.
- Guthrie, Malcolm. 1967-1971. *Comparative Bantu* (4 volumes). Farnborough: Gregg Press Ltd.
- Hashimoto, Mantaro J. 1972. The linguistic mechanism of flip-flop. *Unicorn* 10.1-19.
- Heine, Bernd. 1973. Zur genetischen Gliederung der Bantu-Sprachen. *Afrika und Übersee* 56.164-185.
- Henrici, Alick. 1973. Numerical classification of Bantu languages. *African Language Studies* 13.82-104.
- Hulstaert, G. 1941. *Tonetiek van het Lomongo en Tshiluba*. *Aequatoria* 4.56-58.
- Hyman, Larry M. and Russell G. Schuh. 1974. Universals of tone rules: evidence from West Africa. *Linguistic Inquiry* 5.81-115.
- Kähler-Meyer, Emmi. 1968. The tones of Urbantu. *Afrika und Übersee* 51.81-90.
- Meeussen, A. E. 1954. The tones of prefixes in Common Bantu. *Africa* 24.48-54.
- Meeussen, A. E. 1967. Bantu grammatical reconstructions. *Africana Linguistica* 3.80-121. Annales du Musée Royal de l'Afrique Centrale, Tervuren, Série-in-8°, Sciences Humaines 61.
- Meeussen, A. E. 1971. Relative clauses in Bantu. *Studies in African Linguistics, Supplement 2*, 3-10.
- Mufuta, Patrice. 1969. *Le chant Kasàlà des Lubà* (Classiques Africains 8). Paris: Juillard.
- Rodegem, F. M. 1967. *Précis de Grammaire Rundi*. Brussels/Ghent: Story-Scientia.
- Sharman, J. C. and A. E. Meeussen. 1966. The representation of structural tones, with special references to the behaviour of the verb in Bemba, Northern Rhodesia. *Africa* 26.393-404.
- Stappers, Leo. 1949. *Tonologische Bijdrage tot de Studie van het Werkwoord in het Tshiluba*. Brussels: van Campenhout.
- Van Avermaet, E. 1954. *Dictionnaire Kiluba-français*. Annales du Musée Royal du Congo Belge, Série-in-8°, Sciences de l'Homme, Linguistique 7.
- Van Spaandonck, Marcel. 1971. On the so-called reversive tonal system of Chiluba. *Studies in African Linguistics* 2.131-144.
- Wang, William S-Y. 1967. Phonological features of tone. *International Journal of American Linguistics* 33.93-105.
- Whiteley, W. H. 1966. *A Study of Yao Sentences*. Oxford: University Press.

TONE ANTICIPATION IN KINYARWANDA

BY

ALEXANDRE KIMENYI

DEPARTMENT OF FRENCH AND ITALIAN
CALIFORNIA STATE UNIVERSITY
SACRAMENTO, CALIFORNIA 95819

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

This paper is concerned with a phenomenon that has been reported in some Bantu languages (van Spaandonck 1969, Schadeberg 1976) which consists of shifting a high tone to the preceding syllable, henceforth called tone anticipation. It will be shown that indeed this process exists in Kinyarwanda as well. Its mechanism and constraints will be covered in the following discussion.

Not only does there not as yet exist a study of tone rules in Kinyarwanda, but there also is no general agreement among the scholars who have been working on this language as to how its tones should be represented. Coupez and Meeussen propose two phonetic tones, high (H) and low (L). The L tone is never marked. The H tone is marked by an acute accent ('). Long vowels are doubled; short vowels then appear as either L or H, while long vowels appear as either LL, HH, HL or LH. The phonetic tones found on short and long vowels are illustrated in (1).

- (1) a. L umugabo 'man'
H umugoré 'woman'
- b. LL urukweeto 'shoe'
HL umwáàna 'child'
LH umwaámi 'king'
HH -----

In (1a) we observe a difference between L and H on the final short vowel of the two nouns. In (1b) we observe LL, HL and LH on the penultimate long vowel of 'shoe', 'child' and 'king', respectively. Although Kinyarwanda specialists claim that there exist HH long vowels, they do not give examples to illustrate this possibility. It will be shown later that this system of tone representation corresponds to the systematic phonemic representation rather than to the phonetic representation.

Kagame (1956) recognizes also two features for vowel length, namely short and long, but he proposes three phonetic tones: a low, a mid, and a high. Each diacritic proposed stands for a combined vowel length and tone height value. Five symbols are used:

- (2) " = short-mid ex. umugöre 'woman'
' = short-high ísuka 'hoe'

| | | | |
|---|-------------|------------|----------|
| - | = long-mid | ex. umwāmi | 'king' |
| ^ | = long-high | māma | 'mother' |
| v | = long-low | umwōbo | 'hole' |
| ∅ | = short-low | umugabo | 'man' |

The problem with this system of tone representation is that the author implies that in the case of the long vowels the onset and coda have the same tonal level. He excludes possibilities such as HL or LH, where the long vowels are either falling or rising. Also, if this system were utilized, it wouldn't be easy to formulate tone rules.

Like Coupez and Meeussen I will represent long vowels by doubling them. The necessity of this decision will become obvious when the tone rules are presented. The position is taken here that Kinyarwanda has three phonetic tones: L, H, and F (falling). L tones are marked by ∅ or a grave accent (`), H tones by an acute accent (^), and F tones by the diacritic (v). Theoretically, then, a long vowel should be able to occur with one of the nine possible phonetic tone combinations: -LL-, -HH-, -LH-, -HL-, -FF-, -FL-, -FH-, -LF-, and -HF-. There are, however, only five sequences actually found, namely: -LL-, -HH-, -LH-, -HL-, and -LF-.

For the sake of simplicity and clarity of exposition, items of more than three syllables will not be given. The first thing that one discovers in studying the tonology of Kinyarwanda is the fact that H tones never appear in word final position when the word is taken in isolation. For instance, monosyllables are always realized as either L or F, as illustrated in (3):

| | | | | | | | |
|--------|----|--------|-----|----|-----|--------|-----|
| (3) a. | wê | 'him' | (F) | b. | gè | 'me' | (L) |
| | βô | 'them' | | | nì | 'be' | |
| | kô | 'that' | | | ngò | 'that' | |

On the penultimate syllable, disyllables carry either H or L tone. A limited number of items carry a F tone. The tone on the final syllable is always L as the following examples indicate.

| | | | | | | |
|--------|-------|---------------|-------|------------|-------|--------------------------|
| (4) a. | L-L | b. | H-L | c. | F-L | |
| | ifu | 'flour' | ífi | 'fish' | nhâna | 'on purpose' |
| | inda | 'stomach' | índa | 'louse' | βâno | 'these' |
| | inzu | 'house' | ívu | 'ash' | gûte | 'how' |
| | inño | 'ass' | íki | 'summer' | gûtko | 'like that' |
| | ino | 'toe' | íno | 'here' | βâdǵa | 'these' or 'them eating' |
| | kugwa | 'to fall' | kúβa | 'to be' | ----- | |
| | guska | 'to grind' | gúha | 'to give' | ----- | |
| | kuǵa | 'to go' | kújwa | 'to drink' | ----- | |
| | kunña | 'to defecate' | kúǵa | 'to eat' | ----- | |

In three syllable nouns, the H tone is either found on the initial vowel or the penultimate syllable. It is not possible to find two H tones in a three syllable word or either a F or a H on the last syllable. Another point worth mentioning is that the infinitival verb forms never manifest the H tone on the penultimate syllable. The reason for this constraint will become more obvious later. Examples with three syllables are given in (5) below.

| | | | | | | |
|--------|--------|-----------|--------|-----------|------------|---------------|
| (5) a. | L-L-L | b. | L-H-L | c. | H-L-L | |
| | izosi | 'neck' | iβǵa | 'wing' | fsuka | 'hoe' |
| | iβuye | 'stone' | igiti | 'tree' | ínsina | 'banana tree' |
| | iñoni | 'bird' | iǵhóko | 'chicken' | ísoni | 'shyness' |
| | kurima | 'to plow' | ----- | kúβona | 'to see' | |
| | kumeña | 'to know' | ----- | kúǵina | 'to dance' | |
| | kurora | 'to see' | ----- | gúkora | 'to work' | |

As mentioned in the beginning, long vowels are realized as either -HH-, -LL-, -LH-, -HL-, or -LF-. The sequence -LH- is found only in a few nouns; it is more commonly found in finite verb forms. Infinitive verbs exhibit two kinds of tones only on penultimate long vowels; they are either -HL- or -LL-. Vowels with either -HH-, -LH-, or -LF- are not found in this position.

| | | | | | | |
|--------|----------|----------|----------|----------|----------|-------------|
| (6) a. | L-LL-L | b. | H-HL-L | c. | -LH-L | |
| | iǵaambo | 'word' | ínhwáari | 'brave' | gèéwe | 'me' |
| | iǵhweeto | 'shoes' | ínhíimba | 'sorrow' | daáta | 'my father' |
| | inaanya | 'cithar' | ízúuru | 'nose' | maáma | 'my mother' |
| | itoongo | 'ruin' | idǵíino | 'tooth' | tkwééβǵe | 'we' |

| | | | | |
|----------|------------|-----------|--------------------|-------|
| kugenda | 'to go' | kúróòta | 'to dream' | ----- |
| kuriinda | 'to guard' | gútkwáára | 'to carry/lead' | ----- |
| gušaaka | 'to want' | kúbǵáara | 'to bear children' | ----- |

d. L-LF-L

| | | | |
|----------|--------------|---------|-----------------|
| itáââfi | 'tobacco' | ítúúze | 'calm' |
| imàâri | 'money' | ítééka | 'law, always' |
| inhòðre | 'dancer' | ínééza | 'goodness' |
| imbǵliza | 'vegetables' | íšííngé | 'kind of grass' |

e. H-HH-L

Looking at the data from (3) to (6), one might be tempted to formulate rules such as those in (7) and (8), which simply say that a H in word final position becomes L, except in monosyllables, where it becomes a F tone.

(7) $\acute{V} \rightarrow \grave{V} / _ \#$ (8) $\acute{V} \rightarrow \hat{V} / \# _ \#$

It will be shown, however, that a more general rule is possible which does not have to do with the fact that the H tone occurs in word-final position or the penultimate syllable. It will be made clear that all F tones are underlyingly H and that all H's, at the systematic phonemic level, belong to the next syllable on the right.

The first evidence of tone anticipation in Kinyarwanda is the fact that noun prefixes usually carry L tone, but inexplicably have H tone in some words. The prefixes preceded by their respective preprefix are the following:

| | | | |
|--------------|----------|-----------|-----------|
| (9) 1. u-mu- | 5. i-Ø- | 9. i-n- | 13. u-tu- |
| 2. a-βa- | 6. a-ma- | 10. i-n- | 14. u-βu- |
| 3. u-mu- | 7. i-ki- | 11. u-ru- | 15. u-ku- |
| 4. i-mi- | 8. i-βi- | 12. a-ka- | 16. a-ha- |

Examples are provided in (10) for each noun class.

| | | | |
|----------------|--------------|---------|----------------|
| (10) 1. umúpfu | 'dead' (sg.) | umuskwa | 'stupid' (sg.) |
| 2. abápfu | 'dead' (pl.) | abaskwa | 'stupid' (pl.) |
| 3. umúti | 'medicine' | umuzi | 'root' |
| 4. imíti | 'medicines' | imizi | 'roots' |
| 5. ífi | 'fish' | ibǵa | 'testicle' |
| 6. amáfi | 'fishes' | amabǵa | 'testicles' |

| | | | |
|-------------|--------------|--------|------------------|
| 7. igíti | 'tree' | igihe | 'time' |
| 8. iβídǵo | 'food' | iβiro | 'office' |
| 9. ínhwi | 'firewood' | ingwe | 'leopard' |
| 10. ímhu | 'skins' | ime | 'dews' |
| 11. urúhu | 'skin' | urume | 'dew' |
| 12. akáβi | 'misfortune' | akazi | 'job' |
| 13. udúka | 'small cows' | udusǵo | 'small grinders' |
| 14. uβúkwe | 'wedding' | uβura | 'intestines' |
| 15. ugútkwi | 'ear' | ugusǵa | 'grinding' |

The examples in (10) give pairs in which the prefix is marked by H (on the left) and L (on the right). There is no way any kind of generalization could be made if some prefixes were posited as having underlying H and others as having underlying L tone. It seems reasonable, then, to accept the fact that a H tone on the stem has been shifted to the prefix. This is confirmed by the fact that all prefixes that occur in the place formerly held by a prefix with H tone acquire the H tone also. Virtually all nouns can move from one class to another. For instance, they can take the diminutive marker ka- (class 12) or the pejorative marker ru- (class 11). When we put the nouns in (4) above in the ka- and ru- classes, we discover that these prefixes acquire L tone where the original prefix had L tone, and H tone where the original prefix had H tone.

| | | | |
|---------------|-----------------|----------|-----------------|
| (11) a. agafu | 'flour' | b. agáfi | 'fish' |
| urufu | 'lots of flour' | urúfi | 'big fish' |
| akada | 'stomach' | akáda | 'louse' |
| uruda | 'big stomach' | urúda | 'big louse' |
| akazu | 'house' | akávu | 'little ash' |
| uruzu | 'big house' | urúvu | 'lots of ashes' |

The rule can be formalized by showing that the underlying H tone is always anticipated to the left regardless of whatever syllable it occurs on.

(12) /L-H/ → [H-L]

This rule implies that the underlying representation of the forms in (5b) and (5c) are as given in (13), which is indeed correct.

- (13) b. ipapá → ipápa 'wing'
 igití → igíti 'tree'
 iphokó → iphóko 'chicken'
- c. isúka → ísuka 'hoe' kuβóna → kúβona 'to see'
 insína → ínsina 'banana tree' kubǵína → kúbǵina 'to dance'
 isóni → ísoni 'shyness' gukóra → gúkora 'to work'

Additional evidence of anticipation of H tone is derived from the fact that the preprefix is usually deleted after demonstratives, but its H tone shifts to the final syllable of the demonstrative.

- (14) /zino isúka/ → [zínó suka] 'these hoes'
 /iyi intáre/ → [iyí nhare] 'this lion'
 /yáà inkóno/ → [yáá nhono] 'that pipe'
 /ryáà ipapá/ → [dǵáà βápa] 'that wing'
 /uyu umuzi/ → [uyu muzi] 'this root'

The additional examples in (15) and (16) are given to illustrate that tone anticipation is a live process in Kinyarwanda. They differ from rule (12) in that they can anticipate two or more syllables. Since these are grammatical tones and behave differently from the lexical tones, they won't be discussed further in this paper (they will be treated in a paper now in preparation). For instance, the subjunctive morpheme is -e, but the H tone never appears phonetically on the vowel -e; rather, it shifts one or more syllables to the left.

- (15) /a - kin - é/ [akíne] 'may he play'
 he play SUBJ
 /a - kin - ir - é/ [akínire] 'may he play for someone'
 he play BEN SUBJ
 /a - kór - é/ [akóre] 'may he work'
 he work SUBJ
 /a - kór - er - é/ [akórere]¹ 'may he work for someone'
 he work BEN SUBJ
 /a - kór - eeš - er - ez - é/ [akóréèšereze]¹ 'may he cause someone to work
 he work CAUS BEN CAUS SUBJ for someone'
 /a - kin - iis - ir - iz - é/ [akíníisirize] 'may he cause someone to play
 he play CAUS BEN CAUS SUBJ for someone'

Notice that the lexical H tone of the verb 'work' has been neutral-

ized and that the subjunctive H tone shifts to the first vowel of the causative morpheme no matter how many suffixes occur before it.

Another obvious example of tone anticipation is noted when a pronoun infix appears in the verb forms that keep the lexical tones, namely the infinitive form, the -ra- tense (action-focus marker), the -ka- tense (narrative and consecutive tense) and the -aa- tense (the recent past).²

- (16) a. /-tém-/ 'cut'
- | | |
|---|---|
| /ku - tém - a/ to cut INF | [gútema] ³ 'to cut' |
| /ku - ki - tém - a/ to it cut INF | [kúgitema] 'to cut it' |
| /a - ra - tém - a/ he A.F. cut ASP | [arátema] 'he is cutting' |
| /a - ra - ki - tém - a/ he A.F. it cut ASP | [arágitema] 'he is cutting it' |
| /a - ka - tém - a/ he TNS cut ASP | [agátema] ³ 'and then he cuts' |
| /a - ka - ki - tém - a/ he TNS it cut ASP | [akágitema] ⁴ 'and then he cuts it' |
- b. /-ror-/ 'look'
- | | |
|--|--|
| /ku - ror - a/ to look INF | [kurora] 'to look' |
| /ku - ki - ror - a/ to it look INF | [kukirora] 'to look at it' |
| /a - ra - ror - a/ he A.F. look ASP | [ararora] 'he is looking' |
| /a - ra - ki - ror - a/ he A.F. it look ASP | [arakirora] 'he is looking at it' |
| /a - ka - ror - a/ he TNS look ASP | [akarora] 'and then he looks' |
| /a - ka - ki - ror - a/ he TNS it look ASP | [akakirora] 'and then he looks at it' |
- c. /-kúùnd-/ 'like'
- | | |
|--|------------------------------|
| /ku - kúùnd - a/ to like INF | [gúkúùnda] 'to like' |
| /ku - ki - kúùnd - a/ to it like INF | [kúgikuunda] 'to like it' |
| /a - ra - kúùnd - a/ he A.F. like ASP | [arákúùnda] 'he likes' |

| | |
|--|---|
| /a - ra - ki - kúund - a/ he A.F. it like ASP | [arágíkuunda] 'he likes it' |
| /a - ka - kúund - a/ he TNS like ASP | [agákúúnda] 'and then he likes' |
| /a - ka - ki - kúund - a/ he TNS it like ASP | [akágíkuunda] 'and then he likes it' |

d. /-riind-/ 'guard'

| | |
|---|--|
| /ku - riind - a/ to guard INF | [kuriinda] 'to guard' |
| /ku - ki - riind - a/ to it guard INF | [kukiriinda] 'to guard it' |
| /a - ra - riind - a/ he A.F. guard ASP | [arariinda] 'he is guarding' |
| /a - ra - ki - riind - a/ he A.F. it guard ASP | [arakiriinda] 'he is guarding it' |
| /a - ka - riind - a/ he TNS guard ASP | [akariinda] 'and then he guards' |
| /a - ka - ki - riind - a/ he TNS it guard ASP | [akakiriinda] 'and then he guards it' |

In (3) we observed examples of monosyllables that have F tones and we proposed rule (8), which states that H tones fall in monosyllabic words. The rule is more general than this, however: the H tone falls if there is no other syllable on the left side of the word. One evidence for this rule is that deletion of the initial vowel carrying a H tone causes the next syllable to have a F tone. Thus in Kinyarwanda, one way of naming is obtained by just deleting the preprefix. When this happens, the underlying H tone, which is now the first syllable after the vowel deletion, gets a F tone.

| | |
|--|--|
| (17) /súka/ → [súka] cf. /isúka/ → [ísuka] 'Hoe' 'hoe' | |
| /βára/ → [βára] cf. /iβára/ → [íβara] 'Color' 'color' | |
| /ntáre/ → [nhàre] cf. /intáre/ → [ínhare] 'Lion' 'lion' | |

On the other hand, if the initial H tone syllable consists solely of a vowel, this H does not become a F.

| | |
|--|--|
| (18) /úno/ → [úno] cf. /βáno/ → [βáno] 'this' 'these' | |
| /úrya/ → [úǰa] cf. /βárya/ → [βáǰa] ⁵ 'that' 'those' | |

Compare in this regard the participle, which is marked by a H tone on the verb prefix. It remains H if the verb prefix is a vowel, and falls if the prefix consists of a consonant plus vowel.

| | |
|--------------------------|----------------------------|
| (19) áŋwa 'him drinking' | múŋwa 'you (pl.) drinking' |
| ádǰa 'him eating' | βádǰa 'them eating' |
| úŋwa 'you drinking' | túŋwa 'us drinking' |
| údǰa 'you eating' | βídǰa 'eating them' |

The tone falling rule can then be formulated as follows:

| |
|---------------------------|
| (20) H → F / # C (C) ____ |
|---------------------------|

At this point we need to add two more rules to account for the tones realized on long vowels, since rules (12) and (20) cannot derive them. Thus, a H tone on the first mora of the long vowel is anticipated by not lowered as in other cases:

| |
|------------------------|
| (21) L → H / ____ -HL- |
|------------------------|

The rule expressed in (21) can account for the well-formedness of the words given in (6). The underlying representations of the words in (6b) are as given in (22):

| | | | |
|----------------------|------------|-------------------------------|------------|
| (22) L-HL-L → H-HL-L | | | |
| /intwáari/ 'brave' | [ínhwáari] | /intíimba/ 'sorrow' | [ínhíimba] |
| /izúuru/ 'nose' | [ízúuru] | /izúùba/ 'sun' | [ízúùba] |
| /kuróòta/ 'to dream' | [kúróòta] | /kubyáara/ 'to bear children' | [kúbǰáara] |

The underlying representations of (6c) are given in (23):

| | | | |
|------------------|------------|---------------------|---------|
| (23) LL-H → LH-L | | | |
| /ǰeewé/ 'me' | [ǰééwe] | /daata/ 'my father' | [dàata] |
| /tweebwé/ 'we' | [tkwéébge] | /maama/ 'my mother' | [màama] |

The words in (6c) are, then, the only ones derived by rule (12). The examples in (6e) are derived by both rules (12) and (21).

| | | | |
|----------------------|----------|---------------------|----------|
| (24) L-HL-H → H-HH-L | | | |
| /itúúzé/ 'calm' | [ítúúze] | /inéézà/ 'goodness' | [ínééza] |

| | | | |
|----------|----------|-------------|----------|
| /itééká/ | [ítééka] | /ináábí/ | [ínáábi] |
| 'law' | | 'crudeness' | |

Rule (21) is confirmed by the fact that monosyllabic verbs usually have their lexical H tone on the prefix but when a suffix is added, such as the benefactive suffix *-ir-*, the causative suffix *-iiš-*, or the aspect marker *-(i)ye*, the lexical H tone remains on the stem but tone anticipation still applies.

| | |
|---------------------|--------------------|
| (25) /ku - tá/ | [gúta] |
| to throw | 'to throw' |
| /ku - tá - ir - a/ | [gútéera] |
| to throw BEN INF | 'to throw for' |
| /a - ra - tá - ye/ | [arátáaye] |
| he A.F. throw ASP | 'he is throwing' |
| /ku - há/ | [gúha] |
| to give | 'to give' |
| /ku - há - iiš - a/ | [gúhééša] |
| to give CAUSE ASP | 'to cause to give' |
| /ku - há - ir - a/ | [gúhéera] |
| to give BEN ASP | 'to give for' |

Also H tones on long vowels actually derive from the application of both rules (12) and (21). Usually the contact of two non-identical vowels cause the deletion of the preceding one. If both vowels carry H tone, however, the first vowel gets deleted and the second one is lengthened, thus keeping the two H tones.

| | | | |
|-------------------|---|-----------|------------------|
| (26) /ná - isúka/ | → | [níisuka] | 'with a hoe' |
| /ná - inkokó/ | → | [níñhóko] | 'with a chicken' |
| /nká - inká/ | → | [ñhííñha] | 'like a cow' |
| /nká - ibuye/ | → | [ñhíβuye] | 'like a stone' |

Since the examples in (6d) cannot be derived by either rule (12), (20) or (21), we need another rule which says that a rising tone on a long vowel has to fall.

| | | |
|-------------|-----------|-----------|
| (27) L-LH-L | → | L-LF-L |
| /itáábi/ | [itáábi] | 'tobacco' |
| /intòóre/ | [inhòóre] | 'dancer' |
| /imáári/ | [imáári] | 'money' |
| /išááti/ | [išááti] | 'shirt' |

The rules which have been proposed give a correct phonetic

output and don't have to be ordered. They simply apply each time their structural description is satisfied. We don't know, however, why F tones anticipate but don't lower or why a R tone would have to fall. Rules (12) and (21) explain why we don't find H tones in the penultimate syllable of infinitival verb forms. The morpheme *-a* which comes after the verb stem has a L tone. Penultimate H tones always derive from final H tones. This doesn't explain, however, why infinitival forms with F tones in the penultimate position with long vowels are not found in the language. We don't know why there is such a limited number of lexical items that have a H tone on the second mora of the vowel.

I have shown that tone anticipation is a live process in Kinyarwanda. Much more work needs to be done, however, to determine its correct formulation and boundaries. A further study should try to find a motivation for the rules we have proposed here and examine their application, especially in the case of multiple pronoun incorporation, verbal suffixes (extensions), and in other cases of grammatical tone.

NOTES

¹Meeussen has suggested that vowels of extensions (suffixes) take the tone of the final vowel, thus implying that they are toneless. There is no reason to suppose this for Kinyarwanda, however, since all extensions and prefixes seem to have L tones.

²Note that the recent past, which also keeps the lexical H tone doesn't make the H tone anticipate two syllables but just undergoes the normal anticipation rule. Ex. /-kor-/ 'do':

| | |
|---------------------------|---------------|
| /ba - aa - kór - ye/ | [βáákoze] |
| they PAST do ASP | 'they did' |
| /ba - aa - ki - kór - ye/ | [βaagíkoze] |
| they PAST it do ASP | 'they did it' |

Cf. /-kúünd-/ 'like':

| | |
|-----------------------------|-----------------|
| /ba - aa - kúünd - ye/ | [βáákúünze] |
| they PAST like ASP | 'they liked' |
| /ba - aa - ki - kúünd - ye/ | [βaagíkúünze] |
| they PAST it like ASP | 'they liked it' |

³We observe here the application of Dahl's Law or voice dissimilation, which voices consonants of morphemes that appear before the stem if the latter begins with a voiceless consonant.

⁴If the verb has two or more infixes the underlying H tone seems to spread over all of the syllables to the left.

| | | |
|---------------------------------|--------|----------------------|
| /-há-/ | 'give' | |
| /ku - há - a/ | | [gúha] |
| to give INF | | 'to give' |
| /ku - mu - há - a/ | | [kúmuha] |
| to him give INF | | 'to give him' |
| /ku - ki - mu - há - a/ | | [kúkímúha] |
| to it him give INF | | 'to give it to him' |
| /-kór-/ | 'do' | |
| /ku - kór - a/ | | [gúkora] |
| to do INF | | 'to do' |
| /ku - ki - kór - a/ | | [kúgikora] |
| to it do INF | | 'to do it' |
| /ku - ki - mu - kór - ir - a/ | | [kúkímúkorera] |
| to it him do BEN INF | | 'to do it for him' |
| /-kúùnd-/ | 'like' | |
| /ku - kúùnd - a/ | | [gúkúùnda] |
| to like INF | | 'to like' |
| /ku - mu - kúùnd - a/ | | [kúmúkuunda] |
| to him like INF | | 'to like him' |
| /ku - ki - mu - kúùnd - ir - a/ | | [kúkímúkuundira] |
| to it him like BEN INF | | 'to like it for him' |

⁵Hyman (personal communication) has suggested that the underlying tones of [úno] and [bâno] might be /u-nó/ and /bá-nó/, respectively, in which case [úno] would be derived by the normal anticipation rule, i.e. (12), and [bâno] by a rule such as in (7), and the falling rule, i.e. rule (20).

APPENDIX: Tone Representation in Three Different Systems

| | Coupez and Meeussen | Kagame | Kimenyi |
|-------------|---------------------|---------|----------|
| 'man' | umugabo | umugabo | umugabo |
| 'woman' | umugoré | umugöre | umugóre |
| 'young man' | umusóre | umúsöre | umúsore |
| 'child' | umwáana | úmwāna | úmḡáana |
| 'king' | umwáami | umwāmi | umḡaami |
| 'debt' | umwéendá | úmwēnda | úmḡéenda |
| 'dirt' | umwaanda | umwanda | umḡaanda |
| 'mother' | maamá | māma | maáma |

STUDIES IN BANTU TONOLOGY
Southern California Occasional Papers
in Linguistics No. 3, December 1976
Edited by Larry M. Hyman

TONE, ACCENT, AND ASSERTION IN HAYA

BY

ERNEST RUGWA BYARUSHENGO

LARRY M. HYMAN

SARAH TENENBAUM

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

REFERENCES

- Hyman, L. M. and R. G. Schuh. 1974. Universals of tone rules: evidence from West Africa. *Linguistic Inquiry* 5.81-115.
- Kagame, A. 1956. *La philosophie bantu-rwandaise de l'être*. Bruxelles.
- Kimenyi, A. 1975. On non-uniqueness in generative phonology. Manuscript, University of California, Los Angeles.
- Meeussen, A. E. 1959. *Essai de Grammaire Rundi*. Tervuren.
- Schadeberg, T. C. 1976. Anticipation of tone: evidence from Bantu. Paper presented at the VIIth Conference on African Linguistics, Gainesville, Florida. To appear in proceedings.
- Spaandonck, M. van. 1971. *L'Analyse Morphotologique dans les Langues Bantoues* (trans. by Luc Bouquiaux). Paris: Société d'Etudes Linguistiques et Anthropologiques de France.

The first author is an Assistant Lecturer in African Linguistics at the University of Dar es Salaam currently on study leave at the University of Southern California.

0. INTRODUCTION¹

Like most other Bantu languages, Haya, a language of Northern Tanzania, is characterized by two level tones, H (high) and L (low), which take part in complex alternations conditioned both by tonological and grammatical factors. As is so frequently the case in Bantu, rules which convert underlying tonal representations into surface ones combine a complex of tonal information, grammatical boundaries, and morphological categories. The purpose of the present paper is to integrate these multiple factors into a coherent statement on Haya tonological structure. In section 1 we present a general introduction to the Haya tone system, focusing primarily on alternations characterizing the final two syllables of a phrase. In section 2 we argue that these alternations can only be understood in terms of an abstract phrase-penultimate accent. In section 3 we turn to the pragmatics of this tone-affecting accent and argue that its presence vs. absence can only be predicted on the basis of what is asserted in a Haya utterance within a given discourse. We conclude briefly in section 4 with a general statement on the interaction between tone and syntax.

1. TONE

We begin by considering the possible tone sequences found in bi-, tri-, and quadrisyllabic nouns in Haya, all of which are illustrated in (1).

| | | | | |
|--------|---------|---------|---------|------|
| (1) a. | L-L | ente | 'cow' | 9/10 |
| | H-L | émbwa | 'dog' | 9/10 |
| b. | L-L-L | enfulu | 'fish' | 9/10 |
| | | omuzi | 'root' | 3/4 |
| | L-H-L | empúnu | 'pig' | 9/10 |
| | | omúti | 'tree' | 3/4 |
| | L-F-L | enjôka | 'snake' | 9/10 |
| c. | L-L-L-L | okugulu | 'foot' | 15/6 |
| | L-L-H-L | obugólo | 'snuff' | 14/6 |
| | L-L-F-L | omukôno | 'hand' | 3/4 |
| | L-H-L-L | emótoka | 'car' | 9/10 |

In these and subsequent examples an acute accent marks a H, while a

circumflex accent marks a F (falling tone). L tone is unmarked.²

In (1) we have attempted, where possible, to give nouns having monosyllabic vs. bisyllabic augmented prefixes (e.g. cl. 9 eN- vs. cl. 3 omu-), as well as nouns having monosyllabic vs. bisyllabic stems (e.g. -zi 'root' vs. -fulu 'fish'). Although tone does not carry a heavy functional load lexically, occasional minimal pairs are found, e.g. [enda] 'pregnancy' vs. [énda] 'louse'. Each of the patterns represented in (1) could be further illustrated with numerous examples. The one pattern L-H-L-L is not terribly frequent in nouns and includes a number of borrowings (e.g. eshágama 'blood', from Luganda). Whether it is a native pattern or not will not concern us here.³

From the above surface patterns the following generalizations emerge: 1) H never appears before pause, e.g. on the final syllable of a noun in isolation; 2) F only occurs in penultimate position; 3) no two H's or two F's or one H and one F occur in the same word, i.e. there is only one mark of prominence per noun in isolation; 4) H can occur initially only in bisyllabic nouns. In the following subsections each of these surface constraints on tone sequences in nouns in isolation is taken up in turn. It will be seen that once such nouns are positioned within a larger phrase, many of the above constraints no longer hold. In addition, the tonal shape of a noun can vary considerably, depending on the grammatical context. This last point is illustrated for the noun 'tree' in (2), which appears with seven different tonal configurations.

| | | | |
|--------|-------|------------------------|---------------------------|
| (2) a. | L-H-L | omúti | 'tree' (isolation form) |
| b. | H-H-L | okubón' ómúti | 'to see a tree' |
| c. | L-L-H | omutí gwange | 'my tree' |
| d. | H-L-H | okubón' ómutí gwange | 'to see my tree' |
| e. | L-L-L | omuti gwa Káto | 'tree of Kato' |
| f. | H-L-L | okubón' ómuti gwa Káto | 'to see the tree of Kato' |
| g. | H-H-H | abon' ómutí Káto | 'he sees the tree, Kato' |

The only tone pattern involving H's and L's that has not been found on 'tree' is L-H-H.⁴

1.1. We begin our attempt to provide underlying tonal representations for the nouns in (1) by considering the F tone. Whenever

a word ending in F-L tone on its last two syllables is followed by another word (whatever the syntactic relationship), the F tone is not attested. The corresponding syllable is instead most generally realized as H, as seen in (3).

(3) omukóno 'hand' omukóno gwange 'my hand'

While the word for 'hand' is realized as L-L-F-L before pause, when the possessive pronoun 'my' is added, 'hand' is realized as L-L-H-L. This is consistent with the constraint pointed out above, namely that F occurs only penultimately. However, it is necessary to add that the F tone occurs only in phrase-penultimate position. Thus, when a word is added after another word ending in F-L, the F of the first word is no longer phrase-penultimate and must surface as a H.

We propose that words which in isolation have a F on their penultimate syllable should be represented underlyingly as ending in a H-L sequence. The following rule in (4) converts this sequence to F-L.

(4) H → F / ___ L ||

We therefore posit such underlying representations as /omukóno/ 'hand' and /omwáána/ 'child', which are realized as [omukóno] and [omwáána] when followed directly by pause.⁵

1.2. Since we have suggested that nouns ending in phonetic F-L are actually to be represented with underlying H-L, this naturally leads us to consider nouns which end in phonetic H-L. Whenever such a noun is followed by another word (whatever the syntactic relationship), the H-L sequence is not attested. Instead, the noun typically ends in a L-H sequence, as seen in (5).

(5) omúti 'tree' omutí gwange 'my tree'

While the word for 'tree' is realized as L-H-L in isolation, when the possessive pronoun 'my' is added, 'tree' is realized as L-L-H. This suggests that the underlying form for 'tree' should be /omutí/, which is realized as [omúti] by the tentative rule in (6).

(6) L-H → H-L / ___ ||

An underlying L-H sequence is realized on the surface as H-L when followed directly by pause. The evidence for such underlying forms

as /omutí/ 'tree' and /obugoló/ 'snuff' is thus twofold: 1) There is a systematic gap of no H before pause which is thereby accounted for; and 2) The alternation between H-L (before pause) and L-H (found elsewhere) is thereby explained: underlying L-H is realized as such except when followed by pause.⁶ This except-clause is straightforward and natural, since many tone languages either modify or dispense with H tone in utterance-final position.

The rule in (6) is written in a somewhat vague fashion, one which hedges on the nature of the process in question. We shall return to this important rule in section 2, but would like first to corroborate the above analysis by means of a few verb forms. As seen in (7),

(7) okujuna 'to help' okubóna 'to see'

verb infinitives are characterized by the augmented class 15 prefix o-ku-, a final L tone vowel a, and a tonal contrast between L and F on the stem syllable. Since this stem syllable is in phrase-penultimate position, we do not hesitate in setting up the following underlying forms in (8).

(8) /o-ku-jun-a/ /o-ku-bón-a/

The underlying contrast between L and H on the verb stem is further confirmed when the benefactive suffix -il/-el is added, as seen in the corresponding forms in (9).

(9) o-ku-jun-il-a 'to help for (someone)'
o-ku-bón-el-a 'to see for (someone)'

In the forms in (9) the verb stem is no longer in phrase-penultimate position, and the underlying H of /bón/ 'see' is therefore realized as a surface H, rather than as the F observed in (7).

1.3. We can now address ourselves to the question of why words in isolation do not have (as a general rule) more than one H tone. In order to do so, we shall have to consider the tones of some finite verb forms. In (10),

(10) ajúna 'he helps' abóna 'he sees'

the two verb forms consist of the subject pronoun /a/ 'he/she' and a final L tone vowel [a]. However, note that in this tense (present

habitual), there is no tonal contrast between 'help' and 'see'. This follows from the above analysis. Since we have a L-H-L sequence in 'he helps', and since we have seen in (8) and (9) that 'help' has a L tone on its stem, the H of [ajúna] 'he helps' could only have come from the final vowel. We are therefore justified in setting up the underlying forms in (11).

(11) /a-jun-á/ /a-bón-á/

Underlying /a-jun-á/ is converted to [ajúna] by rule (6). Underlying /a-bón-á/ is more complicated. We are justified in setting up a L-H-H sequence on the basis of the H (or derived F tone) observed on /bón/ in (7). We also want to keep a H tone on the final vowel /á/ which was found necessary in the same tense for the L tone verb 'help'. Because 'he sees' comes out as [abóna], it would appear that we need a further rule, given in (12).

(12) H → L / H ___ ||

That is, a H-H sequence is realized as H-L in pre-pause position. However, this would not account for the form in (13b).

- (13) a. ajuná nyina 'he helps his mother'
b. aboná nyina 'he sees his mother'

While 'he helps his mother' simply realizes the underlying L-L-H sequence recognized in (11) for 'he helps', the underlying L-H-H sequence of 'he sees' comes out as L-L-H for no apparent reason. In order to account for the surface tones of (13b), a further rule is needed, as given in (14).

(14) H → L / L ___ H

A L-H-H sequence is realized as L-L-H when there is no intervening word boundary (see below for a different statement). Such a rule is very often found in African tone languages (cf. Hyman and Schuh 1974) and is clearly needed for Haya.

However, once we accept rule (14) the status of rule (12) is cast into doubt. If we start with /a-bón-á/ 'he sees', the correct surface form can be generated without rule (12), as seen in (15).

(15) /a-bón-á/ → a-bon-á → [abóna]
(by rule 14) (by rule 6)

First rule (14) converts underlying L-H-H to L-L-H, and then rule (6) converts L-L-H to L-H-L. Intermediate a-bon-á would then become surface [abóna] by the same rule that takes underlying /a-jun-á/ 'he helps' and converts it to [ajúna]. The solution is elegant, although we shall have more to say about it in section 2.

To summarize, we have demonstrated, first, that there is no underlying F tone in Haya. Sequences of F-L are underlyingly H-L. Sequences of phonetic H-L, on the other hand, are underlyingly L-H, or at least in some verb forms as we have seen, underlyingly H-H. Final L-L is always realized as such. These findings are summarized in the table in (16).

| | | | | | |
|------|------------------------|-----|-----|-----|-----|
| (16) | Underlying | L-L | H-L | L-H | H-H |
| | Before pause | L-L | F-L | H-L | H-L |
| | Elsewhere ⁷ | L-L | H-L | L-H | L-H |

1.4. In the preceding three subsections we have explained three of the four noted constraints. This leaves the question of why nouns cannot begin with H tone except in the case of some bisyllabic nouns, e.g. [énda] 'louse'. All of the nouns cited in the preceding discussion begin with an initial vowel (which Bantuists refer to as a pre-prefix, an augment, or simply the initial vowel) followed by a noun class prefix, e.g. [o-mu-kôno] 'hand', [é-ń-bwa] 'dog', etc. Those bisyllabic nouns which have H-L tone are recognized as underlying L-H; thus /e-m-bwá/, /e-n-dá/ etc. It would thus appear possible to say that the only time an initial vowel carries H tone is when that H tone has been shifted to the left by rule (6). While this is observationally correct, the conclusion that the initial vowel has an underlying L of its own is not correct. Rather, the initial vowel has an underlying H tone which is lowered by the following rule in (17).⁸

(17) H → L / || [\bar{V}]

In (17) an utterance-initial H tone vowel (in this case, the noun preprefix) is lowered to L. Evidence for this rule is the fact that whenever a preprefix is preceded by anything (whatever the syntactic relationship--and this bears no exceptions), it is realized as a H tone, as seen, for example, in (18).

- (18) okujun' ómwáàna 'to help a child' (cf. omwáana)

Even when the subject of a sentence is preceded by the word 'yesterday', the preprefix is realized as H. It is thus not possible to say that there is a rule changing a L of the initial vowel to H in certain constructions only. The preprefix will have phonetic H tone unless it occurs immediately after pause.

In cases where the preprefix has H tone, this of course sometimes creates words with more than one mark of prominence, underlyingly. Thus, the constraint that there will be only one surface H tone in a noun in isolation owes its existence to the pause boundaries on both sides. In fact, since no final syllable will ever have H tone, and since such syllables always end in a vowel, we can generalize and say that (17) can operate as a mirror-image rule: a H tone vowel will become L if it is immediately adjacent to a pause boundary. Whether these two facts can be captured by one rule depends on the nature of the change from utterance final L-H to H-L. This is taken up again in section 2.

2. ACCENT

Many Bantu languages have a phrase-penultimate accent which usually lengthens the vowel of that syllable, and perhaps has some additional pitch and intensity effects. If we look at a Haya word such as [okugulu] 'leg', with all L tones, we note neither a lengthening of the penultimate vowel, nor any pitch perturbation suggesting an accent on that (or any other) syllable.⁹ However, both rule (4) and rule (6) have the effect of bringing more prominence to the penultimate syllable. Rule (4), it is recalled, changes a H to a F tone when it is in penultimate position. Rule (6) has the effect of transferring a H from final to penultimate position. Could these two processes be seen as accentual in nature? The alternative would be that these rules represent natural tonal assimilations which could take place in the absence of a penultimate accent. Thus, when H-L becomes F-L, the H would be seen as assimilating to the following L (which is itself followed by pause). Similarly, when final L-H becomes H-L, the L would be seen as assimilating to the following H which, in turn, is reduced to L because it is directly followed by pause. While these two processes, as

just described, may seem to have some plausibility, both involve leftward tone-spreading, a process which was said to be unnatural in the cross-linguistic survey conducted by Hyman and Schuh (1974). A H-L sequence should yield H-F rather than F-L, and a L-H sequence should yield L-R (rising) or ultimately L-L in final position (rather than the intermediate H-H considered here). While the assimilation hypothesis cannot be completely dismissed on the basis of the Hyman and Schuh evidence, this evidence becomes all the more persuasive as there is a compelling alternative hypothesis involving accent.

In order to introduce the notion of a phrase accent, consider the following sentences in (19).

- (19) a. naayend' ómwáàna 'he wants the child'
 b. naayend' ómwáàna, káágénde 'he wants the child, let him go'

In (19a) it is observed that /ó-mu-ána/ is realized with a falling tone [áà], since it is directly followed by pause. In (19b), however, we still obtain a F tone, although there is no pause. We have indicated a comma to show that there is a phrase boundary of some kind. The important fact is that Haya speakers do not normally take pauses in the place that speakers of English do (cf. section 3 below).

More direct evidence that there is no pause involved in (19b) is seen from the corresponding sentence in (20b).

- (20) a. naayend' óbugólo 'he wants the snuff'
 b. naayend' óbugóló, káágénde 'he wants the snuff, let him go'

In (20a) /ó-bu-goló/ is realized with final H-L tone, because it is directly followed by pause. In (20b) not only do we find that the final H of the underlying form is still intact, but also that the preceding L tone syllable has assimilated to the final H. Again, the boundary that conditions this alternation is marked by a comma. That there is no pause involved is seen by the fact that rule (6), which changes L-H to H-L before pause, has not applied. If we insist that there is a necessary pause in (20b), and by extension in (19b), then we are forced to abandon the generalization that Haya does not permit H before pause. We would have to say that Haya does not permit H before pause except when that pause is

followed by another clause. This would mean that there are two kinds of pauses, a real pause before which no H is found, and a weaker pause (a shorter one?) which allows H to occur before it. The distinction between two kinds of pauses is not convincing.

What is involved in (19b) and (20b) is a phrase boundary which is not accompanied by a pause. It is this boundary, we would like to suggest, which conditions a penultimate accent, accounting for the alternations summarized in the table in (21) (which should be compared with the table in (16) above).

| | | | |
|------|--------------|-----|-----|
| (21) | Underlying | H-L | L-H |
| | Before pause | F-L | H-L |
| | Before % | F-L | H-H |
| | Elsewhere | H-L | L-H |

It is the H-H realization of underlying L-H which motivates the phrase boundary, formalized as %. A pause boundary contains a % boundary, but a % boundary does not necessarily coincide with a pause boundary. With this in mind, we revise our earlier rules as follows:

(4') H → F / ___ L %

(6') L → H / ___ H %

Rule (4') now says that H-L will become F-L before the % boundary. This automatically entails that the same alternation will take place before pause, since a pause boundary is also a phrase boundary. Rule (6') has been considerably revised over rule (6) and now says that underlying L-H will be realized as H-H before %. This also applies to pause boundaries, but here we need a further rule which will convert H-H to H-L before a pause boundary. This rule is given in (12').

(12') H → L / ___ ||

A H tone which occurs before pause becomes L. Rule (12'), modeled after the tentatively rejected rule (12), must be ordered after rule (6') in order to obtain correct derivations. Rule (14) must, finally, be revised only slightly so that it will not apply to the output of rule (6').

(14') H → L / L ___ H X

condition: X does not begin with %

The reason for the condition in (14') is that we do not want /a-bón-á/ to become first a-bon-á and then the incorrect *[abona]. The complete revised derivations for [abóna] 'he sees' and [aboná nyina] 'he sees his mother' are given below in (22).

| | | | |
|------|-----------|-----------------|------------|
| (22) | /a-bón-á/ | /a-bón-á nyina/ | underlying |
| | [abóna] | | rule (12') |
| | | [aboná nyina] | rule (14') |

Surprisingly, the derivation of (15) has become much simpler. Compare now the derivations for [ajúna] 'he helps' and [ajuná nyina] 'he helps his mother' in (23).

| | | | |
|------|-----------|-----------------|------------------|
| (23) | /a-jun-á/ | /a-jun-á nyina/ | underlying |
| | a-jún-á | | rule (6') |
| | [ajúna] | | rule (12') |
| | | [ajuná nyina] | (no rules apply) |

The derivation of [ajúna] involves one more step with the revised rules, but what is gained is that we can now explain why /a-jun-á/ is realized as [ajúná] when followed by a % boundary, but not by a pause.¹⁰ In just such a case only rule (6') applies, since rule (12') refers specifically to pause.

The question now is why a phrase boundary should condition the change from H-L to F-L and the change from L-H to H-H. The answer which we would like to advance here and further justify in section 3 is that Haya assigns a phrase-penultimate accent by means of the rule in (24).

(24) Syl → [+accent] / ___ Syl %

The second syllable preceding the % boundary receives an accent whose only effect is tonal (namely, rules (4') and (6')). What's more, its effect is seen only when the two syllables preceding the % boundary are either H-L or L-H. When these syllables are L-L, there is no audible effect, and when they are H-H the only effect is a negative one: rule (12') cannot apply if there is only a % boundary, but no pause, and rule (14') cannot apply because L-H-H does not become L-L-H if directly followed by % (including the

pause boundary which contains %).

The abstract phrase accent which we postulate is of course none other than the one reconstructable for Proto-Bantu. Unlike other Bantu tone languages such as Shona, Tswana, etc., there is no accentual feature which we can single out as evidence for the penultimate accent. That we are on firm ground is seen both by the tonal alternations in question (which are unnatural from a tonetic point of view, but natural from an accentual one), as well as the function of the % boundary (to be discussed in section 3). Both the change from H-L to F-L and from L-H to H-H have the effect of adding prominence to the penultimate syllable.¹¹ In the creation of the F tone, the pitch change which takes place on the penultimate syllable highlights that syllable. In deriving a phrase-final H-H from L-H, the penultimate syllable is made to be equal in pitch prominence to the final syllable.¹² When L-H-H fails to become L-L-H before %, the accent boundary guarantees that the penultimate syllable will not be realized with less prominence than the final syllable (cf. note 8). Finally, no audible effect is discerned on L-L sequences before %, though there might have been at some earlier time.

Whether one chooses to state the rules in terms of phrase boundaries or accent boundaries (using the feature specification [+accent]) may be a matter of taste. We see in the above data ample reason to internally reconstruct an accent, which synchronically has its effect in positions other than and in addition to pre-pause. Since we are dealing with tonal alternations conditioned by a boundary, it is instructive to examine the contexts in which % is found and propose rules for the insertion of the % boundary. In section 3, then, we shall further support the notion of a phrase accent in Haya.

3. ASSERTION

In examples (19b) and (20b) it was stated that the phrase boundary %, which we have concluded to be an accent boundary, is usually not accompanied by pause. Conclusive evidence that the % is not to be equated with pause (although a pause boundary necessarily contains a % boundary) is seen in the following near-para-

phrases in (25).

- (25) a. abakázi babon' ómwáàna 'the women see the child'
 b. babon' ómwáàn' ábakázi 'they see the child, the women'

In (25a) /á-ba-kázi/ 'women' is realized with final H-L tone, rather than with F-L, since it is not in phrase-final position (i.e. the H is not penultimate with respect to the % boundary). On the other hand, /ó-mu-ána/ 'child' is realized with F-L tone because it is directly followed by pause (and therefore %). In (25b), when /á-ba-kázi/ is postposed, /ó-mu-ána/ is still realized with F-L even though it is followed by another word. The underlying forms we propose are given in (26).

- (26) a. /á-ba-kázi ba-bón-á ó-mu-ána/ (women they-see child)
 b. /ba-bón-á ó-mu-ána % á-ba-kázi/ (they-see child, women)

It is the % boundary following 'child' in (26b) which converts this noun to F-L before the final vowel is elided. As seen in the derivation in (27),

- (27) /a-há-á ó-mu-ána ó-bu-goló/ →
 [ah' ómwáán' óbugólo] 'he gives the child snuff'

if there had been no such boundary between 'child' and the following noun, /ó-mu-ána/ would have been realized with a H rather than a F tone.

The importance of (25b) and its corresponding underlying representation in (26b) is that if there is a normal vowel elision taking place at the % boundary, then there can be no question of a pause. In fact, as we have already pointed out, Haya phrases are generally produced without intervening pauses, and therefore with the corresponding vowel elisions and assimilations found within a phrase.

The question which now arises is, why should there be a % boundary in (26b), but not in (27)? The grammatical structure of (26b) is sV-O-S (verb-object-subject), while that of (27) is sV-I-O (verb-indirect object-direct object). The "s" of sV indicates that there is a subject (agreement) pronoun on the verb. Although each sentence consists of an sV verbal complex followed by two nouns, when the second noun is the subject, there is an obligatory % boundary

before it. This is also seen in (28).

- (28) /a-bón-á ó-bu-goló % Kató/ →
 [abon' óbugóló Kátó] 'he sees snúff, Kato'

We have put a comma in the translation to indicate the break between the major part of the sentence and the postposed--or "right-dislocated" subject, which of course gets an accent of its own by virtue of its occurring before pause. Since the subject begins with a consonant we can see that the final two syllables of the object are realized H-H (as predicted in (21)), with the penultimate L of /ó-bu-goló/ rising to H.

We conclude that the % boundary is the result of a right dislocation process operating on the subject, as compared to the unmarked word order in (27), where no phrase boundary is attested. What is interesting, as was seen in (25), is that there is no pause involved in right dislocation (vowel elision having taken place), suggesting that if we are dealing with an unplanned "afterthought" (cf. Hyman 1975), this process has at least been "syntacticized" to receive grammatical status in the language. As was demonstrated in Byarushengo and Tenenbaum (1976), the right-dislocated noun with its agreement marker in the verb necessarily represents old information in the discourse. The position we would like to argue for here, as suggested to us by Francesco Antinucci, is that this right-dislocation process allows speakers to remove an argument, or other bit of information from within the scope of the assertion being made in the predicate. When one says "the women see the child", the subject "women" necessarily forms a part of the assertion (or sentential proposition). In the corresponding right-dislocated sentence "they see the child, the women", the subject "they" is taken as given, and the assertion is "see the child" (with the corresponding sentential accent marked appropriately in the English gloss). The appropriate context for such an utterance is not hard to find. Thus, the preceding utterance to which this would be an appropriate reply might be "the women don't see anyone". Thus, with a right-dislocated subject, the assertion acquires an element of contrast, contradiction, or surprise.

The phrase boundary % thus seems to separate asserted from non-asserted information. What is to the right of the % boundary is

necessarily old information in the discourse, and is thus best treated as a recapitulation.¹³ What is to the left of % is, however, not necessarily discourse-new.¹⁴ That the effect of the % boundary is to "defocus" non-asserted information is further seen with respect to the direct object. Consider the following sentences in (29).

- (29) a. babon' ómwáana 'they see the/a child'
 b. bamubón' ómwáana 'they see him, the child'

In (29a) the assertion is 'see the/a child', where the object can be interpreted either as definite or indefinite, though probably new information. In (29b) the assertion is 'see', this sentence being an appropriate reply to the preceding utterance "the women don't see the child". Two things are noticed. First, (29b) involves the object pronoun -mu- 'him/her' which agrees in noun class with the object noun. Second, there is a tonal difference on the verb stem, suggesting the underlying representations in (30).

- (30) a. /ba-bón-á ó-mu-ána/
 b. /ba-mu-bón-á % ó-mu-ána/

The H tones of /ba-bón-á/ in (30a) are lowered to L by a double application of rule (14'). This rule is blocked in (30b), however, by the condition on rule (14') which states that the L-H-H sequence cannot be directly followed by %. Thus, when the final vowel /á/ of the verb is elided, we obtain a surface contrast between [bon] in (29a) vs. [bón] in (29b).

If we change the examples in (29) and (30) to the L tone verb /ó-ku-juna/ 'to help', and replace the vowel-initial noun /ó-mu-ána/ 'child' by the consonant-initial noun /nyina/ 'his mother', we observe this tonal difference even more clearly.

- (31) a. bajuná nyina 'they help his mother'
 b. bamujúná nyina 'they help her, his mother'

The underlying tones are seen in (32).

- (32) a. /ba-jun-á nyina/
 b. /ba-mu-jun-á % nyina/

In (32a) no tone rules apply. In (32b), on the other hand, rule (6') raises the L of /jun/ to H, since it is followed by a H % se-

quence. While (32a) is the neutral utterance, (32b) would be an appropriate contradictory response to the statement "they hurt his mother" (habitual), or to the corresponding question "do they hurt his mother?" Only the verb 'help' is asserted in (32b).

We now return to the examples in (29), to which we add a right-dislocated subject, which can occur either before or after the non-asserted object.

- (33) a. bamubón' ábakâzy' ómwáana 'they see him, the women, the child'
 b. bamubón' ómwáàn' ábakâzi 'they see him, the child, the women'

Both of these sentences might occur as a reply to the previous utterance "the women don't see the child". It is thus seen that the only asserted information is the act of seeing, which acquires an element of contradiction, much like the use of the English verbal auxiliary do, e.g. they do see him. When more than one nonasserted noun occurs to the right of the assertion, each such noun requires a % on each side. That is, the underlying representations for the sentences in (33) are as follows.

- (34) a. /ba-mu-bón-á % á-ba-kázi % ó-mu-ána/
 b. /ba-mu-bón-á % ó-mu-ána % á-ba-kázi/

In (34a) the second occurrence of % converts /kázi/ to [kázi], and then the vowel [i] glides to [y] before the following vowel [o]. In (34b) the H of /-mu-ána/ is converted to a F by the second % boundary (the length of [áà] resulting from the gliding of the preceding /u/ to [w]). The same need for % boundaries is seen in (35), where the tonal pattern of the object involves a final underlying L-H, and the subject noun /kakúlu/ (a proper name) begins with a consonant.

- (35) a. abubóná Kakúlw' óbugólo 'he sees it (bu), Kakulu, the snuff'
 b. abubón' óbugóló Kakúlu 'he sees it (bu), the snuff, Kakulu'

The underlying representations are given in (36).

- (36) a. /a-bu-bón-á % kakúlu % óbugoló/
 b. /a-bu-bón-á % óbugoló % kakúlu/

In (36a) the first % preserves the H-H of the verb; the second % converts /kakúlu/ to [kakúlu], with the final [u] then gliding to [w] before the following vowel [o]. Underlying /óbugoló/ becomes

first óbugóló by rule (6') and then [óbugólo] by rule (12'). In (36b) the first % again preserves the underlying H-H of the verb; the second % converts /óbugoló/ to [óbugóló] by rule (6'). The pause boundary at the end, which contains a third %, converts /kakúlu/ to [kakúlu]. Either of these utterances could have occurred in reply to the statement "Kakulu doesn't see the snuff". Only the act of seeing is asserted.

From the above data it would appear that we do not necessarily require a change in word order in order to obtain the % boundary. Sentences (29a,b) and (31a,b) involve the same basic SVO order. In the (b) sentences there is, however, a break, i.e. SVO vs. SOV%O (where "o" indicates the object pronoun incorporated before the verb stem). The following two sentences indicate this fact even more clearly.

- (37) a. nibajuná Kakúlu mbwéènu 'they are helping Kakulu today'
 b. nibajuná Kakúlu mbwéènu 'they are helping Kakúlu today'

Since /kakúlu/ has a F tone only in (37b), we are justified in distinguishing the following underlying forms.

- (38) a. /ni-ba-jun-á kakúlu mbuénu/ (ni = pres. prog. marker)
 b. /ni-ba-jun-á kakúlu % mbuénu/

While both sentences involve SVO+Adv word order, in (38b) there is an underlying % separating the adverb 'today' from the rest of the sentence. This suggests that 'today' is in (38b) not part of the assertion. And, in fact, (38b) could only be uttered if the previous context had specifically mentioned the time as 'today', i.e. 'today' recapitulates old information in the discourse. Thus, an appropriate preceding context might have been "are they helping Kato today?"; answer: "no, they are helping Kakúlu, today". Sentence (38a), on the other hand, includes 'today' as part of the assertion, with /mbuénu/ probably being new information in the discourse, e.g. "oh, I see that they are helping Kakulu today".

It turns out that almost anything other than the verb can occur as a recapitulation after the main assertion. The sentences in (39) show that 'today' can occur before a nonasserted object, but only if both are nonasserted (i.e. both are recapitulations).

ship between utterance/sentence boundary, on the one hand, and assertion/phrase boundary on the other, then this gives a straightforward account. Left dislocations of the type seen in (41) do not take % boundaries, because it is only when the central assertion is uttered that we have any assertion at all. It is only at that point that we have, in fact, a sentence.

4. CONCLUSION

Much remains to be said about left- vs. right-dislocation in Haya discourse, and why speakers diverge from the neutral or unmarked word order SVIO (Byarushengo and Tenenbaum 1976). In this paper we have provided an outline to the tonal processes operating in Haya. We have seen that it is necessary to postulate an abstract accent which is conditioned by a phrase boundary (%), whose nature can only be understood by carefully examining the discourse properties of the language. The conclusions that we arrive at for Bantu studies are, first, that tonologists may have to spend a lot more time and effort examining the syntax than even we at first believed. One cannot begin to solve Haya tonology without having mastered the assertion-recapitulation dichotomy. Second, such studies as this one have potential bearing on the historical development, not just of Bantu tone, but of Bantu syntax. Word order changes and incipient object-agreement are but two of the important issues in Comparative Bantu syntax. In this study we have seen that syntactic variations not only affect the tones of Haya, but that the tones may in turn reveal the nature of these variations. By considering tone and syntax together we have pursued a line of research which we hope will continue and accelerate in the future.

NOTES

¹We would like to thank Francesco Antinucci, James Heringer, William Leben, and Elinor Keenan for their comments on an earlier draft of this paper. Our thanks also to the members of the Haya Field Methods course and the Seminar on Comparative Bantu Tonology at the University of Southern California. Research on the inter-relationship between Haya tone, accent, and syntax was supported in part by a National Science Foundation Grant No. SOC 75-16487.

²Long vowels are transcribed as a sequence of two like vowels. In case a long vowel carries F tone, the first vowel is marked H and the second L, e.g. [omwáàna] 'child'. It should be noted, how-

ever, that notations such as [áà] and [áá] represent one vowel and one tone. Nasals, if unmarked, are assumed to carry the same phonetic pitch as the end pitch of the preceding vowel, e.g. H in [mulúngi] 'he is good', but L in [olubúnda] 'belly'. In case an utterance begins with a nasal-initial word, L tone is unmarked and H tone marked, e.g. H in [ábwá ki] 'which dog?', but L in [nte] 'it's a cow'.

³For a study of loan words in Haya, see Byarushengo (1976).

⁴The reason why this pattern is not found is a systematic one which will be dealt with below. In the examples in (2) and below, an apostrophe (') indicates that a vowel has been elided, e.g. /okubóna/ 'to see' is realized [okubón'] in (2b,d,f). The final vowel -a is elided whenever followed by another vowel.

⁵Actually, as demonstrated by Byarushengo (1975), 'child' is best represented as /o-mu-ána/ on morphological grounds, where /o-mu-/ is the augmented noun prefix for class 1 (human singular). The phonetic vowel length is a consequence of the gliding of /u/ to [w]. (It will be demonstrated in section 1.4 that the "preprefix" vowel /o/ actually has an underlying H tone, but this need not concern us at this point.)

⁶Actually, underlying L-H may also come out L-L when not in prepausal position, depending on the underlying tone of the following syllable(s). Similarly, underlying H-L may surface as L-L in the same environment. Additional tone rules are needed to account for the surface reflex [omuti] in (2e) and [ómuti] in (2f). Because of space limitations we shall not go into these complexities here, which are the subject of work in progress by the first author.

⁷Elsewhere is defined as both preceded and followed by at least one syllable (see section 1.4 for bisyllabic [H-L] nouns). Some other alternations take place, as is obvious from the realizations of 'tree' in (2). However, whenever forms other than those indicated in the above table are found, other factors have come into play. Some of these are discussed below.

⁸An important condition on rule (17) is that a vowel-initial bisyllabic word such as [éyfa] 'famine' (underlyingly /é-i-fá/, class 5) will not undergo lowering. As we shall see in section 2, this is because in such words the H initial vowel is in penultimate position and therefore protected by an abstract underlying accent (cf. the reformulated rule in (14') below).

⁹The final L does undergo "downgliding", i.e. a process by which a L tone falls in pitch before pause. This can hardly be attributed to a putative penultimate accent, however.

¹⁰Actually, it is difficult to get /a-jun-á/ before a % which is not at the same time a pause boundary. Other instances of L-L-H would of course surface as L-H-H in this context, as seen in (20b).

¹¹Of course we are assuming in the change from L-H to H-H

that H tone is in some sense associated with prominence.

¹²We are not ignoring the likely situation whereby final H actually went through a F stage before pause, as is reconstructable from Luganda evidence (e.g. Lug. [òmùtí] 'tree').

¹³This of course does not answer the question of why recapitulations occur at all. At the time of this writing, E. Byarushengo, T. Bennett, and S. Tenenbaum are engaged in a discourse study of both left- and right-dislocation in Haya. It is hoped that the results of this study will shed further light on the relationship between the % boundary and these processes as used by speakers in real discourse situations.

¹⁴In the hypothetical discourse under discussion, when the sentence 'they see the child, the women' is uttered, 'they' and 'see' are discourse-old, while 'the child' may be new or old. The interpretation of the definite article as representing old information may be more transparent, but the same sentence could have been uttered in Haya with the translation 'they see a child, the women'. In this case the direct object would be unambiguously new information.

¹⁵Elinor Keenan has pointed out to us that the notion of afterthought may be salvageable after all. While one can draw a distinction between planned vs. unplanned discourse, the latter may take place during an utterance or after an utterance has been completed. Thus, in the beginning or middle of an utterance an afterthought "repair" may result in what looks like a right dislocation which occurs as part of the utterance (i.e. not separated from what precedes by a pause). Clearly further work is needed in this area in Haya (cf. note (13)).

REFERENCES

- Byarushengo, Ernest Rugwa. 1975. An Examination of the Segmental Phonology of Haya. Unpublished M.A. Thesis, University of Dar es Salaam.
- Byarushengo, Ernest Rugwa. 1976. Strategies in loan phonology. Proceedings of the Second Annual Meeting of the Berkeley Linguistics Society, 78-88.
- Byarushengo, Ernest Rugwa and Sarah Tenenbaum. 1976. Agreement and word order: a case for pragmatics in Haya. Proceedings of the Second Annual Meeting of the Berkeley Linguistics Society, 89-99.
- Hyman, Larry M. 1975. On the change from SOV to SVO: evidence from Niger-Congo. In Charles N. Li (ed.), Word Order and Word Order Change, 113-147. Austin: University of Texas Press.
- Hyman, Larry M. and Russell G. Schuh. 1974. Universals of tone rules: evidence from West Africa. Linguistic Inquiry 81-115.

STUDIES IN BANTU TONOLOGY
Southern California Occasional Papers
in Linguistics No. 3, December 1976
Edited by Larry M. Hyman

DEVOICING, TONE, AND STRESS IN RUNYANKORE

BY

LAWRENCE JOHNSON

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

Runyankore is a Bantu language spoken by some 388,000 people (Welmers 1971) in the Nkore area of southeastern Uganda between Lake Edward and Lake Victoria, just north of the borders of Rwanda and Tanzania (Ladefoged, Glick and Criper 1972).¹ After some brief background comments, I should like to examine three features of the so-called "low (tone) speakers" of Runyankore: 1) vowel devoicing, which occurs word-finally as well as medially between voiceless consonants; 2) leveled tone, via a comparison of tone in Haya and "high (tone) speakers" of Runyankore (hereafter, High Runyankore); and 3) stress-accent, now prevalent in penultimate position for "low speakers" of Runyankore (hereafter, Low Runyankore), and show that stress arose out of the former tonal system.

Guthrie (1948) classified Runyankore as a Zone E language, closely related to Nyoro, Tooro and Ciga; for Tucker and Bryan (1957), Runyankore falls into the Inter-Lacustrine group, which includes the above languages as well as Luganda. They were the first, also, to specify two dialects for Runyankore: ba-Hima, spoken with an "aristocratic accent", and ba-Iru, the speech of the lower social class, a dialect which "has more in common with Kiga and Tooro than has the Hima form" (Bryan 1959:108). Tucker and Bryan add that in Nyoro and Tooro, "high tone is almost entirely associated with penultimate stress" (1957:17) and final vowels are whispered in Bwisi and Tooro.

Morphologically, Runyankore is similar to Luganda in that it has preserved much of the proto-Bantu concord system, having ten singular/plural nominal class markers. In a lexical comparison of a number of Bantu languages of Uganda, Ladefoged et al (1972) find Runyankore closest to Rukiga, with ninety-four per cent cognates. Both Taylor (1959) and Morris and Kirwin (1957) emphasize this close relationship.

Taylor, in his Runyankore dictionary (1959), and Morris and Kirwin, in their Runyankore grammar (1957), briefly discuss vowel-devoicing, pointing out that except after n, final vowels are whispered, and short vowels, "more often whispered than not", are deleted "under certain circumstances... most noticeable when the vowel separates identical consonants... particularly between two r's, and also between sh and t, j and t, n and r" (Morris and Kirwin

1957:238). Actually, as the following data show, only the short high vowels u and i can devoice between voiceless consonants generally, even in penultimate position. And final vowels even after n are likewise devoiced. This devoicing is shown in (1), with a residue of heavy aspiration.²

| | | | | |
|-----|----------|------------|-----------|-----------|
| (1) | obwato | [obwátʰ] | enkoko | [ɛnkókʰ] |
| | 'canoe' | | 'chicken' | |
| | omuti | [omútʰ] | embwa | [émbwʰ] |
| | 'tree' | | 'dog' | |
| | ekicuncu | [ɛkʷʰčúnč] | embaata | [ɛmbá:tʰ] |
| | 'lion' | | 'duck' | |

When the vowel is not word-final, it retains voice, as shown in (2).

| | | | |
|-----|----------------|---------------|-----------|
| (2) | omuti gwangye | [omútəgwánʃ] | 'my tree' |
| | embaata yangye | [ɛmbá:təyánʃ] | 'my duck' |

Vowel-devoicing between voiceless consonants is illustrated in (3).

| | | | | |
|-----|----------|---------|---------------|------------|
| (3) | okufa | [ókʰfʰ] | okushutama | [okʰštámə] |
| | 'to die' | | 'to sit down' | |
| | okutu | [ókʰtʰ] | okufuka | [ókʰfʰkʰ] |
| | 'ear' | | 'to be cold' | |

Note the following in (4), however, in which both long and short a, o, and e retain voice between voiceless consonants in penultimate position.

| | | | | |
|-----|------------------|------------|-----------|-----------|
| (4) | bashata | [bašátʰ] | okuteeka | [okʰtékʰ] |
| | 'three' (people) | | 'to cook' | |
| | ekikooko | [ɛkʷʰkókʰ] | akata | [akátʰ] |
| | 'insect' | | 'stick' | |
| | abarezi | [abaréz] | | |
| | 'nursemaids' | | | |

Also, long and short a, i, o, and e do not devoice when they are not in penultimate (stress) position, as the examples in (5) show.

| | | | | |
|-----|-------------------|-------------|----------------|---------------|
| (5) | ebipapura | [ebipapúɾə] | aheekiikire | [ahekʷikʷíɾə] |
| | 'cardboard' | | 'secret place' | |
| | abacocoozi | [abačočóɔz] | okutitira | [okʰtitíɾə] |
| | 'hunting beaters' | | 'to shiver' | |

It is only in reduplicated forms in a sequence VVCVC that these vowels can be deleted, as in (6).

| | | | |
|-----|---------------|---------------|----------------|
| (6) | okuteekateeka | [okʰtekʰtékʰ] | 'to think' |
| | okusheesheka | [okʰšéškʰ] | 'to be poured' |

Furthermore, long u and i remain voiced in penultimate position, as seen in (7).

- (7) efuutu [ɛfúth] 'ruler' (<English 'foot')
ekito [ɛkʷíth] 'puzzle'

Actually, there is a phonetic rule in Runyankore that centralizes i to u when it is between two obstruents or between an obstruent and a nasal, such that in slow speech we have the following in (8).

- (8) empikye [ɛmpúkʷh] okusina [okʰzúnə]
'ant hill' 'to dance'
omutima [omutámə]
'heart'

It is, then, more precise to say that only non-front high vowels devoice. In natural, rapid speech, of course, empikye shows the typical devoicing and is realized as [ɛmpʰkʷh] (since the i occurs between two voiceless consonants).

I would now like to consider tone, or rather the lack of it, in Low Runyankore by comparing it to both High Runyankore and closely related Haya, as seen in (9).

| (9) Tone | Haya | High Runyankore | Low Runyankore |
|----------|----------------------------|------------------|----------------|
| L-L | ente 'cow' | énte 'cow' | [énth] |
| | enda 'pregnancy' | enda 'womb' | [éndh] |
| H-L | émbwa 'dog' | émbwa 'dog' | [émbwh] |
| | énda 'louse' | énda 'louse' | [éndh] |
| L-L-L | omuzi 'root' | omuzi 'root' | [omúz] |
| L-H-L | omúti 'tree' | omúti 'tree' | [omúth] |
| L-F-L | omwána 'child' | omwána 'child' | [omwán] |
| | amázi 'water' | amázi 'water' | [améz] |
| | eibála 'name' | eizfína 'name' | [izfn] |
| L-L-L-L | okugulu 'leg' | okuguru 'leg' | [okugúru] |
| L-L-H-L | ekigúnju 'animal' | | |
| L-L-F-L | omukázi 'woman' | omukázi 'woman' | [omukáz] |
| | omutíma 'heart' | omutíma 'heart' | [omutámə] |
| | omusháija 'man' | omusháija 'man' | [omushéiz] |
| L-H-L-L | eshágama 'blood' | eshágama 'blood' | [ɛshágámə] |
| | enkúrungo 'grinding stone' | | [enkurúngʰ] |

Haya and High Runyankore have similar surface tonal patterns in that neither high tone (H) nor falling tone (F) can occur on the final syllable of a word, and there is only one H or F tone per word (F occurring only in penultimate position). Runyankore may have a H tone on the prefix attached to monosyllabic stems.

Most cases in (9) show retention of tones by Haya and High Runyankore, for example émbwa with H-L, omuzi with L-L-L, and omwána with L-F-L. In some cases, the Runyankore form is H where the Haya form is F, for example Runyankore omutíma vs. Haya omutíma 'heart' and Runyankore omukázi vs. Haya omukázi 'woman'. However, in every case cited, the Low Runyankore form shows stress (accent) on the penultimate syllable (assigned before the final vowel is devoiced). Thus, where Haya and High Runyankore have minimal pairs based on tonal distinctions, for example Haya and Runyankore énda 'louse' vs. enda 'pregnancy, womb', the two forms have merged in Low Runyankore: [éndh]. Also, as Byarushengo, Hyman, and Tenenbaum (1976) have shown, Haya tones are involved in complex alternations, conditioned by tonological, grammatical, and pragmatic factors which interact with abstract phrase penultimate stress-accent. By contrast, High Runyankore has simpler alternations. Words in sequence have what is called "carry on" tone, whereby the last syllable of the first word bears H tone, as shown in (10).

- (10) akabanzá omurimo /akabanzómurimo/ 'he began the work'
akareebá ahonáaho /akareebáhonáaho/ 'he saw immediately'

Note that there is also vowel fusion here between word boundaries and carry-on tone most often occurs when the second word begins with a vowel.⁴ Aside from carry-on H tone, nouns generally maintain the tone patterns they display in isolation. And certain tenses of verbs, such as the past and immediate past, reflect a loss of H tone in the verb when followed by an object or adverb. However, future tense, for example, shows preservation of tone patterns of verbs in isolation.

The loss of tonal distinctions in Low Runyankore is thus in contrast to both High Runyankore and Haya. In this regard, it should be compared with Swahili and Nyakyusa, both of which have also lost their tones, as well perhaps with Safwa and Kinga, which

have very restricted tonal oppositions (Voorhoeve 1973, Schadeberg 1973; cf. Kähler-Meyer (1963) for discussion of some toneless Bantu languages, including Nyakyusa, spoken in Tanzania). As seen in the other papers in this volume, most Bantu languages have retained the H and L tones of the proto language.

In his notes on Runyankore tone, Taylor (1959) sets up Tone A for a word with a H tone on a short vowel, Tone B for F tone, Tone C for words with H tone on a long vowel, and Tone Z ("zero") for words in which all syllables are spoken on a L tone. He states:

There is a large class of people, mainly living in the towns of Ankole and Kigezi, in Mpororo, and in the counties of Kashaari, Sheena and Rwampara, who pronounce a large number of words in Tone Z. This intonation is steadily gaining ground as a kind of "received pronunciation". We will call these people "low speakers" as opposed to those who adopt what seems to be the older pronunciation, whom we will call "high speakers" (p. xv).

As has been shown in all the preceding examples of Low Runyankore, there is an absence of both H and F tones, but a presence of stress.

As in other languages, stress is characterized in Low Runyankore by pitch change, greater intensity, and greater duration (cf. Bolinger 1958). Thus, since both tone and stress are characterized by pitch change, it is not surprising to find one being replaced by the other. Or rather, since Proto-Bantu may itself have been characterized by a penultimate stress superimposed over the various tone patterns, it is not surprising to find the tones being leveled out, but the culminative stress-accent remaining. As opposed to Haya, which has an abstract or underlying phrase-penultimate accent only (cf. Byarushengo, Hyman, and Tenenbaum 1976), Low Runyankore has a concrete word-penultimate stress-accent. In addition, then, to leveled tone and vowel devoicing, there is an increasing reliance on penultimate stress. There thus appears to be a conflict in Runyankore when tone is leveled, vowels devoiced (whispered or deleted), and stress assigned, since, for example, if a vowel is devoiced in penultimate position, where can the stress go?

First, because of vowel-devoicing, stress can move from penultimate to antepenultimate position, since it would be articulatorily difficult to produce and perceptually difficult to detect

pitch change, greater duration, and increased intensity (the three correlates of stress) on a voiceless (or deleted) vowel. We thus find examples such as those in (11).

- (11) empikye [ɛmp^hɪk^vh] 'ant hill'
okuhika [ók^whɪk^h] 'to arrive'

Following the leveling of tone and the devoicing of final vowels and primarily of short u and u between voiceless consonants (basically an assimilatory process), the cue-bearing suprasegmental pattern has become stress, primarily penultimate stress. This can also be seen to some degree in High Runyankore, where there is a tendency, as in Haya, for the pitch-prominent tones H and F to occur in penultimate position. Final H and F are not permitted, and antepenultimate H is found much less frequently than penultimate H. Nonpenultimate F is also not permitted.

We have seen above that despite vowel-devoicing, vowels retain voice in penultimate position (except in those few cases in which stress is shifted to antepenultimate position). Examples were given in (4). Furthermore, however, final vowel-devoicing seems to obscure the underlying penultimate stress pattern on the surface, and has even spread to post n position in disyllabics, as seen in (12).

- (12) eiziina [izín] 'name'
omwana [omwán] 'child'

The final vowel is, of course, realized in careful, overly precise speech, and is recoverable when a following word, e.g. an adjective, is added, as seen in (13).

- (13) eiziina yangye [izínəyánʃ] 'my name'
omwana wangye [omwánəwánʃ] 'my child'

We can thus lend some support to the idea that stress, at least when it arises out of a tone system, first functions demarcatively (i.e. it marks a boundary). As stress came to replace tone, former tonal contrasts have merged, as seen in (14).

- (14) ebikara [ɛbikárə] enkura [ɛnkúrə]
'foreign police' 'rhinoceros'
ebikara [ɛbikárə] enkura [ɛnkúrə]
'charcoal' 'shape of a person'

In High Runyankore, however, we find ebikara 'foreign police' vs. ebikára 'charcoal' and enkura 'rhinoceros' vs. enkúra 'shape of a person'.

In conclusion, since tone and stress both utilize pitch as a cue of prominence, it would appear that a transition from a tone language to a stress language is "natural", as it has, for example, happened in Swahili. There are also languages which are tonal and have dominant penultimate stress (e.g. Shona, Tswana). Further, at least in High Runyankore, the majority of H and F tones occur in penultimate position.⁵ In the transition from tone to stress, Low Runyankore has lost the possibility of having a pitch prominence on any but the penultimate syllable. This, then, is the natural transition from a tone to a stress system. The contrast of H or F vs. L has been replaced by one of stress vs. non-stress. A closer examination of both the tonal and nontonal dialects of Runyankore is likely to shed further light on the intriguing process of tonal exodus in language.

NOTES

¹I wish to thank my Runyankore consultant, Willis Shalita, without whom this study would not have been possible, and Larry Hyman, who offered many helpful comments and suggestions. I am, of course, responsible for any possible errors.

²The forms cited in (1) and following are not marked for tone since all syllables are low tone in Low Runyankore. The accent mark (´) on the phonetic forms (always and only between phonetic brackets) indicates stress.

³In the Haya and High Runyankore forms in (9) and following, (´) indicates high tone (not to be confused with the same mark indicating stress in Low Runyankore, whose forms are always between phonetic brackets). (^) indicates a falling tone, as does the sequence (´´) marked over two successive vowels.

⁴It is likely that this carry-on H tone is attributable to the preprefix of the second word, which historically carried H tone (cf. several of the other papers in this volume).

⁵Calculation based on random sample of items in Taylor (1959) shows approximately seventy per cent of the words in his dictionary bearing H or F tone have these tones in penultimate position.

REFERENCES

- Bolinger, Dwight L. 1958. A theory of pitch-accent in English. *Word* 14.109-149.
- Bryan, M. A. 1959. *The Bantu Languages of Africa*. Oxford: International African Institute.
- Byarushengo, Ernest Rugwa, Larry M. Hyman, and Sarah Tenenbaum. 1976. Tone, accent, and assertion in Haya (in this volume).
- Guthrie, Malcolm. 1948. *The Classification of the Bantu Languages*. Oxford: International African Institute.
- Kähler, Meyer, E. 1963. Bantu-Tonsprachen und -Nichttonsprachen in Tanganyika. *Zeitschrift für Phonetik, Sprachwissenschaft, und Kommunikationsforschung* 16.101-112.
- Ladefoged, Peter, Ruth Glick, and Clive Criper. 1972. *Language in Uganda*. Oxford: University Press.
- Morris, H. F. and F. R. Kirwin. 1957. *A Runyankore Grammar*. The Eagle Press.
- Schadeberg, Thilo C. 1973. Kinga: a restricted tone system. *Studies in African Linguistics* 4.23-48.
- Taylor, C. 1959. *A Simplified Runyankore-Rukiga-English and English-Runyankore-Rukiga Dictionary*. The Eagle Press.
- Tucker, A. N. and M. A. Bryan. 1957. *Linguistic Survey of the Northern Bantu Borderland*. Oxford: International African Institute.
- Voorhoeve, Jan. 1973. Safwa as a restricted tone system. *Studies in African Linguistics* 4.1-22.
- Welmers, William E. 1971. A checklist of African languages and dialect names. In T. Sebeok (ed.), *Current Trends in Linguistics* 7.759-900. The Hague: Mouton.

THE TONAL STRUCTURE OF ÓLUSAMIA

BY

JEREMY E. CHAGAS

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

0. INTRODUCTION

Ólusamia is spoken on the Northern shores of Lake Victoria by the Ábasamia, a people numbering approximately 60,000 (45,000 in Kenya and 15,000 in Uganda). It is classified by Guthrie (1948) as E.34 and is generally considered by most Bantuists to be part of the Masaba-Luhya group which includes such other languages as Gisu, Bukusu, Tsootso, and Maragoli.*

Previous research specifically on the Ólusamia dialect has been limited, although it may be assumed that data from Samia has been included in studies such as those by de Blois (1970) and Guthrie (1970), which deal with a general Luhya tongue as representative of the entire group of dialects. Two relevant grammars do exist (Appleby 1961; Donohew 1962), but again in each case they are admittedly "composite Luhya": exercise books meant for the foreigner intending to learn the language rather than for the linguist. Tones and tonal patterns are mentioned hardly at all other than to state that tones seem to be lexically significant.

The present study attempts to present an overview of the general grammatical structure of Samia with special reference to tonal patterns. It is hoped that certain of the questions and/or hypotheses dealt with here may suggest possibilities for further research, particularly along the lines of reconstructing Proto-Bantu tonological and phonological patterns. A case in point is the question of the preprefix: as evidence of the theory of a Proto-Bantu high tone preprefix which appears as a low tone in the surface forms of many modern Bantu languages (Byarushengo, Hyman, and Tenenbaum 1976), it should be noted that Samia has retained the original H (high) tone. Samia may be as conservative in other areas as well.

Like the majority of its Bantu neighbors, Samia is built upon a noun class system of paired genders, numbered consecutively from 1 to 18, and also including a 1a/2a and a 20/4 gender. The standard arrangements of nouns within each gender is observed as follows:

- 1/2 - primarily human; 1a/2a - primarily kinship terms
- 3/4 - animate but nonhuman
- 5/6 - mass nouns in 6; some body parts; some animals and plants
- 7/8 - some body parts; utensils, etc.

- 9/10 - mostly animals; loan words
 11/10 - items of nature; some body parts
 12/13 - diminutive and/or derogatory (not inherent)
 14/6 - intangibles; ideas
 15/6 - verb infinitives; some body parts
 16, 17, 18 - locatives; almost none inherent
 20/4 - augmentative; sometimes derogatory, rarely inherent

The nouns in each class, with the exception of 1a/2a, are composed of a preprefix vowel, a prefix (normally CV), and a stem or root, the preprefix being restricted to certain specific uses. The noun class system with its appropriate segmental concord markers is found in Table I.

The verb system in Samia allows for 9 tenses: 3 past tenses, a "have just" tense, a present tense, a present progressive or continuous tense, a past progressive tense, and 2 future tenses. The subject concord markers for human subjects are as follows:

| | singular | plural |
|------------|----------|--------|
| 1st person | N- | xu- |
| 2nd person | o- | mu- |
| 3rd person | a- | ba- |

In terms of its phonology, Samia appears to be much like nearby groups such as Haya (Byarushengo 1975) and Olutsootso (Dalgish 1976) in that it is a 5 vowel language, subject to relative vowel harmony (o-u/e-i/a-a), to vowel coalescence or deletion, etc. Consonants which create specific problems in Samia include the homorganic nasal which may surface in any one of a number of forms (mb/nd/ŋg, etc.), or may be deleted completely (before voiceless fricatives); the liquids [l] and [r], which are apparently orthographically interchangeable, but are phonetically determined by the preceding vowel (al/er/il-ir/ol/ul); and certain consonants and consonant clusters which are subject to palatalization: /k, x, ŋg/ are realized as [č, š, nš] before /i/ and /e/. These and other aspects of Samia phonology, as well as its morphology, will be dealt with below.

1. LEXICAL TONE

On nouns in isolation Samia makes use of H (high), F (falling),

| class | PP | prefix | adj. | poss.adj. | num. | demon. 'this' | demon. 'that' | which? | assoc. /á/ | many | all/ whole |
|-------|-------|--------|------|-----------|------|------------------|------------------|--------|---------------|------|---------------|
| 1 | ó- | -mu- | mu- | w- | mu- | u- | u- | o- | w- | | y- |
| 2 | á- | -ba- | ba- | b- | bé- | ba- | ba- | ba- | b- | ba- | b- |
| 1a | ∅ | | mu- | w- | mu- | u- | u- | o- | w- | | y- |
| 2a | ∅ | | ba- | b- | ba- | ba- | ba- | ba- | b- | ba- | b- |
| 3 | ó- | -mu- | mu- | kw- | mu- | ku- | ku- | ku- | kw- | | kw- |
| 4 | é- | -mi- | ki- | ky- | ki- | ki- | ki- | ki- | ky- | mi- | ky- |
| 5 | é-/é- | -li-/∅ | li- | ly- | ∅ | li- | li- | li- | ly- | | ly- |
| 6 | á- | -ma- | ka- | k- | ma- | ka- | ka- | ka- | k- | | ka- |
| 7 | é- | -si- | si- | sy- | si- | si- | si- | si- | sy- | si- | sy- |
| 8 | é- | -bi- | bi- | by- | bi- | bi- | bi- | bi- | by- | bi- | by- |
| 9 | é-/é- | -N- | i- | y- | N- | yi- | yi- | yi- | y- | | y- |
| 10 | é-/é- | -N- | ci- | ci- | ci- | ci- | ci- | ci- | cy- | ny- | ci- |
| 11 | ó- | -lu- | lu- | lw- | lu- | lu- | lu- | lu- | lw- | | l- |
| 12 | á- | -xa- | xa- | x- | xa- | xa- | xa- | xa- | x- | | xa- |
| 13 | ó- | -tu- | tu- | tw- | tu- | tu- | tu- | tu- | tw- | tu- | tw- |
| 14 | ó- | -bu- | bu- | bw- | bu- | bu- | bu- | bu- | bw- | | bw- |
| 15 | ó- | -xu- | xu- | xw- | xu- | xu- | xu- | xu- | xw- | | xw- |
| 16 | á- | -ha- | | | | | | | | | |
| 17 | ∅ | xu- | xu- | | | | | | | | |
| 18 | ∅ | mu- | | | | | | | | | |
| 20 | ó- | -ku- | ku- | kw- | ku- | ku- | ku- | ku- | kw- | | kw- |

TABLE I. CONCORD MARKERS BY NOUN CLASS

and L (low) tone. Note that there are no initial L tones, except on nouns belonging to class 1a where no preprefix is used and in a few exceptional cases, apparently all in 9/10, which also have no preprefix. The surface patterns found on bi-, tri-, and quadrisyllabic nouns are seen below (L tones are unmarked).

| | | | | |
|----------------|----------|-----------|-----------------|------|
| Bisyllabic: | L-L | baaba | 'father' | 1a/ |
| | H-H | éndá | 'belly' | 9/10 |
| | F-F | êndá | 'louse' | 9/10 |
| | F-H | êmbwá | 'dog' | 9/10 |
| | F-L | êye | 'war' | 5/ |
| Trisyllabic: | L-L-L | masaala | 'mother-in-law' | 1a/ |
| | H-H-H | éyóní | 'bird' | 5/ |
| | H-L-H | ómwaaná | 'child' | 1/ |
| | H-L-L | édete | 'fingernail' | 5/ |
| | F-H-L | étémwa | 'banana' | 5/ |
| | F-H-F | êdímwá | 'maize' | 5/ |
| Quadrisyllabic | L-L-H-L | naluwíga | 'rhino' | 9/10 |
| | L-H-L-H | namúbolí | 'kingfisher' | 9/10 |
| | H-H-H-H | ámáyóní | 'birds' | /6 |
| | H-L-L-H | ómusaachá | 'man' | 1/ |
| | H-L-L-L | ésihoba | 'skin (human)' | 7/ |
| | H-L-H-L | ámatémwa | 'bananas' | /6 |
| H-L-H-F | ámadímwá | 'flowers' | /6 | |

There are only a handful of nouns scattered throughout the language which contain more than four syllables, many of them apparent loanwords from Swahili, and with such widely irregular tonal patterns that they are of little use in a study such as this. However, the surface tone patterns seen above open up a number of interesting questions. For example, the preprefix in Samia is invariably H on words in isolation; how then to explain the initial F on words such as *éndá*, *êmbwá*, and *étémwa*? It seems evident that the [ê] observed in such forms represents a coalescence of a /é/ preprefix with a L prefix whose segmental support has either dropped or desyllabified. Since this initial F tone is attested only in classes 9/10 and 5/, the following historical derivations are not unreasonable.

9/10 *éNì > éN̄ > éN

5/ *éìì > éì > é

In the case of *étémwa* and other such class 5 nouns with initial F tone, the argument gains further strength when the corresponding class 6 plural form is compared with the singular: *étémwa* 'bird' (pl. *ámatémwa*), *êdímwá* 'maize' (pl. *ámadímwá*), *êbwé* 'fox' (pl. *ámabwé*). In each case the F of [ê] in the singular corresponds to a H-L sequence in the [áma] of the plural. The only exceptions occur when the noun stem is H-H: *éyóní* 'bird' (pl. *ámáyóní*). We expect the plural of 'bird' to be **ámáyóní*. However, there is a rule whereby a L prefix is raised to H in the context H __ H-H (cf. *ékíná* 'stone', pl. *ámákiná*; *ékósf* 'neck', pl. *ámákósf*, etc.).

In examining the verb paradigms, we note the following: (1) All infinitive forms (class 15) take H on the preprefix and H on the final vowel /á/; (2) All prefixes in infinitive forms take L tone; (3) There is a maximum of two L tones per infinitive (i.e. prefix and first syllable of the verb stem, regardless of VC or CV pattern); (4) Infinitives which terminate in double or triple H tone sequences may be supposed to be derived forms (i.e. benefactives, causatives, etc.) which take their tone by anticipating the H of the final vowel (Meussen 1967); such verbs typically end in /-ira/, /-ula/, /-esa/, etc.

A number of factors influence the tonal distribution by tense and person (see Tables II and III). One important factor is the phonological shape of the verb stem (VS): VC and VCVC verbs have tonological patterns in certain tenses which are different from those found in the majority of CV and CVCV verbs. The vowel-initial verbs *óxwiitá* and *óxuwiingírá*, for example, are the only verbs represented which permit H tones on the concord markers (CM), other than in P₃, or where, in the case of negative forms, the first person singular tonal pattern is very different from that of the other persons. Another factor influencing tone is vowel coalescence, which may result in a F tone as opposed to the H tone found in the remainder of the paradigm, e.g. *óxuboná* 'to see' in P₁ and P₂:

P₁ - *a-bón-ìl-é > a-bón-ì-é > a-bónì-é > a-bóin-é > abwêné

P₂ - *a-bón-fì-é > a-bón-f-é > a-bóní-é > a-bóin-é > abwêné

(P₁ may better be reconstructed with a final L tone vowel which at some point underwent raising to H.)

A particularly interesting item appears in the negative forms. /hasí-/ may be assumed to be underlyingly L-H. On the surface it does in fact appear as L-H everywhere except in those first person singular verbs with an initial N and a L tone CM. In the latter case /hasí-/ becomes L-F, offering strong support for the contention that the homorganic nasal was historically /-ni-/. Upon deletion of the /-i-/, its L tone is assigned first to the preceding nasal, and then to the negative marker to produce [hasí]. That the F versus H tone distinction is phonological rather than grammatical is convincingly demonstrated by the verb óxufukírírǎ 'to agree', which takes a \emptyset first person singular CM in certain tenses: hasífukírira 'I agree', hasífukíriranga 'I am agreeing'; but hasíndáfukírírǎ 'I will agree' (F₁). In the first two forms the N- first person singular CM has been deleted before the voiceless fricative /f/; in the third form it remains and produces the F on [hasí].

The P₃ negative paradigm shows another interesting tonal phenomenon. Using óxubonǎ 'to see', we find: hasíndábona (1st sg.) and hasíbábona (3rd pl.). If we are to assume the underlying form /hasí-ni-lí-á-bon-a/, the surface form should be *[hasíndábona], whereas /hasí-/ has remained L-H. The only explanation for this unexpected tonal realization is that in parts of the paradigm it is this unexpected H tone which keeps the P₃ negative distinct from the F₁ negative; e.g. hasíndábona 'I didn't see' (P₃) vs. hasínda-bona 'I will not see' (F₁). Perhaps there has been paradigmatic pressure which cannot be justified on purely tonological grounds.

A third item of importance in the distribution of tones concerns polysyllabic verbs containing the benefactive, causative, applicative, and reversive extensions. While examination of óxuberésǎ 'to give', óxwiingírǎ 'to enter', óxubwííxúúǎ 'to uncover', and óxufukírírǎ 'to agree' shows that they are probably all derived verbs with "tone anticipation", each of the four functions tonologically in different ways. Part of the question is whether or not any of these extensions have, or once had, inherently H tone. As yet there is insufficient data to be able to posit a relationship between the reversive /-ul-/ and the applicative /-il-/, which would be one way of explaining the fact that óxubwííxúúǎ is most similar tonologically to óxufukírírǎ--or is the apparent similarity due to

| | present/ habitual | present prog. | past prog. | 'have just' | P ₁ | P ₂ | P ₃ | F ₁ | F ₂ |
|-------------------|----------------------|------------------|---------------|-------------|----------------|----------------|----------------|----------------|----------------|
| HLH/ -CV- | CM+VS+á | CM+VS+ángá | CM+VS+éngé | CM+xá+VS+a | CM+VS+iré | CM+VS+iré | CM+VS+a | CM+ná+VS+á | CM+xá+VS+é |
| HLH/ -VC- | CM+VS+á | CM+VS+ángá | CM+VS+éngé | CM+xá+VS+a | CM+VS+iré | CM+VS+iré | CM+VS+a | CM+ná+VS+á | CM+xá+VS+é |
| HLH/ -CVC- | CM+VS+á | CM+VS+ángá | CM+VS+éngé | CM+xá+VS+a | CM+VS+iré | CM+VS+iré | CM+VS+a | CM+ná+VS+á | CM+xá+VS+é |
| HLH/ -VCVC- | CM+VS+á | CM+VS+ángá | CM+VS+éngé | CM+xá+VS+a | CM+VS+iré | CM+VS+iré | CM+VS+a | CM+ná+VS+á | CM+xá+VS+é |
| HLH/ -CVCVC- | CM+VS+á | CM+VS+ángá | CM+VS+éngé | CM+xá+VS+a | CM+VS+iré | CM+VS+iré | CM+VS+a | CM+ná+VS+á | CM+xá+VS+é |
| HLH/ -CVCVCVC- | CM+VS+á | CM+VS+ángá | CM+VS+éngé | CM+xá+VS+a | CM+VS+iré | CM+VS+iré | CM+VS+a | CM+ná+VS+á | CM+xá+VS+é |

TABLE II. Verbal Tone Patterns by Tenses: Affirmative

- Notes: (1) CM = (subject) concord marker; VS = verb stem
 (2) the ná form is used in F₁ for all persons except first person singular
 (3) óxuberésǎ (HLH pattern) may be a causative verb, which would explain why the P₂ endings do not concord to the rest of the paradigm
 (4) the follows verbs illustrate the above seven tonal/segmental patterns:

| | | | |
|------------|------------|-------------|--------------|
| ókulyá | 'to eat' | ókuberésǎ | 'to give' |
| ókwiitá | 'to kill' | ókubwííxúúǎ | 'to uncover' |
| ókuboná | 'to see' | ókufukírírǎ | 'to agree' |
| ókwiingírǎ | 'to enter' | | |

| | present/ habitual | present progressive | past progressive | 'have just' | P ₁ |
|---------------------|---------------------------|------------------------------|---|------------------------------|-----------------------------|
| HLH/ -CV- | hasí+CM+VS+á | hasí+CM+VS+ànga | hasí+CM+VS+ènge | hasí+CM+xá+VS+a | hasí+CM+VS+ire |
| HLH/ -VC- | hasí+CM+VS+a | hasí+CM+VS+ànga | hasí+CM+VS+enge [VC] - 1st p. sg. [VC+V] - others | hasí+CM+xá+VS+a | hasí+CM+VS+ire |
| HLHH/ -CVC- | hasí+CM+VS+a | hasí+CM+VS+ànga | hasí+CM+VS+ènge | hasí+CM+xá+VS+a | hasí+CM+VS+ire |
| HLHH/ -VCVC- | hasí+CM+VS+a [VCVC] | hasí+CM+VS+ànga [VCVC] | hasí+CM+VS+enge [VCVC] - 1st p. sg. [VCVC] - others | hasí+CM+xá+VS+a [VCVC] | hasí+CM+VS+ire [VCVC] |
| HLHH/ -CVCVC- | hasí+CM+VS+a [CVCVC] | hasí+CM+VS+ànga [CVCVC] | hasí+CM+VS+enge [CVCVC] | hasí+CM+xá+VS+a [CVCVC] | hasí+CM+VS+ire [CVCVC] |
| HLHHH/ -CVCVCVC- | hasí+CM+VS+a [CVCVCVC] | hasí+CM+VS+ànga [CVCVCVC] | hasí+CM+VS+enge [CVCVCVC] | hasí+CM+xá+VS+a [CVCVCVC] | hasí+CM+VS+ire [CVCVCVC] |

TABLE III. Verbal Tone Patterns by Tenses: Negative
[continued next page]

| | P ₂ | P ₃ | F ₁ | F ₂ |
|---------------------|-----------------------------|----------------|---|------------------------------|
| HLH/ -CV- | hasí+CM+VS+ire | hasí+CM+VS+a | hasí+CM+ná+VS+á | hasí+CM+xá+VS+é |
| HLH/ -VC- | hasí+CM+VS+ire | hasí+CM+VS+a | hasí+CM+ná+VS+a | hasí+CM+xá+VS+e |
| HLHH/ -CVC- | hasí+CM+VS+ire | hasí+CM+VS+a | hasí+CM+VS+a (1st p. sg.) hasí+CM+ná+VS+a (others) | hasí+CM+xá+VS+e |
| HLHH/ -VCVC- | hasí+CM+VS+ire [VCVC] | hasí+CM+VS+a | hasí+CM+ná+VS+a [VCVC] | hasí+CM+xá+VS+e |
| HLHH/ -CVCVC- | hasí+CM+VS+ire [CVCVC] | hasí+CM+VS+a | hasí+CM+VS+a (1st p. sg.) hasí+CM+ná+VS+a (others) | hasí+CM+xá+VS+e |
| HLHHH/ -CVCVC- | hasí+CM+VS+ire [CVCVC] | hasí+CM+VS+a | hasí+CM+VS+á [CVCVC] (1st p. sg.) hasí+CM+ná+VS+á [CVCVC] (others) | hasí+CM+xá+VS+é [CVCVC] |
| HLHHH/ -CVCVCVC- | hasí+CM+VS+ire [CVCVCVC] | hasí+CM+VS+a | hasí+CM+VS+á [CVCVCVC] (1st p. sg.) hasí+CM+ná+VS+á [CVCVCVC] (others) | hasí+CM+xá+VS+é [CVCVCVC] |

TABLE IV. Tonal Alternations within the Noun Phrase
[continued next three pages]

| | noun | class | my | your (sg.) | his/her | our | your (pl.) | their | big | one | good |
|------|------------------------|-------|--------------------|------------------|-------------------|---------------------|---------------------|--------------------|---------------------|---------------------|--------------------|
| LL | baaba 'father' | 1a | baaba wángé | baaba wáó | baaba wáye | baaba weefwé | baaba weenwé | baaba waabwé | baaba muhóngó | baaba mulálá | baaba mulayf |
| HH | éndá 'belly' | 9 | éndá yángé | éndá yáó | éndá yáye | éndá cheefwé | éndá cheenwé | éndá chabwé | éndá hóngó | éndá ndálá | éndá ndayf |
| FF | éndá 'louse' | 9 | éndá yángé | éndá yáó | éndá yáye | éndá cheefwé | éndá cheenwé | éndá chabwé | éndá hóngó | éndá ndálá | éndá ndayf |
| FH | émbwá 'dog' | 9 | émbwa yángé | émbwa yáó | émbwa yáye | émbwa yeefwé | émbwa yeenwé | émbwa yabwé | émbwa hóngó | émbwa ndálá | émbwa ndayf |
| FL | éwa 'thorn' | 5 | éwa lyángé | éwa lyáó | éwa lyáye | éwa lyefwé | éwa lyenwé | éwa lyabwé | éwa hóngó | éwa lálá | éwa layf |
| LLL | masaala 'm.-in-law' | 1a | masaala wángé | masaala wáó | masaala wáye | masaala weefwé | masaala weenwé | masaala wabwé | masaala muhóngó | masaala mulálá | masaala mulayf |
| HHH | éyóní 'bird' | 5 | éyóní lyángé | éyóní lyáó | éyóní lyáye | éyóní lyefwé | éyóní lyenwé | éyóní lyabwé | éyóní hóngó | éyóní lálá | éyóní layf |
| HLH | ómwaaná 'child' | 1 | ómwaana wángé | ómwaana wáó | ómwaana wáye | ómwaaná weefwé | ómwaaná weenwé | ómwaaná waabwé | ómwaana muhóngó | ómwaana mulálá | ómwaana mulayf |
| HLL | éngasi 'oar' | 9 | éngasi yángé | éngasi yáó | éngasi yáye | éngasi yeefwé | éngasi yeenwé | éngasi yabwé | éngasi hóngó | éngasi ndálá | éngasi ndayf |
| FHL | étémwa 'banana' | 5 | étémwa lyángé | étémwa lyáó | étémwa lyáye | étémwa lyefwé | étémwa lyenwé | étémwa lyabwé | étémwa hóngó | étémwa lálá | étémwa layf |
| FHF | édímwa 'maize' | 5 | édímwa lyángé | édímwa lyáó | édímwa lyáye | édímwa lyefwé | édímwa lyenwé | édímwa lyabwé | édímwa hóngó | édímwa lálá | édímwa layf |
| LHLH | xamúlalí 'pepper' | 9 | xamúlali yángé | xamúlali yáó | xamúlali yáye | xamúlali yeefwé | xamúlali yeenwé | xamúlali yabwé | xamúlali hóngó | xamúlali ndálá | xamúlali ndayf |
| LLHL | naluwíga 'rhino' | 9 | naluwíga yángé | naluwíga yáó | naluwíga yáye | naluwíga yeefwé | naluwíga yeenwé | naluwíga yabwé | naluwíga hóngó | naluwíga ndálá | naluwíga ndayf |
| HHHH | ómúífró 'fire' | 3 | ómúífró kwángé | ómúífró kwáó | ómúífró kwáye | ómúífró kweefwé | ómúífró kweenwé | ómúífró kwabwé | ómúífró muhóngó | ómúífró mulálá | ómúífró mulayf |
| HLHH | ómuxasí 'woman' | 1 | ómuxasi wángé | ómuxasi wáó | ómuxasi wáye | ómuxasi weefwé | ómuxasi weenwé | ómuxasi wabwé | ómuxasi muhóngó | ómuxasi mulálá | ómuxasi mulayf |
| HLLL | ómusaala 'tree' | 3 | ómusaala kwángé | ómusaala kwáó | ómusaala kwáye | ómusaala kweefwé | ómusaala kweenwé | ómusaala kwabwé | ómusaala muhóngó | ómusaala mulálá | ómusaala mulayf |
| HLHL | ámatémwa 'bananas' | 6 | ámatémwa kángé | ámatémwa káó | ámatémwa káye | ámatémwa keefwé | ámatémwa keenwé | ámatémwa kabwé | ámatémwa mahóngó | ámatémwa ma layf | ámatémwa malayf |
| FHLL | éngósya 'yuiture' | 9 | éngósya yángé | éngósya yáó | éngósya yáye | éngósya yeefwé | éngósya yeenwé | éngósya yabwé | éngósya hóngó | éngósya ndálá | éngósya ndayf |
| HLHF | ámadímwa 'maizes' | 6 | ámadímwa kángé | ámadímwa káó | ámadímwa káye | ámadímwa keefwé | ámadímwa keenwé | ámadímwa kabwé | ámadímwa mahóngó | ámadímwa ma layf | ámadímwa malayf |

| | noun | class | this/ these | that/ those | which? | all/ whole | many/ much | assoc. / ___ H | assoc. / ___ F | assoc. / ___ L |
|-----|------------------------|-------|-----------------|-----------------|-------------------|------------------|--------------------|-----------------------|--------------------|------------------------|
| LL | baaba 'father' | 1a | baaba ulá | baaba ulá | baaba oliná | baaba yósi | baaba bangi | baaba w'omwáana | baaba w'émwa | baaba wa mǎsaala |
| HH | éndá 'belly' | 9 | éndá yira | éndá yira | éndá yiriná | éndá yósi | éndá 'nyingi | éndá y'omwáana | éndá y'émwa | éndá ya masaala |
| FF | éndá 'louse' | 9 | éndá yira | éndá yira | éndá yiriná | éndá yósi | éndá 'nyingi | éndá y'omwáana | éndá y'émwa | éndá ya masaala |
| FH | émwá 'dog' | 9 | émwá yirá | émwá yirá | émwá yiriná | émwá yósi | émwá 'nyingi | émwá y'omwáana | émwá y'émwa | émwá ya masaala |
| FL | éwa 'thorn' | 5 | éwa lirá | éwa lirá | éwa liliná | éwa lyósi | ámwa mangi | éwa ly'omwáana | éwa ly'émwa | éwa lya masaala |
| LLL | masaala 'm.-in-law' | 1a | masaala ulá | masaala ulá | masaala oliná | masaala yósi | masaala bangi | masaala w'omwáana | masaala w'émwa | masaala wa baaba |
| HHH | éyóní 'bird' | 5 | éyóní lirá | éyóní lirá | éyóní liliná | éyóní lyósi | áméyóní mangi | éyóní ly'omwáana | éyóní ly'émwa | éyóní lya masaala |
| HLH | ómwaaná 'child' | 1 | ómwaaná ulá | ómwaaná ulá | ómwaaná oliná | ómwaaná yósi | ébeaná bangi | ómwaaná w'omwáana | ómwaaná w'émwa | ómwaaná wa masaala |
| HLL | éngási 'oar' | 9 | éngási yiré | éngási yiré | éngási yiriná | éngási yósi | éngási 'nyingi | éngási y'omwáana | éngási y'émwa | éngási ya masaala |
| FHL | étémwa 'banana' | 5 | étémwa lirá | étémwa lirá | étémwa liliná | étémwa lyósi | ámátémwa mangi | étémwa ly'omwáana | étémwa ly'émwa | étémwa lya masaala |
| FHF | édífmwá 'maize' | 5 | édífmwá lira | édífmwá lira | édífmwá liliná | édífmwá lyósi | ámádífmwá mangi | édífmwá ly'omwáana | édífmwá ly'émwa | édífmwá lya masaala |

| | | | | | | | | | | |
|------|-----------------------|---|-------------------|-------------------|---------------------|--------------------|---------------------|------------------------|---------------------|-------------------------|
| LHLH | xamúlaif 'pepper' | 9 | xamúlaif yiré | xamúlaif yiré | xamúlaif yiriná | xamúlaif yósi | xamúlaif 'nyingi | xamúlaif y'omwáana | xamúlaif y'émwa | xamúlaif ya masaala |
| LLHL | naluwíga 'rhino' | 9 | naluwíga yiré | naluwíga yiré | naluwíga yiriná | naluwíga yósi | naluwíga 'nyingi | naluwíga y'omwáana | naluwíga y'émwa | naluwíga ya masaala |
| HHHH | ómúfíró 'fire' | 3 | ómúfíró kulá | ómúfíró kulá | ómúfíró kuliná | ómúfíró kwósi | ómúfíró 'mingi | ómúfíró kw'omwáana | ómúfíró kw'émwa | ómúfíró kwa masaala |
| HLLH | ómuxasí 'woman' | 1 | ómuxasí ulá | ómuxasí ulá | ómuxasí oliná | ómuxasí yósi | ábexasí bangi | ómuxasí w'omwáana | ómuxasí w'émwa | ómuxasí wa masaala |
| HLLL | ómusaala 'tree' | 3 | ómusaala kulá | ómusaala kulá | ómusaala kuliná | ómusaala kwósi | émi saalá 'mingi | ómusaala kw'omwáana | ómusaala kw'émwa | ómusaala kwa masaala |
| HLHL | ámátémwa 'bananas' | 6 | ámátémwa kalá | ámátémwa kalá | ámátémwa kaliná | ámátémwa kaósi | ámátémwa mangi | ámátémwa k'omwáana | ámátémwa k'émwa | ámátémwa ka masaala |
| FHLL | éngósya 'vulture' | 9 | éngósya yiré | éngósya yiré | éngósya yiriná | éngósya yósi | éngósya 'nyingi | éngósya y'omwáana | éngósya y'émwa | éngósya ya masaala |
| HLHF | ámádífmwá 'maizes' | 6 | ámádífmwá kalá | ámádífmwá kalá | ámádífmwá kaliná | ámádífmwá kaósi | ámádífmwá mangi | ámádífmwá k'omwáana | ámádífmwá k'émwa | ámádífmwá ka masaala |

the fact that each of the two verbs has two "extended" syllables (as opposed to only one in the other derived verbs)?

2. GRAMMATICAL TONE

In order to examine the ways in which various types of grammatical structures affect tonological patterns in Samia, three general areas need to be looked at closely. The first of these areas, and the one for which it seems most difficult to establish definitive tone rules because of the extremely diverse lexical tone patterns, is that of the noun phrase (NP). Table IV presents each of the surface tonal patterns found in the nouns of the language with a series of different sorts of qualifiers (i.e. modifiers of various kinds). Table V shows how each of the surface patterns changes according to what follows. Two constraints should be noted: (1) Nouns with final L do not change to H or F under any circumstances; and (2) Nouns with final H do not change to L or F before L. One other factor seems to be at work within the NP tonal system, but it is difficult as yet to determine exactly why it functions as it does: there seems to be a tendency in the language to eliminate F tones, even when they occur initially in a four-syllable noun followed by a modifier with L, H, or F initial tone. Thus, éndâ 'louse' becomes enda, and êngósya 'vulture' becomes engósya before L, F, and H. The two exceptions to this rule occur in étémwa lya masaala 'the banana of the mother-in-law', where étémwa does not become H-H-L as the rest of the paradigm does, and the noun édímwâ 'maize' before L which falls out in two patterns so evenly that it is difficult to establish rule and exception:

| | |
|--------------------------------|--|
| F-H-F → H-H-L / ___ L | F-H-F → H-H-F / ___ L |
| édímwa lyefwê 'our maize' | édímwâ lino 'this maize' |
| édímwa lyenwê 'your pl. maize' | édímwâ lira 'that maize' |
| édímwa lyabwê 'their maize' | édímwâ lininâ 'which maize' |
| édímwa layí 'good maize' | édímwâ ly'omwâana 'maize of the child' |

The first person possessive 'my' creates exceptions in the tone rules of the class 5 nouns, as does /-ôsi/ 'all/the whole'; for éyóní 'bird', for example, H-H-H should become H-H-L before F, and yet we find éyóní lyânge 'my bird' and éyóní lyôsi 'the whole bird'. If we assume that the underlying forms for lyânge and lyôsi are

TABLE V. Summary of Tonal Variations within the Noun Phrase

| | |
|------------------------------------|-------------------------------------|
| L-L → n.c. / ___ L | F-H-F → H-H- $\frac{L}{F}$ / ___ L |
| L-L → n.c. / ___ H | F-H-F → H-H-L / ___ H |
| L-L → n.c. / ___ F | F-H-F → H-H-L / ___ F |
| H-H → n.c. / ___ L ¹ | L-H-L-H → n.c. / ___ L ⁵ |
| H-H → H-L / ___ H | L-H-L-H → L-H-L-L / ___ H |
| H-H → H-L / ___ F | L-H-L-H → L-H-L-L / ___ F |
| F-F → F-L / ___ L | L-L-H-L → n.c. / ___ L |
| F-F → F-L / ___ H | L-L-H-L → n.c. / ___ H |
| F-F → F-L / ___ F | L-L-H-L → n.c. / ___ F |
| F-L → H-L / ___ L | H-H-H-H → n.c. / ___ L |
| F-L → H-L / ___ H | H-H-H-H → H-H-H-L / ___ H |
| F-L → H-L / ___ F | H-H-H-H → H-H-H-L / ___ F |
| L-L-L → n.c. / ___ L | H-L-L-H → n.c. / ___ L |
| L-L-L → n.c. / ___ H | H-L-L-H → H-L-L-L / ___ H |
| L-L-L → n.c. / ___ F | H-L-L-H → H-L-L-L / ___ F |
| H-H-H → n.c. / ___ L | H-L-L-L → n.c. / ___ L |
| H-H-H → H-H-L / ___ H | H-L-L-L → n.c. / ___ H |
| H-H-H → H-H-L / ___ F ² | H-L-L-L → n.c. / ___ F |
| H-L-H → n.c. / ___ L | H-L-H-L → n.c. / ___ L |
| H-L-H → H-L-L / ___ H ³ | H-L-H-L → n.c. / ___ H |
| H-L-H → H-L-L / ___ F | H-L-H-L → n.c. / ___ F |
| H-L-L → n.c. / ___ L | F-H-L-L → H-H-L-L / ___ L |
| H-L-L → n.c. / ___ H | F-H-L-L → H-H-L-L / ___ H |
| H-L-L → n.c. / ___ F | F-H-L-L → H-H-L-L / ___ F |
| F-H-L → H-H-L / ___ L ⁴ | H-L-H-F → n.c. / ___ L |
| F-H-L → H-H-L / ___ H | H-L-H-F → H-L-H-L / ___ H |
| F-H-L → H-H-L / ___ F | H-L-H-F → H-L-H-L / ___ F |

- Notes: 1. no change in most cases, except for possessive plurals
 2. exceptions: lyângé, lyôsi (see text)
 3. note unusual H on CM of múhôngó, múláíá, múláíyí
 4. exception: associative construction / ___ L
 5. exceptions: plural possessives, associatives

/li-ânge/ and /li-ôsi/, then it is not surprising to find that éyóní lyânge and éyóní lyôsi follow the rule of no change before L. Certain inexplicable irregularities do occur in associative formations with éyóní, for example: éyóní ly'omwáana 'the bird of the child', éyóní ly'émwá 'the bird of the dog', éyóní lya masaala 'the bird of the mother-in-law', all three of which should have 'bird' surfacing as H-H-H instead of H-H-L. The associative construction seems to produce a number of irregularities, including a H on baaba wa másaala 'the father of the mother-in-law', a noun which shows up consistently L-L-L in every other combination.

One more set of irregularities appears in the ómwaaná paradigm. While it seems to be triggered by the noun itself (other class 1 nouns do not produce the same irregularities), it manifests itself on the CM of the modifier: ómwaaná múhóngó 'the big child', ómwaaná múlayí 'the good child', ómwaaná múlálá 'one child'. It is hardly likely that the class 1 CM /mu-/ is underlyingly H. Thus, it would appear that the H of 'child' is somehow carried over onto the following word. This would fit the rule which predicts no change of H-L-H before L, but it seems unlikely since in most cases in Samia tonal influence seems to work backwards on the preceding vowel(s) rather than forwards on the following vowel(s). An example of this occurs in the associative construction, which is characterized by a L /-a/. Unlike many other Bantu languages (e.g. Haya), where the initial vowel following the associative marker will take that marker's tone, in Samia, the associative L tone marker only retains its surface tone if it is followed by another L or by a consonant-initial word. If, as in the case of ómwaaná w'émwá 'the child of the dog', underlyingly /ómwaaná wa émwá/, the following word is vowel-initial with H tone, that H is retained on the surface, while the preceding tone, the L of the associative marker, is lost. Another example of the same direction of tonal effect is in the use of the copula /ní/:

| | | | | | |
|---------|--------------|--------------|---|----------|-----------------|
| ómwaaná | 'child' | /ní+ómwaaná/ | → | nómwaaná | 'it's a child' |
| êsímba | 'lion' | /ní+êsímba/ | → | nêsímba | 'it's a lion' |
| ámáyóní | 'birds' | /ní+ámáyóní/ | → | námáyóní | 'they're birds' |
| Juma | [prop. name] | /ní+Juma/ | → | ni Juma | 'it's Juma' |

The final two sections to be covered here deal with the tonological patterns found in full NP-VP sentences, specifically the roles played by tone in defining and constraining position and use of the object markers (OM), both direct and indirect, and the structures involving relative clauses of various types. In Samia only two object marker positions are found between the CM and the verb stem, and these are strictly controlled both as to position and tone. A set of ordered statements regarding the rules for D.O./I.O. infixing follows: (1) Only two interchangeable D.O./I.O. positions are permitted; (2) The OM immediately preceding the verb stem takes H tone except in P₃ and F₁; (3) Classes 1/2 and 1a/2a take priority positions; the positions of the OM of other classes are interchangeable. Essentially what this means is that with the exception of tenses P₃ and F₁, the /-mu-/ or /-ba-/ OM must be placed immediately before the verb stem where it can take the H tone; any other position is unacceptable: ayimúberesé 'he gave it to him' (not *amuyíberesé). If the sentence is constructed in such a way that the 1/2 infix is optional, then the OM of the lesser class may occur in pre-verb stem position and therefore take a H tone: ayíberesé ómwaaná 'he gave it to the child'. When using P₃ or F₁ tenses, where the verbal CM and tense markers are the only morphemes to take tone markers, OM order is equally rigid, with 1/2 appearing right before the verb stem: yákabalíma 'he cultivated them (bananas) for them (children)' (P₃) (not *yábakalíma), anákalímá 'he will cultivate them (bananas) for them (children)' (F₁) (and not *anábakalímá).

Certain variations in surface tones of verb stems themselves are also noted, apparently as the result of the infixing of OM's:

| | | | | | | |
|------------------|---------|------------|-----------|---------------|---------|--------------|
| | mbóná | 'I see' | xúbona | 'I see you' | mbábona | 'I see them' |
| P ₁ : | babwéné | 'they saw' | balíbwéné | 'they saw it' | | |
| P ₃ : | yábona | 'he saw' | yásibóna | 'he saw it' | | |

While it is true that óxuboná 'to see' is a highly irregular verb, and as such may be atypical or an isolated case, both óxulímá 'to cultivate' and óxulyá 'to eat' show at least one such tone change each: alíiré 'he ate [P₁]', ayíiré 'he ate it'; alímá 'he cultivates', abálímá 'he cultivates for them'. Before any conclusions

can be drawn as to why such changes occur, many more verbs must be examined in terms of their number of syllables, canonical shape, tone patterns in citation form, etc.

By examining the following sentences, a number of factors concerning the tone patterns of Samia become evident:

| | | |
|---------------|----------------------|-------------------|
| abóná | 'he sees' | /abóná/ |
| ómwaan' ábóna | 'the child sees' | /ómwaaná abóná/ |
| ómwaan' abóna | 'the child who sees' | /ómwaaná à àbóná/ |

The underlying tones of 'the child sees' are /ómwaaná/, CM /à/, verb stem /-bón-/, and present tense /-á/ final vowel. The final H of /ómwaaná/ and the L of the CM combine to form a F tone. In 'the child who sees', there is presumably an additional L tone /à/ relative marker, which keeps the initial tone of /abóná/ L. What is strange in both of these sentences is that the final H realized in [abóná] 'he sees' comes out instead as L when there is a noun subject. There is no obvious explanation for this fact.

It should be clear that there are vast areas of Samia grammar and tonology which have not been addressed here. There are a number of questions which my own research has raised but not answered, such as the suspicion that Samia may have a lexical mid tone in addition to H, L, and F (perhaps pitch-raising of the type reported by Hazel Carter in Bukusu?). Hopefully further research will help provide the answers to the many still unanswered questions.

NOTE

*This paper is based on the speech of Mr. Chrispen Maende, to whom I am extremely grateful for devoting much of his valuable time to this study of Samia grammar and tone.

REFERENCES

- Appleby, L. L. 1961. A First Luyia Grammar. Dar es Salaam: The East Africa Literature Bureau.
- Byarushengo, Ernest Rugwa. 1975. An Examination of the Segmental Phonology of Haya. Unpublished M.A. Thesis, University of Dar es Salaam.
- Byarushengo, Ernest Rugwa, Larry M. Hyman, and Sarah Tenenbaum. 1976. Tone, accent, and assertion in Haya (in this volume).

- Carter, Hazel. 1973. Tonal data in Comparative Bantu. African Language Studies 14.36-52.
- Dalgish, Gerard M. 1976. The Morphophonemics of OluTsootso: Issues and Implications. Unpublished Ph.D. Dissertation, University of Illinois.
- de Blois, K. F. 1970. The augment in the Bantu languages. Africana Linguistica 4.85-165. Musée Royal de l'Afrique Centrale, Tervuren.
- Donohew, G. 1962. A First Course in Luyia.
- Guthrie, Malcolm. 1948. The Classification of the Bantu Languages. London: Oxford University Press.
- Guthrie, Malcolm. 1970. Comparative Bantu, Vols. I-IV. Hants: Gregg Press Ltd.
- Meeussen, A. E. 1967. Bantu grammatical reconstructions. Annales du Musée Royal de l'Afrique Centrale, Sciences Humaines, 61.80+121.

APPENDIX I: Basic Word List (modified Swadesh)

Nouns:

| | | | | | | |
|-------|---|---------|-----------------|------|---------|----------|
| L-L | : | baaba | 'father' | 1a/ | | |
| | | maama | 'mother' | 1a/ | | |
| H-H | : | éndá | 'belly' | 9/10 | | |
| | | éké | 'termite' | 5/ | | |
| | | émwó | 'seeds' | /10 | | |
| F-F | : | éndá | 'louse' | 9/10 | | |
| | | èñù | 'hyena' | 9/10 | | |
| F-H | : | êmbwá | 'dog' | 9/10 | | |
| | | ébwé | 'fox' | 5/6 | | |
| F-L | : | êye | 'war' | 5/6 | | |
| | | êwa | 'thorn' | 5/6 | | |
| L-L-L | : | masaala | 'mother-in-law' | 1a/ | | |
| H-H-H | : | éyóní | 'bird' | 5/ | | |
| | | ómúndú | 'person' | 1/2 | ábáándú | 'people' |
| | | ómúsí | 'root' | 3/4 | émfí | 'roots' |
| | | ésíndú | 'thing' | 7/8 | ébíndú | 'things' |
| | | ómwóyó | 'heart' | 3/ | | |
| | | ékíná | 'stone' | 5/ | | |
| | | ólúfwá | 'seed' | 11/ | | |
| | | éleésí | 'cloud' | 5/ | | |
| | | ényámá | 'flesh/meat' | 9/10 | | |
| | | édóóndó | 'navel' | 5/ | | |
| | | ékósf | 'neck' | 5/ | | |
| | | ólúmwó | 'seed' | 11/ | | |
| | | élobbá | 'ground/earth' | 5/ | | |
| | | ékífrá | 'path' | 9/10 | | |
| | | ékúúlú | 'mountains' | /10 | | |
| | | ékóxé | 'ash' | 5/ | | |

| | | | | | | |
|---------|---|-----------|---------------|-------|---------|-------------|
| H-L-H | : | ómwaaná | 'child' | 1/2 | ábaaná | 'children' |
| | | ámaté | 'saliva' | 0/6 | | |
| | | ésinyá | 'fat' | 5/ | | |
| | | éfutá | 'oil' | 5/ | | |
| | | ólwiiká | 'animal horn' | 11/10 | énjiiká | 'horns' |
| | | éfwiirf | 'hair (head)' | 5/ | | |
| | | ómutwé | 'head' | 3/4 | émitwé | 'heads' |
| | | émbusf | 'goat' | 9/10 | | |
| | | ésiró | 'night' | 7/8 | ébiró | 'nights' |
| | | óxutwí | 'ear' | 15/6 | ámatwí | 'ears' |
| | | émonf | 'eye' | 9/10 | | |
| | | ámoolú | 'noses' | /6 | | |
| | | élinó | 'tooth' | 5/6 | ámeenó | 'teeth' |
| | | énimí | 'tongues' | /10 | | |
| | | élitá | 'name' | 5/6 | ámeetá | 'names' |
| | | ómwaaaló | 'river' | 3/ | | |
| | | éfulá | 'rain' | 5/0 | | |
| H-L-L | : | édete | 'fingernail' | 5/ | | |
| | | ébuyu | 'egg' | 5/ | | |
| | | ékumba | 'bone' | 5/ | | |
| | | ényumba | 'house' | 9/10 | | |
| | | ómwibi | 'thief' | 1/2 | ábibi | 'thieves' |
| | | ésolo | 'animal' | 9/10 | | |
| | | éngasi | 'oar, paddle' | 9/10 | | |
| F-H-L | : | émésá | 'table' | 9/10 | | |
| | | ésfmba | 'lion' | 9/10 | | |
| | | éndésége | 'plane' | 9/10 | | |
| | | éngási | 'ladder' | 9/10 | | |
| | | éngíla | 'ring' | 9/10 | | |
| | | ébúri | 'waterbuck' | 9/10 | | |
| | | étémwa | 'banana' | 5/ | | |
| | | épúúsf | 'cat' | 5/ | | |
| | | éwúwa | 'flower' | 5/ | | |
| F-H-F | : | édífwá | 'maize' | 5/ | | |
| L-H-L-H | : | xamúlalf | 'pepper' | 9/10 | | |
| | | namúlobf | 'kingfisher' | 9/10 | | |
| L-L-H-L | : | naluwíga | 'rhino' | | | |
| H-H-H-H | : | ámáyónf | 'birds' | /6 | | |
| | | ámákfíná | 'stones' | /6 | | |
| | | ámálóésf | 'clouds' | /6 | | |
| | | ámádóóndó | 'navels' | /6 | | |
| | | ámálobá | 'soil' | /6 | | |
| | | ámákoxé | 'ashes' | /6 | | |
| | | ámákósf | 'necks' | /6 | | |
| | | ómúlfiró | 'fire' | 3/4 | émfílró | 'campfires' |
| | | ómúxóyé | 'rope' | 3/4 | émíxóyé | 'ropes' |
| | | ólúgúlú | 'mountain' | 11/ | | |
| | | óxúkúlú | 'leg/foot' | 15/6 | ámákúlú | 'legs/feet' |
| | | émíóyó | 'hearts' | /4 | | |
| H-L-L-H | : | ámasinyá | 'fats' | /6 | | |
| | | ómuhirá | 'tail' | 3/4 | émihirá | 'tails' |
| | | ámáfutá | 'oils' | /6 | | |

| | | | | | | |
|---------|---|-----------|---------------|------|-----------|---------|
| | | ámáfwiirf | 'hairs' | /6 | | |
| | | élioólú | 'nose' | 5/ | | |
| | | ólulimí | 'tongue' | 11/ | | |
| | | ómuxonó | 'hand' | 3/6 | ámaxonó | 'hands' |
| | | ómusenyé | 'sand' | 3/4 | émisenyé | 'sands' |
| | | ómuxasí | 'woman' | 1/2 | ábaxasí | 'women' |
| | | ómusaachá | 'man' | 1/2 | ábasaachá | 'men' |
| | | éliubá | 'sun' | 5/0 | | |
| | | élioyá | 'feather' | 5/ | | |
| H-L-L-L | : | ámadete | 'fingernails' | /6 | | |
| | | ámabuyu | 'eggs' | /6 | | |
| | | ámakumba | 'bones' | /6 | | |
| | | ésihoba | 'human skin' | 7/8 | ébihoba | 'skins' |
| | | ómusaaala | 'tree' | 3/4 | émisaaala | 'trees' |
| H-L-H-L | : | ámátémwa | 'bananas' | /6 | | |
| | | ámawúwa | 'flowers' | /6 | | |
| | | ámápúúsi | 'cats' | /6 | | |
| F-H-L-L | : | éngósya | 'vulture' | 9/10 | | |
| H-L-H-F | : | ámádfmwá | 'maizes' | /6 | | |

Verbs:

| | | | | | |
|-----------|---|--------------|----------------------------|-----------|----------------------|
| H-L-H | : | óxulyá | 'to eat' | óxwiitá | 'to kill' |
| | | óxunwá | 'to drink' | óxwooká | 'to bathe' |
| | | óxweemá | 'to stand up' | óxwiichá | 'to come' |
| | | óxufwá | 'to die' | óxwiibá | 'to steal' |
| H-L-L-H | : | óxusaambá | 'to burn/roast' | óxukoná | 'to sleep' |
| | | óxulumá | 'to bite' | óxusoogá | 'to swim' |
| | | óxuboná | 'to see' | óxusomá | 'to read' |
| | | óxulimá | 'to cultivate' | óxuboolá | 'to say (something)' |
| | | óxumirá | 'to swallow' | óxukeendá | 'to walk/go' |
| | | óxumanyá | 'to know' | óxusiihá | 'to bury' |
| | | óxwiihalá | 'to sit down' | | |
| H-L-H-H | : | óxuulfrá | 'to hear' | óxwiibúlá | 'to give birth' |
| H-L-L-L-H | : | óxubuuyuká | 'to blow' | óxuburuhá | 'to fly' |
| H-L-L-H-H | : | óxweeyalífsá | 'to lie down/ to sleep' | óxuberésá | 'to give' |

Other words:

| | | | | | |
|------------|---|----------------|----------|----------|---------|
| numerals | : | ndáíá | 'one' | chinè | 'four' |
| | | chibífrí | 'two' | chitanú | 'five' |
| | | chidatú | 'three' | | |
| colors | : | mabangá | 'red' | rachaarí | 'white' |
| | | majani kabíchi | 'green' | rateni | 'black' |
| | | namukí | 'yellow' | | |
| adjectives | : | -hóngó | 'big' | | |
| | | -ndífdi | 'small' | | |
| | | -layí | 'good' | | |

APPENDIX II: Some Derived Verbs

| <u>Original Form</u> | | <u>Derived Form</u> | |
|----------------------|----------------|---------------------|--------------------|
| óxukulá | 'to buy' | óxukusá | 'to sell' |
| óxulyá | 'to eat' | óxulíísá | 'to feed' |
| óxweká | 'to learn' | óxuwekéésá | 'to teach' |
| óxuboolá | 'to say/speak' | óxubooléíá | 'to say to/tell' |
| óxusomá | 'to read' | óxusoméíá | 'to read to' |
| óxuteká | 'to cook' | óxuteshéíá | 'to cook for' |
| óxufumbá | 'to fold' | óxufumbúúíá | 'to unfold' |
| óxufwalá | 'to dress' | óxufwalúíá | 'to undress' |
| óxwibalá | 'to guide' | óxwibalííá | 'to guide someone' |

STUDIES IN BANTU TONOLOGY
 Southern California Occasional Papers
 in Linguistics No. 3, December 1976
 Edited by Larry M. Hyman

A NEW APPROACH TO SUKUMA TONE

BY

HERMAN BATIBO

DEPARTMENT OF AFRICAN LINGUISTICS
 UNIVERSITY OF DAR ES SALAAM
 P.O. Box 35040
 DAR ES SALAAM, TANZANIA

Published by the Department of Linguistics
 University of Southern California
 Los Angeles, California 90007

1. INTRODUCTION

Sukuma is a Bantu language (Guthrie's F.21) spoken by over one and a half million Tanzanians who live to the South and South-East of Lake Nyanza (or Victoria). The four main dialects constituting this language are named according to their geographical orientation. Although these four dialects differ mostly phonetically, phonemic and lexical variations are not infrequent. However these differences, though linguistically significant, have little bearing on general intercomprehension. The dialect described here is Kemunasukuma, or "the northern way of speaking".

1.1. Theory

Sukuma has often been described as a language with "tonal displacement", in that, high (H) tones often appear to surface two syllables after the syllables to which they belong underlyingly (Richardson 1959, 1971; Richardson and Mann 1966). This approach, though generally acceptable, presents three serious phonological problems: 1) Given that one of the major features of one kind of tone language is that every syllable is characterized by a distinctive pitch level,¹ the "displacement" of H tone from a given syllable implies that the syllable in question becomes devoid of any tone--which is obviously not true. 2) It is extremely difficult to account for the phonemic extra-low tone ('L) under the traditional perspective of tonal displacement. 3) Sukuma language speakers are able to recognize a word with a "displaceable" H tone in a context where displacement is not possible (see below for the specific conditions on "displacement"). To give an example, the author, while in Paris, was able to identify in a companion's speech the Sukuma version for the French word "métro" as bearing a "displaceable tone" without going through Richardson's test frames (see Richardson 1971:227).

In this study, I shall attempt an alternative approach by suggesting a Downslip-Uplift Theory to handle the complex tonal situation in Sukuma. While the "downstep" effect is the realization of a H tone at a level slightly lower than the preceding H (cf. Hyman and Schuh 1974), the "downslip" incidence (as described here) causes the realization of a H tone at a level similar to, or significantly lower than, a low (L) tone. One other difference be-

tween a downstep and a downslip is that while the former occurs nearly always after a H tone (but see Hyman and Tadadjeu 1976), the latter can occur after both H and L tones. On the other hand, "uplift" means the promotion of a L tone to H, often as a compensation for a downslip. In other words, every downslip will, in appropriate circumstances be counterbalanced by an uplift.

1.2. Notations and Sign Conventions

The seven vowel phonemes in Sukuma are presented here as i, e, ɛ, a, ɔ, o, u. This notation, termed "Latin Orthography" by Tucker (1929), is intended to reflect the phonological system rather than indicate the phonetic realizations of the vowels. The consonants are likewise noted phonemically except in phonetic transcriptions. The following are the sign conventions used in this work:

| | | |
|-----------------|---|---|
| CVV | = | one long morphosyllable (surfaces as long syllable) |
| CV.V | = | two morphosyllables (surface as one long syllable) |
| C [́] | = | high (H) tone |
| C [̄] | = | mid (M) tone |
| C [̀] | = | low (L) tone |
| 'C [̀] | = | extra-low ('L) tone |
| "C [̀] | = | ultra extra-low ("L) tone |
| C [̇] | = | neutral morphological tone |
| { } | = | morphophonological abstraction |
| | = | intermediate or operational level |
| / / | = | phonological representation (phonemic level) |
| [] | = | phonetic realization |
| ↓ | = | downslip |
| ↑ | = | uplift |
| | = | pause boundary |
| + | = | word boundary (in morphophonological analysis) |
| - | = | morpheme junction (in morphophonological analysis) |

1.3. Procedure

At the deepest level of abstraction, Sukuma can be shown to have two tone contrasts: High {H} and Low {L}. These are essentially morphological tones and will be known here as "morphotonemes".³ In fact, all morphotonological sequences are possible in Sukuma

morphemes.⁴ Thus we have the following possibilities:

| | | |
|------|-------|-------|
| {LL} | {LLL} | {LHH} |
| {LH} | {LLH} | {HLH} |
| {HL} | {LHL} | {HHL} |
| {HH} | {HLL} | {HHH} |

So as to take a systematic approach to the problem, I intend, in the first place, to show how morphotonemes generally surface as tonemes through representation rules, first in isolation (before pause) and then in contexts (before other words). I shall also distinguish between general rules, that is, rules which cover all similar situations, and specific cases ("minor rules" in generative terminology), or cases which apply only to particular types of morphemes.

2. GENERAL RULES

2.1. In Isolation

Rule 1. If a L morphotoneme is not preceded by a downslip, it will be represented phonologically by a L toneme.

{LL} → |LL| → /LL/

Examples are seen in (1).

- (1) a. {pí} → |pí| → /pí/ [_] 'black'
 b. {kòlè} → |kòlè| → /kòlè/ [_ _] 'far'
 c. {sàgàlà} → |sàgàlà| → /sàgàlà/ [_ _ _] 'carelessly'
 d. {kò-sòl-èl-èl-l-à} → |kò-sòl-èl-èl-y-à| → /kòsòlèlèjà/
 [_ _ _ _ _] 'contribute, raise money'

One will notice that final L is realized with a falling contour or "downglide". It is noteworthy that final syllables are usually associated with considerable prominence, notably in a form of high intensity.

Rule 2. A final or penultimate H morphotoneme in the absence of another neighboring H in the same morpheme, will be affected by a downslip (↓). The resulting pitch will be an extra-low toneme ('L).

- a) {LLH} → |LL↓H| → /LL'L/
 b) {LHL} → |L↓HL| → /L'L'L/

Examples are given in (2).

- (2) a. {bà-dògò} → |bà-dògò| → /bàdò'gò/ 'relatives' (cl. 2)
 b. {dàkámà} → |dàkámà| → /dà'kà'mà/ 'south'

The morphotonological processes can be schematized thus:



Note in the above examples that the notation 'L implies a downslipped L on the surface. Thus, the downslip mark in a hypothetical sequence 'L-L will lower both L tones, while the notation 'L-'L will stand for a sequence of extra-L followed by a still lower ultra extra-L tone. Note that if the downslip incidence occurs in penultimate position before pause, the final syllable will be realized not as an ultra extra-L (which I symbolized in earlier work as "L), but as a downglided extra-L. The phonological status of 'L can be seen in the following examples.^{4'}

- (3) a. /màlò'mbò/ 'sisters' (augmentative, cl. 6) |mà-lò↓mbó|
 /màlòmbò/ 'leg' (of dead animal, cl. 6) |mà-lòmbò|
 b. /ìkà'là/ 'member of Kala tribe' (pej. cl. 5) |ì-kà↓lá|
 /ì'kà'là/ 'charcoal' (cl. 5) |ì-↓kálà|

Even when a downslip affects an initial H, the latter will be realized slightly lower than a L.⁵ This is especially true in disyllabic words, as seen in (4).

- (4) [ŋ^hɔ́lɔ́] 'sheep' |n-kòlò|
 ['ŋ^hɔ́lɔ́] 'heart' |n-↓kóólò|

Notice in the second example that an extra-L tone will downglide in final position, giving the impression of an ultra extra-L tone, with which it does not contrast. The noun 'heart' can therefore be equivalently transcribed as ['ŋ^hɔ́'lɔ́].

As a result of rule 2, most H morphotonemes characterizing monosyllabic morphemes (e.g. verbal radicals,⁶ monosyllabic nominal stems and affixes) are systematically affected by the downslip.

Moreover, in part (b) of rule 2, if the {H} in the sequence {(L)HL} happens to characterize a long morphosyllable, it will surface as a falling tonal glide, as seen in (5).

(5) {húunà} → |húunà| → /húunà/ 'small animal of rabbit family'

Rule 3. A morpheme with a succession of H morphotonemes, but characterized by a {L} on its final morphosyllable, will equally be affected by downslip. As in rule 2 above, the {H} in the penultimate position will be realized as extra-L and the {L} in final position will be realized as ultra extra-L (i.e. extra-L with downglide).

{HHHL} → |H↓H↓HL| → /LL'LL/ → [LL'L'L]

An example is given in (6), whose gloss is 'cock' (cl. 9).

(6) {n-kúngúúmè} → |n-↓kú↓ngú↓úmè| → /n'hùngù 'lùmè/ → [n'hù:ngù'rù'mè]⁷

Rule 4. As the language does not admit a succession of two H tones in the same morpheme, a morpheme with a sequence of H morphotonemes, of which one is on the last morphosyllable, will undergo one of the following processes.

a) {HH} → |H↓HH| → /LH/ → [LHL]

Examples are seen in (7).

(7) a. {tálá} → |tálá| → /tálá/ → [t'hálá] 'lamp'
 b. {nágáná} → |nágáná| → /nágáná/ → [nágáná] 'raw, immature'

Notice that final H tonemes are phonetically realized as falling tonal glides before pause.

b) {HH} → |H↓H| → /H'L/ → [H'L]
 or → [HL]

Examples are given in (8).

(8) a. {hámó} → |hámó| → /há'mò/ → [há'mò] or [hámò] 'perhaps'
 b. {ø-de'éédé} → |ø-de'éédé| → /dè'é'dè/ → [dè'é'dè] or [dè'é'dè]
 'small bird with grey feathers'

It will be noticed, as the last example shows, that a H on a long morphosyllable will surface as a rising tonal glide if it is followed by a downslipped {H}.

Comparing rules 4a and 4b we notice that their respective conditions are so similar that some words will surface interchangeably

through either rule. Thus, {m-kóyó} 'fig tree' (cl. 3) undergoes rule 4a in (9a) or rule 4b in (9b).

(9) a. → |m-↓kóyó| → /n'kòyó/ → [n'k'hòyò]⁸
 b. → |m-kó↓yó| → /n'kó'yò/ → [n'k'hòyò]⁸ or [n'k'hòyò]⁸

Some monosyllabic morphemes with {H} seem not to be affected by the downslip incidence. A close diachronic investigation suggests that these morphemes are a result of a contraction of two {H} morphosyllables, as seen in (10).

(10) a. {-mó} → |-mó| → /('ò)mó/ 'one' (person, cl. 1)
 b. {-né} → |-né| → /('è)né/ 'four' (trees, cl. 4)

Moreover, if a morphosyllable characterized by {H} surfaces as an accentuated syllable for expressive ends, it will normally not be downslipped, as seen in (11).

(11) {ká} + {mù-ntò} → |ká+mù-ntò| → /ká mù'n'ò/ 'it is a man' (beyond doubt)¹⁰

Finally, words borrowed from languages with stress-accent are normally considered as bearing {H} on the originally accentuated morphosyllable. Again, the resulting H morphotonemes are normally not affected by the downslip phenomenon, as seen in (12).

(12) Swahili Sukuma 'flute'
 fi'limbi > {filímbi} → |filímbi| → /filímbi/ → [filí:mbi]

2.2. In Word Context

If the downslip incidence occurs in a position which is neither final nor penultimate, or if the word in which the former occurs (in final or penultimate position) is followed by another word, a new mechanism will systematically come into play. This is the "uplift" (↑) described above. It is essentially the counterpart of downslip, in that it counterbalances the effects of the latter. The various rules and conditions on its operation are now presented.

Rule 5. Generally, the uplift will take place two morphosyllables after a |H↓|, on the condition that both morphosyllables are |L|. If the |H↓| happens to fall in penultimate or final position, the uplift counterpart will occur on the second morphosyllable of the following word. Thus the first morphosyllable will function as a "pivot". The subparts of this rule are given below.

- a) {HLL} → |↓HL↑L| → /LLH/
 b) {LLH} + {LL} → |LL↓H + L↑L| → /LLL LH/
 or {LHL} + {LL} → |L↓HL + L↑L| → /LLL LH/

Examples are given in (13).

- (13) a. {n-bɔ́gɔ́mà} → |n-↓bɔ́gɔ́↑mà| → /mbɔ́gɔ́má/ 'heifer'
 b. {bá-kò-sɔ́l-à} → |↓bá-kò-↑sɔ́l-à| → /bàkòsɔ́là/ 'they will pick up'
 c. {m-dògɔ́} + {gɛ̀ɛ̀tɛ̀} → |m-dò↓gɔ́ + gɛ̀ɛ̀↑tɛ̀| → /ndògò gɛ̀ɛ̀tɛ̀/ 'a real relative'
 d. {dàkámà} + {kòlɛ̀} → |dà↓kámà + kò↑lɛ̀| → /dàkámà kòlɛ̀/
 → [dàk'hàmà k'hòlɛ̀] or [dà'k'hàmà kòlɛ̀] 'the south is far'
 e. {jɛ̀l-ìè} + {sàgàlà} → |↓jɛ̀l-ìè + sà↑gàlà| → /jɛ̀lè sàgàlà/ 'they are kept carelessly (e.g. cattle)'

Rule 6. As a follow up of rule 5b, if after a downslip occurrence, the following word is monosyllabic, the uplift counterpart will still take place on the latter.

- {LH} + {L} → |L↓H + ↑L| → /LL H/

An example of rule 6 is given in (14).

- (14) {nùmpɔ́} + {wà} → |nù↓mpɔ́+↑wà| → /nùm'ò wá/ 'it is perhaps that way'

Curiously enough, preprefixes (or augments) and verbal prefixes behave morphotonologically as independent syntactical elements (or words), as seen in (15).

- (15) {hámɔ́} + {ò-mù-ntò} → |há↓mɔ́+↑ò+mù-ntò| → /hámò ómùn'ò/ 'perhaps it is the man in question'
 {hámɔ́} + {à-kò-bɔ́n-à} → |há↓mɔ́+↑à+kò-↓bɔ́n-à| → /hámò ákò'bònà/ 'perhaps he will see'

Rule 7. Since tonal uplifting occurring only on |L| morphosyllables, if a |↓H| happens to be on the second morphosyllable, the uplifting operation will take place on the |L| immediately preceding it. The two subparts of this rule are given below.

- a) {HLH} → |↓H↑L↓H| → /LH'L/
 b) {LLH} + {LH} → |LL↓H+↑L↓H| → /LLL H'L/

Examples are given in (16).

- (16) a. {bá-kò-bɔ́n-à} → |↓bá-↑kò-↓bɔ́n-à| → /bàkò'bònà/ 'they will see'

- b. {bà-dògɔ́} + {bà-fùlà} → |bà-dò↓gɔ́+↑bà↓fùlà| → /bàdògò bá'fùlà/ 'kind relatives'

Moreover, since the succession /HH/ is not permitted in the same morpheme in the language (rule 4), the uplift occurrence will never surface immediately before a non-downslipped {H}.¹¹ In such situations the uplift will take place at least two morphosyllables before the non-downslipped {H}. Thus:

- {LLH} + {LLHH} → |LL↓H + ↑LLH↓H| → /LLL HLH'L/

An example is given in (17).

- (17) {mà-pééíá} + {mà-gùgúnú} → |mà-pééí↓á + ↑mà-gùgúnú| → /màpééílà mágùgúnú/ → [màp'hééílà mágùgúnú]

Rule 8. If a |H|, downslipped or not, immediately follows a |↓H|, the latter will not have an uplift counterpart.

- a) {HHHHH} → |↓H↓H↓H↓H↓H| → /LLL'LL/
 b) {LH} + {HL} → |L↓H + ↓HL| → /LL'LL/
 c) {LH} + {HH} → |L↓H + H↓H| → /LLH'L/

Examples are given in (18).

- (18) a. {bá-á-ló-bɔ́n-á} → |↓bá-↓á-↓lò-↓bɔ́n-↓á| → /báalò'bònà/ 'they have just seen it [cl. 11]'
 b. {bà-dògɔ́} + {dòhò} → |bà-dò↓gɔ́ + ↓dòhò| → /bàdògò 'dòhò/ —
 [bàdògò 'dòhò] 'only relatives'
 c. {bà-dògɔ́} + {hámɔ́} → |bà-dò↓gɔ́ + há↓mɔ́| → /bàdògò há'mò/ 'perhaps they are relatives'
 or /bàdògò há'mò/

It is noticed in the last example that there are two surface alternatives. Indeed the downslip operation will not normally affect a {H} in final position if, in the following word, not only uplift is blocked, but also one {H} is to surface as /H/. Addition examples of this are seen in (19).

- (19) a. {ná-á-bɔ́n-á} + {tálá} → |↓ná-↓á-↓bɔ́n-á + ↓tálá| → /nàabònà tàlá/ 'I have just seen a lamp'
 b. {bà-dògɔ́} + {bá-śsɛ́} → |bà-dògɔ́ + ↓bá-↓śsɛ́| → /bàdògò bɔ́śsɛ́/ 'all relatives'
 c. {bà-dògɔ́} + {bá-láá-sɔ́l-à} → |bà-dògɔ́ + ↓bá-↓lá.á-sɔ́l-à| → /bàdògò bàláásɔ́là/ 'relatives will pick up'

Alternatively: $\rightarrow |b\grave{a}-d\acute{o}+g\acute{o} + b\acute{a}^{14} + \psi\acute{a}.\acute{a}-s\grave{o}l-\grave{a}| \rightarrow /b\grave{a}d\acute{o}g\acute{o} b\acute{a}l\acute{a}a\acute{s}\grave{o}l\grave{a}/$

On the other hand, it will be seen that no uplift takes place on some apparent |L| morphosyllables. A hypothetical diachronic explanation would be that all these cases were originally {H}. In fact, this could be synchronically shown by the following step by step processes:

(1) (2) (3)
 $\{CVV\} \rightarrow |CV.V| \rightarrow |\psi CV.V| \rightarrow |CV.(V)| \rightarrow /CV/^{13}$

Process (1): The long morphosyllable becomes di-morphosyllabic.

Process (2): The first part is downslipped.

Process (3): The second part is lost because of a voiceless plosive consonant.

This is for example the case of the indefinite past tense infix {-kaá} which will systematically undergo the following processes.

$\{ka\acute{a}\} \rightarrow |k\acute{a}.\acute{a}|$ (di-morphosyllabification)
 $\{k\acute{a}.\acute{a}\} \rightarrow |\psi k\acute{a}.\acute{a}|$ (rule 4a)
 $\{k\grave{a}.\acute{a}\} \rightarrow |k\grave{a}.|$ (loss of second morphosyllable because of voiceless plosive)
 $|k\grave{a}.| \rightarrow /k\grave{a}/^{14}$

e.g. $\{b\acute{a}-ka\acute{a}-s\grave{o}l-\grave{a}\} \rightarrow |\psi b\acute{a}-\psi k\acute{a}.\acute{a}-s\grave{o}l-\grave{a}| \rightarrow /b\grave{a}k\grave{a}s\grave{o}l\grave{a}/$ 'they picked up'

Another exception to rule 8 is when the {H} is on a morphosyllable with a complex consonant (aspirated nasal or prenasalized consonant). In this case uplift will take place on the second mora of the preceding morphosyllable which, in such conditions, is usually long. Examples are given in (20).

(20) a. $\{b\acute{o}l\acute{e}\} + \{nk\acute{n}\acute{a}\} \rightarrow |b\acute{o}\psi l\acute{e} + \uparrow n\psi k\acute{n}\acute{a}| \rightarrow /b\acute{o}l\acute{e}\acute{e}'\eta h\acute{n}\acute{a}/$ 'as a matter of fact'
 b. $\{b\acute{o}l\acute{e}\} + \{n-b\acute{u}l\acute{i}\} \rightarrow |b\acute{o}\psi l\acute{e} + \uparrow n-\psi b\acute{u}l\acute{i}| \rightarrow /b\acute{o}l\acute{e}\acute{e}'mb\acute{u}l\acute{i}/$ 'every goat'

3. SPECIFIC CASES

The specific and, at times, phenomenal nature of some cases demands separate treatment. In fact, these cases are so numerous that I shall treat here just the most important ones. A fuller analysis is to be found in Batibo (in preparation).

Case 1. A certain number of morphemes, both lexical and grammatical, appear to manifest two morphotonological contours according to the dictates of the morphological contexts. Examples are given

in (21).

- (21) a. Verbal Radical, e.g. {-fùng-} 'close'
 thus: $\{k\grave{o}-f\grave{u}ng-\grave{e}l-\grave{a}\} \rightarrow |k\grave{o}-f\grave{u}ng-\grave{e}l-\grave{a}| \rightarrow /k\grave{o}f\grave{u}ng\grave{e}l\grave{a}/$ 'to lock by means of'
 but: $\{k\grave{o}-f\grave{u}ng-\grave{o}l-\grave{a}\} \rightarrow |k\grave{o}-\psi f\grave{u}ng-\grave{o}l-\uparrow\grave{a}|^{15} \rightarrow /k\grave{o}f\grave{u}ng\grave{o}l\acute{a}/$ 'to open'
- b. Independent nominal
 $\{l\acute{o}-\xi f k\acute{o}\} \rightarrow |l\acute{o}-\xi f k\acute{o}| \rightarrow /l\acute{o}\xi f'k\acute{o}/$ 'day' (cl. 11)
 but: $\{\emptyset-\xi f k\acute{o}\} \rightarrow |\emptyset-\psi \xi f k\acute{o}| \rightarrow /'\xi i k\acute{o}/$ 'days' (cl. 10) ['\xi i k'ò]
- c. Dependent nominals
 $\{b\acute{a}-d\acute{a}t\acute{o}\} \rightarrow |\psi b\acute{a}-\psi d\acute{a}t\acute{o}| \rightarrow /b\grave{a}'d\acute{a}t\acute{o}/$ 'three' (e.g. persons, cl. 2)
 but: $\{\grave{e}-d\acute{a}t\acute{o}\} \rightarrow |\grave{e}-d\acute{a}\psi t\acute{o}|^{16} \rightarrow /èd\acute{a}'t\acute{o}/$ 'three' (e.g. trees, cl. 4)
- d. Grammatical element
 $\{\grave{u}-\acute{a}-s\grave{o}l-\grave{a}\} \rightarrow |\grave{u}-\psi \acute{a}-s\grave{o}l-\uparrow\grave{a}| \rightarrow /w\acute{a}a\acute{s}\grave{o}l\acute{a}/$ 'he has just picked up'
 immed.tense
 but: $\{b\acute{a}-\acute{a}-s\grave{o}l-\acute{a}\} \rightarrow |\psi b\acute{a}-\psi \acute{a}-\uparrow s\grave{o}l-\psi \acute{a}| \rightarrow /b\acute{a}a\acute{s}'l\grave{a}/$ 'they have just picked up'

One will indeed notice that the examples given in (21d) seem to confirm Meeussen's (1958) observations on the correspondence between morphotonemes in initial and final positions. Here it is particularly the case between the verbal prefix and the tense suffix. On the other hand, the examples in (21c) seem to suggest the contrary.

Case 2. Due to phonotactic phenomena that frequently occur between vowels in both inter- and intra-word positions, vowels in initial (and sometimes final) position are in most cases morphotonologically disregarded in that they cannot function as "pivots" between |∅H| and |∅L|. In such cases the following morphosyllable will take up the function,¹⁷ as seen in the examples in (22).

- (22) a. $\{b\acute{o}l\acute{e}\} + \{i-b\grave{e}g\acute{a}\} \rightarrow |b\acute{o}\psi l\acute{e} + (i)-b\grave{e}\uparrow g\acute{a}| \rightarrow /b\acute{o}l\acute{e} \text{ } i\grave{b}\grave{e}g\acute{a}/$ 'each shoulder'
 $\rightarrow [b\acute{o}l\acute{e}i\beta\grave{e}g\acute{a}]$
- b. $\{j\acute{i}-\grave{a}-k\grave{a}l\acute{e}\} \rightarrow |\psi j\acute{i}-(\grave{a})-k\grave{a}\uparrow l\acute{e}| \rightarrow /j\grave{a}k\grave{a}l\acute{e}/ \rightarrow [j\grave{a}:k'h\grave{a}l\acute{e}]$ 'the old ones' (e.g. houses)
- c. $\{b\acute{a}-k\acute{o}-i\acute{z}-\grave{a}\} \rightarrow |\psi b\acute{a}-k(\acute{o})-i\acute{z}-\uparrow\grave{a}| \rightarrow /b\grave{a}k\acute{w}i\acute{z}\acute{a}/$ 'they will come'

Case 3. It has been noted frequently that verbal extensions in many Bantu tone languages are tonologically neutral in that their tonemes will depend on the morphotoneme of the final vowel (tense suffix) of each verbal construction. Up to a certain extent

Sukuma displays a similar situation, as the examples in (23) show.

- (23) a. {à-kò-màl-àn-èl-i-à} → |à-kò-màl-àn-èl-y-à| → /àkòmàlànèjà/ 'he will finish at the same time'
 b. {bá-á-màl-àn-èl-i-á} → |↓bá-á-↑màl-↓á-↓é-y-↓á| → /baámálà'nèjà/ 'they have just finished at the same time'
 c. {bá-à-bón-èl-èl-i-á} → |↓bá-↑à-↓bón-↓é1-↓é1-y-↓á| → /bàábònè'lèjà/ 'they have, since long, found something for the purpose'

The only exceptional case arises when in a verbal construction the four obligatory elements (that is, the verbal prefix, tense infix, radical and tense suffix) are all {H}. In such a situation, the extensions will morphotonologically behave as |L|, as in (24).

- (24) a. {bá-á-bón-èl-èl-i-á} → |↓bá-↓á-↓bón-èl-↑èl-y-↓á| → /bàábònèlé'jà/ 'they have just found something for the purpose'
 b. {bá-á-lá.á1-èl-ìlè} ¹⁸ → |↓bá-↓á-↓lá.á1-↑èl-ì↓lè| → /bàaláalél'lè/ 'they slept on..., they went to bed without food'

Case 4. The subjunctive form {-ò-...é} is exceptional in that when its infixal part immediately precedes a {H} verbal radical, no downslip takes place on the latter, as seen in (25).

- (25) a. {à-ò-bón-é} → |à-↓ò-bón-↓é| ¹⁹ → /àbó'nè/ 'let him see'
 but: b. {à-ò-bá-bón-é} → |à-↓ò-↓bá-↓bón-↓é| → /àbà'bònè/ 'let him see them'

Case 5. The ultimate future tense infix {-láá-} may surface as /làá/ or as /láá/ depending on the tonal context: 1) In order that {láá} surface as /láá/ two conditions are essential: a) no |↓H| should immediately follow; b) it should be in such a position that it surfaces as a penultimate syllable. An example is in (26).

- (26) {à-láá-j-à} → |à-lá.á-j-à| → /àláájà/ 'he will ultimately go'
 2) Where one of the conditions in 1) is not met, {láá} will surface as /làá/, as seen in (27).
 (27) a. {à-láá-c'-à} → |à-↓lá.á-↓c'-à| → /àláá'cà/ 'he will die in the long run'
 b. {à-láá-j-èl-à} → |à-↓lá.á-j-èl-à| → /àláájèlà/ → [àlááji:là] 'he will fetch in the long run'

In addition, the present tense infix {lèè}, that Richardson (1959) considers as "unamenable to systematization", behaves in a

similar way. Any uplift due to affect |lè.è| will cause a falling tonal glide if conditions of 1) above prevail, and it will give rise to a rising tonal glide elsewhere, as seen in (28).

- (28) a. {bá-lèè-j-à} → |↓bá-lè.↑è-j-à| → /bàlèèjà/ 'they are going, they are to go'
 b. {bá-lèè-c'-à} → |↓bá-lè.↑è-↓c'-à| → /bàlèé'cà/ 'they are dying, they are to die'
 c. {bá-lèè-j-èl-à} → |↓bá-lè.↑è-j-èl-à| → /bàlèéjèlà/ — [βàlì(jì:là)] 'they are fetching, they are to fetch'

4. CONCLUSION

This brief and simplified sketch of the major features of the Sukuma tonal system presents mainly two interesting points for discussion. First, a new approach has been undertaken in order to capture the interlocking relationship of {H} and {L} in Sukuma. This relationship is that of balance. In geography we learn that any downdrift movement will "trigger" an upward movement; in this way, not only rift valleys but also range mountains are formed. In linguistic terms, any |↓H| will "trigger" a |↑L| in appropriate situations. This approach (unlike the traditional "tonal displacement" concept) not only respects the phonological properties of the language, but also depicts systematically the different processes and stages necessary for a morphotoneme (underlying tone) to come to the surface. Here the importance of the concept of morphophonology is crucial, although some linguists, especially on the French side, would not share the same opinion.²⁰

Second, by starting from the deepest level of abstraction, it has been possible to show the identity of the morphological tones in Sukuma with those of the other "typical" Bantu languages. This can be demonstrated by comparing a number of lexical items from Bobangi, a Bantu language considered to be tonally etymological, with those of Sukuma. A table of comparisons is provided below.

The inevitable question then would be: what is the origin of this downslip/uplift phenomenon? A number of hypotheses can be formulated. However, since this subject is beyond the scope of this work, the author will leave this issue for further treatment elsewhere.²¹

| Bobangi | Sukuma | gloss | Bobangi | Sukuma | gloss |
|---------|------------------------|----------|---------|----------------------|------------|
| bòtémà | {i-témà} ²² | 'heart' | lèlís | {lèlís} | 'today' |
| lìtámà | {i-támà} | 'cheek' | línò | {lì-ínò} | 'tooth' |
| ncónì | {n-sónì} | 'shame' | mbwá | {n-wá} ²³ | 'dog' |
| lòlémù | {lò-lémì} | 'tongue' | nkónì | {lò-kwé} | 'firewood' |

NOTES

¹"...chaque syllabe présente un ton distinctif...." (A. Martinet 1970:90).

²A "morphosyllable" is here defined as a segmental unit in the underlying structure that is characterized by a morphological tone (see below). Long vowels in radicals and most verbal extensions behave morphotonologically as two morphosyllables, while elsewhere they behave as single morphosyllables. As will be seen, the notion "morphosyllable" is of particular importance in Sukuma, where deep syllables do not always correspond to surface ones.

³The author distinguishes between a "morphotoneme" or deep (morphological) tone, a "toneme" or phonological (phonemic) tone, and a "tone" or phonetic realization of syllabic pitch.

⁴The term "morpheme" is employed throughout this article in the Bloomfieldian sense.

^{4'}It is for this reason that extra low is treated as phonological, while downglided 'L is considered here as an allotone of the extra low toneme.

⁵This seems to contradict Richardson (1971:222), who states "..."n-kolo 'sheep' and n-kolo 'heart' are identical at surface level in isolation...."

⁶Complex radicals behave tonologically as extended simple radicals of the type CVC.

⁷It should be noted that short vowels are realized long before aspirated nasals as well as prenasalized consonants, and after palatals. Since this lengthening process is automatic, it will not be noted in the phonemic transcription.

⁸The three pronunciations are possible.

⁹The corresponding forms in Lingala are: mókó 'one' and m'í'f 'four.'

¹⁰{ká} here expresses emphasis.

¹¹It is in fact this tonal constraint that prompted Richardson (1959) to establish "fixed normal [low] tones" in his analysis. This etiquette is however unnecessary since most, if not all, the "fixed tones" are not only explicable, but also predictable.

¹²See rule 6 above, especially example (15).

¹³Obviously this set of operations will not occur unless (i) the morphosyllable in question constitutes a monosyllabic morpheme; (ii) the consonant it contains is a voiceless plosive.

¹⁴In fact, another proof that the indefinite past tense infix /kà/ is indeed {-kaá-} in the underlying structure is the fact that like the ultimate future infix {-láá-} (see example (19c)), it inhibits downslip operation from taking place on the final morphosyllable of the previous word. Thus:

{bà-dògó} + {bá-kaá-sòl-à} → |bà-dògó + bá-kaá.(á)-sòl-à| → /bàdògò bákàsòlà/ 'relatives picked (it) up'

Alternatively: → |bà-dògò + bá-kaá.(á)-sòl-à| → /bàdògò bákàsòlà/

¹⁵It should be understood here that the reversive extension {-òl-} does not normally cause {H} on the radical, as seen from the following:

{kò-sòng-òl-à} → |kò-sòng-òl-à| → /kòsòngòlà/ 'to winnow'

¹⁶Again, it should be borne in mind that the binary opposition |ò-/ø- (cl. 11/10) does not normally cause tonal contour variations. This can be seen from the following examples:

sg. {lò-gútá} → |lò-gútá| → /lògútà/ 'wall' (cl. 11)

pl. {n-gútá} → |n-gútá| → /ngútà/ 'walls' (cl. 10)

¹⁷Exceptions to this rule are the vocalic verbal prefixes and the preprefixes. Their peculiar tonal behavior has already been explained above (see rule 6, especially example 15).

¹⁸Note that the second part of a long vowel (di-morphosyllabic) radical as well as the first part of a compound tense suffix behave morphotonologically as extensions (i.e. the case of {-lá.ál-} and {-ilé} in example (24b)).

¹⁹Notice in this example that downslip can take place even where there is a total absence of segmental phonemes.

²⁰For instance, see Martinet (1970:99-100).

²¹I would like to express my deepest appreciation to Luc Bouquiaux and Larry Hyman, whose invaluable comments and suggestions have led to improvements on a number of points in this paper.

²²The Sukuma reflex has undergone a slight semantic shift in that it means 'liver'.

²³Phonologically /'mvà/.

REFERENCES

- Batibo, H. M. In preparation. *Le Kesukuma, Langue Bantu de Tanzanie: Phonologie et Morphologie*. Ph.D. Dissertation, University of Paris.
- Hyman, L. M. and R. G. Schuh. 1974. Universals of tone rules: evidence from West Africa. *Linguistic Inquiry* 4.81-115.
- Hyman, L. M. and M. Tadadjeu. 1976. Floating tones in Mbam-Nkam (in this volume).
- Martinet, A. 1970. *Eléments de Linguistique Générale*. Paris: Librairie Armand Colin.
- Meeussen, A. E. 1958. Morfotonologie van de verwoeging in het Suthu (The morphotonology of verbal conjugation in Sotho). *Zaire* 12.383-392.
- Richardson, I. 1959. *The Role of Tone in the Structure of Sukuma*. London: School of Oriental and African Studies, University of London.
- Richardson, I. 1971. Displaced tones in Sukuma. In C-W. Kim and H. Stahlke (eds.), *Papers in African Linguistics*, 219-227. Edmonton (Alberta): Linguistic Research Inc.
- Richardson, I. and W. M. Mann. 1966. A vocabulary of Sukuma. *African Language Studies* 7.1-79.
- Tucker, A. N. 1929. *The Comparative Phonetics of the Suto-Chuana Group of Bantu Languages*. London.
- van Spaandonck, M. 1971. *L'Analyse Morphotologique dans les Langues Bantoues*. Translation and preface by L. Bouquiaux. Paris: Société d'Etudes Linguistiques et Anthropologiques de France.

STUDIES IN BANTU TONOLOGY
 Southern California Occasional Papers
 in Linguistics No. 3, December 1976
 Edited by Larry M. Hyman

DESYLLABIFIED NOUN CLASS PREFIXES
 AND DEPRESSOR CONSONANTS IN CHICHEWA

BY

LEE TRITHART

DEPARTMENT OF LINGUISTICS
 UNIVERSITY OF CALIFORNIA
 LOS ANGELES, CALIFORNIA 90024

Published by the Department of Linguistics
 University of Southern California
 Los Angeles, California 90007

0. INTRODUCTION

In Proto-Bantu, all noun class prefixes reconstruct as syllabic with low tone. In Chichewa, a Bantu language spoken in Malawi and eastern Zambia, all noun class prefixes still appear to carry underlying low tone; many, however, are no longer syllabic. This paper describes the tone patterns found on citation form nouns in Chichewa, with particular reference to the tone-bearing properties of certain consonants in noun class prefixes. An observation is made that the consonants which can carry a L (low) tone preceding a H (high) tone vowel in noun class prefixes are roughly the same as those which occur as depressor consonants in Chichewa. The tonal realizations in both contexts bear a strong surface resemblance to tonal realizations found exclusively with depressor consonants in Nguni. Discussion covers possible relationships across the described correspondences and their implications.¹

1. NOUN CLASS PREFIXES IN CHICHEWA²

The system of noun class prefixes in Chichewa has been the object of considerable phonological merger and erosion. In many cases there are several prefixes for a single noun class and several noun classes with the same prefix. The mergers and erosion have also affected the syllabicity of noun class prefixes. A noun class may have a prefix which is syllabic and one or more which are nonsyllabic, as well as having noun stems which appear with a \emptyset prefix. The varying syllabic and segmental values of noun class prefixes, shown in Table I, make it necessary to consider morpheme structure as well as syllable structure when describing tone patterns on citation form Chichewa nouns.

2. TONE PATTERNS ON CITATION FORM NOUNS

Chichewa is usually analyzed as having two underlying tones: H and L (Watkins 1937, Stevick 1965, Harding 1966). The tone patterns presented in this paper, however, are not based on underlying tones. Instead, they refer to surface realizations. A potentially confusing result of this attention to surface detail is that tones and tone patterns appear additional to those which would normally be expected for a two-tone system. For example, a two-tone

| Singular Classes | | Plural Classes | |
|--|---|----------------|--------------------------------------|
| Noun Class | Prefix Forms | Noun Class | Prefix Forms |
| 1 | - mu-, mw- - syllabic nasal - nonsyllabic nasal - \emptyset | 2 | - a- |
| 3 | - mu-, mw- - syllabic nasal - nonsyllabic nasal | 4 | - mi- |
| 5 | - li-, dz-, t(s)- - aspiration of initial stem consonant - miscellaneous (m-, di-) - \emptyset | 6 | - ma- |
| 7 | - chi-, ch- | 8 | - zi-, z- |
| 9 | - nonsyllabic nasal - \emptyset | 10 | - nonsyllabic nasal - \emptyset |
| 11 = 14 | - u- - syllabic nasal - \emptyset | | |
| 12 | - ka- | 13 | - ti- |
| Classes which are neutral with respect to singular/plural: | | | |
| 15 | ku- | 17 | ku- |
| 16 | pa- | 18 | mu- |

TABLE I.

system normally has the potential for four tone patterns on disyllabic nouns: L-L, L-H, H-L, and H-H. Nevertheless, six tone patterns for disyllabic nouns are given here. The additional two patterns are \widehat{LH} -L and \widehat{LH} -H, where $\widehat{\quad}$ indicates a single syllable and a hyphen indicates a syllable boundary. The \widehat{LH} tone in each additional pattern will later be shown to result from separate L and H tones which occur on the same syllable. Initially, however, examples of different surface tone patterns are simply presented without comment. Table II summarizes the tone patterns and morpheme/syllable structures found on citation form Chichewa nouns.

| Number of Syllables | Tone Pattern | Morpheme/Syllable Structure | Number of Syllables | Tone Pattern | Morpheme/Syllable Structure |
|---------------------|--------------|-----------------------------|---------------------|--------------|-----------------------------|
| 2 | L-L | 1, 2, 3, 12 | 4 | L-L-L-L | 10, 11, 12 |
| | L-H | 2, 3 | | L-L-H-L | 10 |
| | (H-L | 2, 3, 12 | | L-H-L-L | 10, 12 |
| | H-H | 2, 3, 12 | | L-L-H-H | 10, 11 |
| | L̂H-L | 2, 3, 12 | | L-H-H-H | 10 |
| | L̂H-H | 1, 2, 3, 12 | | H-H-'H-H | 11 |
| 3 | L-L-L | 4, 5, 7, 12 | 5 | L-L-L-H-L | 12 |
| | L-H-L | 4, 7, 8, 12 | | | |
| | L-H-H | 4, 5, 6, 7, 12 | | | |
| | H-L-L | 9 | | | |
| | L-L-H | 4 | | | |
| | L̂H-L-L | 11 | | | |

| Morpheme/syllable structures: | |
|-------------------------------|--|
| 1. | syllabic prefix + monosyllabic stem |
| 2. | nonsyllabic prefix + disyllabic stem |
| 3. | ∅ prefix + disyllabic stem |
| 4. | syllabic prefix + disyllabic stem |
| 5. | syllabic prefix + nonsyllabic prefix + disyllabic stem |
| 6. | syllabic prefix + ∅ prefix + disyllabic stem |
| 7. | ∅ prefix + trisyllabic stem (prefix has become part of stem) |
| 8. | nonsyllabic prefix + trisyllabic stem |
| 9. | ∅ prefix + trisyllabic stem |
| 10. | syllabic prefix + trisyllabic stem |
| 11. | syllabic prefix + syllabic prefix + disyllabic stem |
| 12. | nouns which do not have singular/plural alternation |

TABLE II.

Examples of nouns with each tone pattern and each morpheme/syllable structure follow.

Nouns of two, three, four, and five syllables are presented in section 3. (Since the noun class prefix is included in the syllable count, and since monosyllabic stems always have a syllabic prefix, Chichewa does not have one-syllable nouns.) The morpheme boundaries between noun class prefixes and noun stems are based on singular/plural pairing. Cases of nouns which do not have singular/plural alternation are listed separately at the end of each group.

The examples throughout this paper employ the transcription in Table III.

| Consonants. | | bilabial | labio-dental | alveolar | palatal | velar |
|--------------|--|----------|--------------|----------|----------------|-------|
| stops | voiceless unaspirated | p | | t | | k |
| | | ph | | th | | kh |
| | voiced | b | | d | | g |
| fricatives | voiceless | | f | s | | |
| | voiced | | v | z | | |
| affricates | voiceless | | | ts | ch (aspirated) | |
| | voiced | | | dz | j | |
| nasals | | m | | n | ny | ŋ |
| lateral | | | | l (~r) | | |
| Vowels. | i, e, a, o, u : the usual five-vowel system | | | | | |
| Glides. | y, w : front and back glides | | | | | |
| Syllabicity. | X : syllabic, marked only in cases of possible confusion, as with nasals and vowel-vowel sequences | | | | | |
| Tones. | ' : H (high) ` : L (low) ^ : F (falling) (cf. footnote 4) ! : 'H (downstep) > : lowered pitch (affecting preceding tone) | | | | | |

TABLE III.

The following conventions are followed in marking tone: 1) L tone vowels and syllabic nasals are unmarked for tone; 2) consonants which have the same tone as the following vowel are unmarked for tone; 3) lowered pitch is marked only on the final syllable of a L-L# or H-H# sequence. Note that these conventions, together with some unusual tonal realizations found in the data, have the following consequences: 1) A segment may be marked for tone without being syllabic. Thus, *d̂zina* 'name' (L̂H-L) contrasts with *d̂zúwa* 'sun' (H-L). 2) Nasals may also be marked for tone without being syllabic, e.g. *m̂búzi* 'goat' (L̂H-L), *m̂imba* 'belly' (L̂H-L). 3) A nasal therefore may be assumed to be syllabic only when it is so marked: *ntembo* 'corpse' (L-L-L, with a lowered final L), *mkázi* 'woman' (L-H-H, with a lowered final H). 4) A vowel-vowel sequence may be assumed to be disyllabic only when each vowel is marked for syllabicity: *maḡle* 'breasts' (L-H-L) contrasted with *kangaude* 'spider' (L-L-L).

3. PRESENTATION OF EXAMPLES

3.1. Two-Syllable NounsL-L 1. syllabic prefix + monosyllabic stem

munthu[˘] 'person' (mu+nthu), pl. anthu[˘] 1/2
 anthu[˘] 'people' (a+nthu), sg. munthu[˘] 1/2
 mudzi[˘] 'village' (mu+dzi), pl. midzi[˘] 3/4
 midzi[˘] 'villages' (mi+dzi), sg. mudzi[˘] 3/4
 muzu[˘] 'root' (mu+zu), pl. mizu[˘] 3/4
 mizu[˘] 'roots' (mi+zu), sg. muzu[˘] 3/4

2. nonsyllabic prefix + disyllabic stem

muni[˘] 'torch' (mu+uni, with vowel coalescence) pl. mi(y)uni[˘] 3/4
 moyo[˘] 'life' (mu+oyo, with vowel coalescence), pl. mi(y)oyo[˘] 3/4
 mlomo 'lip' (m+lomo), pl. mlomo 3/4
 dzanja[˘] 'hand' (dz+anja), pl. manja[˘] 5/6
 manja[˘] 'hands' (ma+anja, with vowel coalescence), sg. dzanja[˘] 5/6

3. Ø prefix + disyllabic stem

kamba[˘] 'tortoise' (Ø+kamba), pl. akamba[˘] 1/2
 fisi 'hyena' (Ø+fisi), pl. afisi 1/2
 khomo[˘] 'entrance' (Ø+khomo), pl. makomo[˘] 5/6
 kamwa[˘] 'mouth' (Ø+kamwa), pl. makamwa[˘] 5/6
 thengo[˘] 'bush' (Ø+thengo), pl. matengo[˘] 5/6
 phiko[˘] 'wing' (Ø+phiko), pl. mapiko[˘] 5/6
 thumbo[˘] 'intestines' (Ø+thumbo), pl. matumbo[˘] 5/6
 lumu[˘] 'razor' (Ø+lumu), pl. malumu[˘] 5/6

12. nouns which do not have singular/plural alternation

khobwe[˘] 'pea(s)' no plural 1
 gona[˘] 'crocodile' identical in plural 9/10
 ndebvu[˘] 'beard' identical in plural 9/10
 ndey[˘] 'fight' identical in plural 9/10
 goma[˘] 'drum' identical in plural 9/10
 mate 'saliva' no plural 6
 thesi 'frog' unknown plural 1
 manda[˘] 'grave' no plural 6
 nyama[˘] 'animal' identical in plural 9/10
 gombe[˘] 'cow' identical in plural 9/10
 gkhono[˘] 'snail' identical in plural 9/10
 nthenga[˘] 'feather' identical in plural 9/10
 njala[˘] 'hunger' identical in plural 9/10
 mphelo[˘] 'millstone' identical in plural 9/10
 nchafu 'thigh' identical in plural 9/10
 nsabwe[˘] 'louse' identical in plural 9/10
 nthithi[˘] 'rib' identical in plural 9/10
 bowa[˘] 'mushroom' no plural 1

L-H L-H nouns are extremely rare, especially in citation form.

The scarcity of L-H nouns is at least in part due to a Chichewa tone rule of the form L → H / ___ H ||. Thus, the L-H nouns listed here are exceptions to a rule which is otherwise completely

general. There are only two forms.

2. nonsyllabic prefix + disyllabic stem

mwalá 'stone' (mu+ala), pl. mi(y)álá 3/4

3. Ø prefix + disyllabic stem

galú 'dog' (Ø+galu), pl. agalú 1/2

H-L 2. nonsyllabic prefix + disyllabic stem

tsáya 'cheek' (t(s)+saya), pl. masáya 5/6
 tsíku 'day' (t(s)+síku), pl. masíku 5/6
 díso 'eye' (d+(i)so), pl. mósó, irregular sg./pl. pair 5/6

3. Ø prefix + disyllabic stem

béle 'breast' (Ø+bele), pl. maḡéle, with b → Ø / V ___ V 5/6

12. nouns which do not have singular/plural alternation

gkhúnda 'pigeon' identical in plural 9/10
 dzúwa 'sun' no plural 5
 gkhósa 'sheep' identical in plural 9/10
 ngála 'crab' identical in plural 9/10
 gkhánga 'guinea fowl' identical in plural 9/10
 gkhúku 'chicken' identical in plural 9/10
 gkhúni 'firewood' identical in plural 9/10
 ntháwi 'time' identical in plural 9/10
 gkháfi 'oar' identical in plural 9/10

H-H 2. nonsyllabic prefix + disyllabic stem

ééni 'owners' (a+i:ini, with vowel coalescence), sg. m̀wíni 1/2
 áná 'children' (a+ana, with vowel coalescence), sg. m̀wáná 1/2
 chálá 'finger' (chi+ala, with vowel coalescence), pl. žálá 7/8
 cháká 'year' (chi+aka, with vowel coalescence), pl. žáká 7/8

3. Ø prefix + disyllabic stem

táté 'father' (Ø+tate), pl. atáté 1/2
 chúlé 'frog' (Ø+chule), pl. achulé 1/2
 lúzf[˘] 'string' (Ø+luzi), pl. malúzf[˘] 5/6
 khútú[˘] 'ear' (Ø+khutu), pl. makútú[˘] 5/6
 khwápá[˘] 'armpit' (Ø+khwapa), pl. makwápá[˘] 5/6
 útá 'bow' (Ø+uta), pl. maútá 11=14/6

12. nouns which do not have singular/plural alternation

fmvf 'gray hair' identical in plural 9/10
 bóngó[˘] 'brain' identical in plural 11=14/6
 úfá[˘] 'flour' no plural 11=14
 mánthá[˘] 'fear' no plural 6
 útsf 'smoke' no plural 11=14
 khónjé[˘] 'sisal' no plural 1

LH-L 2. nonsyllabic prefix + disyllabic stem

m̀phása 'twin' (m+phasa), pl. mapása 1/6
 m̀fúmu 'chief' (m+fumu), pl. mafúmu 9/6

ṁ(p)fuwa 'cooking stone', (m+(p)fuwa), pl. mafúwa 5/6
 dzína 'name' (dz+ina), pl. mafna 5/6
 dzíno 'tooth' (dz+ino), pl. mánó, irregular sg./pl. pair 5/6
 tsínde 'base of tree' (t(s)+sinde), pl. masinde 5/6

3. Ø prefix + disyllabic stem

bòndo 'knee' (Ø+bondo), pl. maòndo, with b → Ø / V __ V 5/6
 khúmi 'ten' (Ø+khumi), pl. makúmi 5/6
 khála 'charcoal' (Ø+khala), pl. makála 5/6
 kháto 'palm' (Ø+khato), pl. makáto 5/6
 tháko 'buttocks' (Ø+thako), pl. matáko 5/6
 phéwa 'shoulder' (Ø+phewa), pl. mapéwa 5/6
 phúzi 'shoulder' (Ø+phuzi), pl. mapúzi 5/6

12. nouns which do not have singular/plural alternation

ṁbólo 'penis' identical in plural 9/10
 ṁvúla 'rain' identical in plural 9/10
 chíle 'bush' no plural 5
 thòbvú 'froth' no plural 5
 ṁjáti 'buffalo' identical in plural 9/10
 ṁjúchi 'bee' identical in plural 9/10
 pánda 'antelope' identical in plural 9/10
 ṁphépo 'wind' no plural 4=9
 ṁthámbi 'twig' identical in plural 9/10
 ṁjóká 'snake' identical in plural 9/10
 ṁphémvu 'cockroach' identical in plural 9/10
 ṁfémvu 'cockroach' identical in plural 9/10
 ṁsómá 'fish' identical in plural 9/10
 ṁfmba 'belly' identical in plural 9/10
 ṁbúzi 'goat' identical in plural 9/10
 ṁbáli 'side' identical in plural 9/10

LH-H 1. syllabic prefix + monosyllabic stem

ṁtútu 'head' (mu+tu), pl. ṁtútu 3/4
 ṁítútu 'heads' (mi+tu), sg. ṁtútu 3/4
 ṁúnda 'field' (mu+nda), pl. ṁfnda 3/4
 ṁínda 'fields' (mi+nda), sg. ṁúnda 3/4
 ṁánó 'teeth' (ma+(i)no), sg. dzíno, irregular sg./pl. pair 5/6
 ṁásó 'eyes' (ma+(i)so), sg. díso, irregular sg./pl. pair 5/6
 líú 'word' (li+u), pl. ṁáú 5/6
 ṁáú 'words' (ma+u), sg. líú 5/6

2. nonsyllabic prefix + disyllabic stem

ṁwííni 'owner' (mu+iini, with glide formation), pl. ééni 1/2
 ṁwána 'child' (mu+ana, with glide formation), pl. áná 1/2
 ṁlééndo 'stranger' (m+leendo), pl. alééndo 1/2
 ṁwézí 'moon' (mu+ezi, with glide formation), pl. mi(y)ézí 3/4
 zálá 'fingers' (zi+ala, with vowel coalescence), sg. chála 7/8
 záká 'years' (zi+aka, with vowel coalescence), sg. cháka 7/8
 dzénjé 'hole' (dz+enje), pl. maénjé 5/6

3. Ø prefix + disyllabic stem

bwátó 'boat' (Ø+bwato), pl. mabwátó 11=14/6
 phází 'foot' (Ø+phazi), pl. mapází 5/6

12. nouns which do not have singular/plural alternation

ṁvúú 'hippopotamus' identical in plural 9/10
 ṁúngú 'porcupine' identical in plural 9/10
 úbvé 'filth' no plural 11=14
 ṁpháká 'wildcat' identical in plural 1/10
 ṁwézí 'blood' no plural 1
 ṁádzí 'water' no plural 6
 ṁkhwáí 'partridge' identical in plural 9/10

3.2. Three-Syllable NounsL-L-L 4. syllabic prefix + disyllabic stem

akamba 'tortoises' (a+kamba), sg. kamba 1/2
 afisi 'hyenas' (a+fisi), sg. fisi 1/2
 ṁtembo 'corpse' (n+tembo), pl. mitembo 3/4
 mitembo 'corpses' (mi+tembo), sg. ṁtembo 3/4
 mi(y)uni 'torches' (mi+uni), sg. muni 3/4
 mi(y)oyo 'lives' (mi+oyo), sg. moyo 3/4
 mlomo 'lips' (mi+lomo), sg. mlomo 3/4
 ṁtambo 'cloud' (m+tambo), pl. mitambo 3/4
 mitambo 'clouds' (mi+tambo), sg. ṁtambo 3/4
 ṁzinda 'city' (m+zinda), pl. mizinda 3/4
 mizinda 'cities' (mi+zinda), sg. ṁzinda 3/4
 makamwa 'mouths' (ma+kamwa), sg. kamwa 5/6
 matengo 'bushes' (ma+tengo), sg. thengo 5/6
 mapiko 'wings' (ma+piko), sg. phiko 5/6
 matumbo 'intestines (pl.)' (ma+tumbo), sg. thumbo 5/6
 chíseko 'door' (chi+tseko), pl. zitseko 7/8
 zitseko 'doors' (zi+tseko), sg. chíseko 7/8
 malumo 'razors' (ma+lumo), sg. lumo 5/6
 chíkopa 'hide' (chi+kopa), pl. zíkopa 7/8
 zíkopa 'hides' (zi+kopa), sg. chíkopa 7/8
 makomo 'entrances' (ma+komo), sg. khomo 5/6

5. syllabic prefix + nonsyllabic prefix + disyllabic stem (derived nouns)

kamperi 'excessively small knife' (ka+m+peni), pl. tímipeni 12/13

7. Ø prefix + trisyllabic stem

kangaude 'spider' (Ø+kangaude), pl. akangaude 1/2
 ulalo 'bridge' (Ø+ulalo), pl. mapulalo 11=14/6

12. nouns which do not have singular/plural alternation

ṁguluuwe 'forest pig' identical in plural 9/10
 nyalugwe 'leopard' identical in plural 1 and 9/10
 mapeto 'end' no plural 6
 magari 'blood' no plural 6
 ulemu 'courtesy' no plural 11=14
 ulimbo 'birdlime' no plural 11=14

L-H-L⁴ 4. syllabic prefix + disyllabic stem

ṁchíra 'tail' (ṁ+chira), pl. míchíra 3/4
 ṁtêngo 'tree' (ṁ+tengo), pl. mítêngo 3/4
 mítêngo 'trees' (mi+tengo), sg. ṁtêngo 3/4

mpîni 'handle' (m+pini), pl. mipîni 3/4
 mipîni 'handles' (mi+pini), sg. mpîni 3/4
 mapûzi 'shoulders' (ma+puzi), sg. phûzi 5/6
 makâla 'charcoals' (ma+kala), sg. khâla 5/6
 makûmi 'tens' (ma+kumi), sg. khûmi 5/6
 matâko 'buttocks (pl.)' (ma+tako), sg. thâko 5/6
 masâya 'cheeks' (ma+saya), sg. tsâya 5/6
 masîku 'days' (ma+siku), sg. tsîku 5/6
 masînde 'bases of trees' (ma+sinde), sg. tsînde 5/6
 mǎpǎndo 'knees' (ma+bondo, with b → Ø / V ___ V), sg. bǎndo 5/6
 makâto 'palms' (ma+kato), sg. khâto 5/6
 ŋkhǎndo 'spear' (ŋ+khondo), pl. mikǎndo 3/4
 mikǎndo 'spears' (mi+kondo), sg. ŋkhǎndo 3/4
 mapâsa 'twins' (ma+pasa), sg. mpâsa 1/6
 mafûmu 'chiefs' (ma+fumu), sg. mfûmu 9/6
 mkôno 'arm' (m+kono), pl. mikôno 3/4
 mikôno 'arms' (mi+kono), sg. mkôno 3/4
 ŋzîmu 'spirit' (ŋ+zîmu), pl. mizîmu 3/4
 mizîmu 'spirits' (mi+zîmu), sg. ŋzîmu 3/4
 michîra 'tails' (mi+chira), sg. mchîra 3/4
 mtsémpha 'vein' (m+tsémpha), pl. mitsémpha 3/4
 mitsémpha 'veins' (mi+tsémpha), sg. mtsémpha 3/4
 mchómbo 'navel' (m+chombo), pl. michómbo 3/4
 michómbo 'navels' (mi+chombo), sg. mchómbo 3/4
 mtîma 'heart' (m+tima), pl. mitîma 3/4
 mitîma 'hearts' (mi+tima), sg. mtîma 3/4
 mkóndo 'spear' (m+kondo), pl. mikóndo 3/4
 mikóndo 'spears' (mi+kondo), sg. mkóndo 3/4
 mtsîtsi 'creeping vine' (m+tsîtsi), pl. mitsîtsi 3/4
 mitsîtsi 'creeping vines' (mi+tsîtsi), sg. mtsîtsi 3/4
 mtólo 'burden' (m+tololo), pl. mitólo 3/4
 mitólo 'burdens' (mi+tololo), sg. mtólo 3/4
 mǎéle 'breasts' (ma+bele, with b → Ø / V ___ V), sg. béle 5/6
 mafúwa 'stones' (ma+fuwa), sg. m(p)fuwa 5/6
 mapéwa 'shoulders' (ma+pewa), sg. phéwa 5/6
 mafna 'names' (ma+ina), sg. dzfna 5/6

7. Ø prefix + trisyllabic stem

lilîme 'tongue' (Ø+lilîme), pl. malilîme 5/6

8. nonsyllabic prefix + trisyllabic stem

mwamúna 'man' (mu+amuna, with glide formation), pl. amúna 1/2
 amúna 'men' (a+amuna, with vowel coalescence), sg. mwamúna 1/2

12. nouns which do not have singular/plural alternation

chisóni 'sorrow' no plural 7
 mafúta 'fat' no plural 6
 ukáli 'fierceness' no plural 11=14

L-H-H 1. syllabic prefix + disyllabic stem

mapází 'feet' (ma+pazi), sg. phází 5/6
 mkází 'woman' (m+kazi), pl. akází 1/2
 akází 'women' (a+kazi), sg. mkází 1/2
 alééndó 'strangers' (a+leendo), sg. mlééndó 1/2

atáté 'fathers' (a+tate), sg. táté 1/2
 achulé 'frogs' (a+chule), sg. chúlé 1/2
 mi(y)álá 'stones' (mi+ala), sg. mwalá 3/4
 mi(y)ézí 'moons' (mi+ezi), sg. mwézí 3/4
 mpsínkhú 'stature' (m+sinkhu), pl. misínkhú 3/4
 misínkhú 'statures' (mi+sinkhu), sg. mpsínkhú 3/4
 mǎénjé 'holes' (ma+enje), sg. dzénjé 5/6
 malúzi 'strings' (ma+luzi), sg. lúzi 5/6
 makútu 'ears' (ma+kutu), sg. khútu 5/6
 makwápá 'armpits' (ma+kwapa), sg. khwápá 5/6
 mǎútá 'bows' (ma+uta), sg. útá 11=14/6
 mabwátó 'boat' (ma+bwato), sg. bwátó 11=14/6

5. syllabic prefix + nonsyllabic prefix + disyllabic stem (derived nouns)

kamwáná 'excessively small child' (ka+mu+ana, with glide formation),
 pl. tiáná 12/13
 tiáná 'excessively small children' (ti+a+ana, with vowel coalescence), sg. kamwáná 12/13

6. syllabic prefix + Ø prefix + disyllabic stem

kupházi 'sole' (ku+Ø+phazi), pl. kumapází 17

7. Ø prefix + trisyllabic stem

liwíló 'speed' (Ø+liwilo), pl. maliwíló 5/6
 uléndó 'journey' (Ø+ulendo), pl. mǎuléndó 11=14/6

12. nouns which do not have singular/plural alternation

malílé 'limit' no plural 6
 usáná 'daytime' no plural 11=14
 ufúfú 'freedom' no plural 11=14
 ulésí 'laziness' no plural 11=14
 umpháwí 'poverty' no plural 11=14

H-L-L 9. Ø prefix + trisyllabic stem⁵

sfnanga 'doctor' (Ø+snanga), pl. asfnanga 1/2
 náámwali 'woman' (Ø+naamwali), pl. anáámwali 1/2

L-L-H 4. syllabic prefix + disyllabic stem

agalú 'dogs' (a+galu), sg. galú 1/2

LH-L-L 12. nouns which do not have singular/plural alternation

mbáame 'bird' identical in plural 9/10

3.3. Four-Syllable Nouns

L-L-L-L 10. syllabic prefix + trisyllabic stem

akangaude 'spiders' (a+kangaude), sg. kangaude 1/2
 mǎulalo 'bridges' (ma+ulalo), sg. ulalo 11=14/6

11. syllabic prefix + syllabic prefix + disyllabic stem

timipeni 'excessively small knives' (ti+mi+peni), sg. kampeni 12/13

12. nouns which do not have singular/plural alternation
 mvukuto 'bellows' identical in plural 11=14/10

L-L-H-L 10. syllabic prefix + trisyllabic stem
 maliilime 'tongues' (ma+liilime), sg. liilime 5/6

L-H-L-L 10. syllabic prefix + trisyllabic stem
 asinanga 'doctors' (a+sinanga), sg. sinanga 1/2
 anadamwali 'women' (a+naamwali), sg. namwali 1/2

12. nouns which do not have singular/plural alternation
 utftili 'bunch of fleas' no plural 11=14

L-L-H-H 10. syllabic prefix + trisyllabic stem
 maliwilo⁷ 'speeds' (ma+liwilo), sg. liwilo⁷ 5/6
 ma⁷ulendo⁷ 'journeys' (ma+ulendo), sg. ulendo⁷ 11=14/6

11. syllabic prefix + syllabic prefix + disyllabic stem
 kumapazi⁷ 'soles' (ku+ma+pazi), sg. kuphazi⁷ 17

L-H-H-H 10. syllabic prefix + trisyllabic stem
 kakamwini⁷ 'son-in-law' (ka+kamwini), pl. akamwini⁷ 1/2
 akamwini⁷ 'sons-in-law' (a+kamwini), sg. kamwini⁷ 1/2

H-H-'H-H 12. nouns which do not have singular/plural alternation
 nthungu⁷ 'ululating' identical in plural 9/10

3.4. Five-Syllable Nouns

L-L-L-H-L 12. nouns which do not have singular/plural alternation⁶
 chi(w)ombangkanga 'eagle' unknown plural 7

4. DISCUSSION

Syllabic noun class prefixes are uniformly L-toned. All apparent counterexamples to this generalization can be taken care of with a single rule:

(1) L → LH / [noun class prefix] H #

That is, a syllabic noun class prefix becomes LH when it occurs with a monosyllabic H stem. In words subject to (1) the consonant of the prefix carries L and the vowel carries H. A similar rule is:

(2) L → H / ___ H || , on a two-syllable stem

Rule (2) is responsible for tone alternations between nouns which are final H-H in citation form but not in noun+adjective constructions:

| | | | | |
|---------|-------------|-----|----------------------|------------------|
| mwinfi | 'owner' | vs. | mwinfi wache wankulu | 'his big owner' |
| eenfi | 'owners' | vs. | enfi ache akulu | 'his big owners' |
| mwaná | 'child' | vs. | mwaná wankulu | 'big child' |
| ána | 'children' | vs. | aná akulu | 'big children' |
| mléendó | 'stranger' | vs. | mleendó wankulu | 'big stranger' |
| aléendó | 'strangers' | vs. | aleendó akulu | 'big strangers' |
| táté | 'father' | vs. | taté wankulu | 'big father' |
| chulé | 'frog' | vs. | chulé wankulu | 'big frog' |
| mwezí | 'moon' | vs. | mwezí wákkulu | 'big moon' |

Rule (1), because it refers to word boundary rather than pause, does not result in alternations between citation and construction forms, as seen in the following examples:

| | | | | |
|-------|----------|-----|---------------|------------------|
| mútu | 'head' | vs. | mútu wákkulu | 'big head' |
| mítú | 'heads' | vs. | mítú yáykulu | 'big heads' |
| múnda | 'field' | vs. | múnda wákkulu | 'big field' |
| mínda | 'fields' | vs. | mínda yáykulu | 'big fields' |
| ífu | 'word' | vs. | ífú íáífkulu | 'big word' |
| máfu | 'words' | vs. | máfu akulu | 'big words' |
| mádzí | 'water' | vs. | mádzí ámbfri | 'a lot of water' |

Both rules appear to result from an interaction between penultimate accent and tone. Rule (1), however, has resulted in frozen forms and rule (2), for the most part, has not. There is some indication, however, that citation forms resulting from rule (2) are starting to freeze up as well. Thus, the plurals for the last three forms listed as examples for rule (2) are final H-H both in construction and citation:

| | | | | |
|----------|-----------|-----|-------------------|---------------|
| atáté | 'fathers' | vs. | atáté akulu | 'big fathers' |
| | | | *ataté akulu | |
| achulé | 'frogs' | vs. | achulé akulu | 'big frogs' |
| | | | *achulé akulu | |
| mi(y)ézi | 'moons' | vs. | mi(y)ézi yáykulu | 'big moons' |
| | | | *mi(y)ézi yáykulu | |

If this process continues, rule (2) will eventually disappear from the grammar and the words it previously applied to will be restructured as underlying H-H.

The restricted environment for LH tone realizations may be described as in (3).

- (3) \widehat{LH} tone realizations appear only with (a) nonsyllabic noun class prefixes and (b) syllabic prefixes where (1) has applied

This generalization covers nouns which do not have singular/plural alternation as well as those which do. The following apparent counterexamples appear in the data.

úbvé⁷ 'filth' no plural 11=14
 pánda 'antelope' identical in plural 9/10
 phéwa 'shoulder' (\emptyset +phewa), pl. mapéwa 5/6
 phází⁷ 'foot' (\emptyset +phazi), pl. mapází⁷ 5/6
 phúzi 'shoulder' (\emptyset +phuzi), pl. mapúzi 5/6
 tháko 'buttocks (sg.)' (\emptyset +thako), pl. matáko 5/6
 thóbvú 'froth' no plural 5
 chíle 'bush' no plural 5
 khúmi 'ten' (\emptyset +khumi), pl. makúmi 5/6
 khála 'charcoal' (\emptyset +khala), pl. makála 5/6
 kháto 'palm' (\emptyset +khato), pl. makáto 5/6
 bóndo 'knee' (\emptyset +bondo), pl. mą́ndo, with b \rightarrow \emptyset / V __ V 5/6
 bwátó 'boat' (\emptyset +bwato), pl. mabwátó 11=14/6
 húngú 'porcupine' identical in plural 9/10
 mímba 'belly' identical in plural 9/10

The first two of these apparent counterexamples, úbvé⁷ 'filth' and pánda 'antelope' are genuine exceptions; the remainder are not. The nouns phéwa 'shoulder' through kháto 'palm' are all examples of class 5 nouns in which the reflex of Proto-Bantu *l_i- is aspiration of the stem-initial consonant. Thus, although the contemporary reflex of *l_i- is part of the noun stem, the aspiration may still be seen as a desyllabified noun class prefix.

The Proto-Bantu form for bóndo 'knee' is -dú_i, which indicates bú- as a class 14 noun prefix preserved in its full syllabic form by penultimate accent. Application of (1) gives the current Chichewa form, which at some point was assigned class 5 concords by analogy with the majority of words which take their plural in class 6. The form bwátó 'boat', historically -áto, does not require application of (1), but otherwise has a parallel history.

The noun húngú 'porcupine' was historically -gúmbá.⁷ The noun stem -gúmbá, because it indicates an animal, presumably occurred in class 9 and carried a L tone nasal noun class prefix. The L-H tone pattern of -gúmbá becomes H-H by application of rule (2), $g > \emptyset$, a very common change from Proto-Bantu to Chichewa, and the \widehat{LH} tone realization associated with a nonsyllabic noun class prefix results.

The form mímba 'belly', historically *-jími, does not require application of (2) but otherwise has a parallel history.

The strongest argument for an association between desyllabified noun class prefixes and \widehat{LH} tone realizations in Chichewa comes from comparison of singular/plural pairs. When the noun class prefix for a singular form is nonsyllabic and that for the plural is syllabic, the tone pattern for the plural of a singular \widehat{LH} -L noun is L-H-L and that for a \widehat{LH} -H noun is L-H-H. The only exceptions are irregular singular/plural pairs.

| \widehat{LH} -L Singular | L-H-L Plural | Gloss/Noun Class | \widehat{LH} -H Singular | L-H-H Plural | Gloss/Noun Class |
|-------------------------------|-----------------|---------------------|-------------------------------|------------------------|------------------|
| mphása | mapása | 'twin' 1/6 | mílééndó | álééndó | 'stranger' 1/2 |
| míúmu | mafúmu | 'chief' 9/6 | míwézí ⁷ | mi(y)ézi ⁷ | 'moon' 3/4 |
| m(p)fúwa | mafúwa | 'cooking stone' 5/6 | dženjé ⁷ | mą́njenjé ⁷ | 'hole' 5/6 |
| džína | maína | 'name' 5/6 | phází ⁷ | mapází ⁷ | 'foot' 5/6 |
| tsínde | masínde | 'base of tree' 5/6 | | | |
| bóndo | mą́ndo | 'knee' 5/6 | | | |
| khúmi | makúmi | 'ten' 5/6 | | | |
| khála | makála | 'charcoal' 5/6 | | | |
| kháto | makáto | 'palm' 5/6 | | | |
| tháko | matáko | 'buttocks' 5/6 | | | |
| phéwa | mapéwa | 'shoulder' 5/6 | | | |
| phúzi | mapúzi | 'shoulder' 5/6 | | | |

And final arguments for association between the two come from comparison of words like béle 'breast', Proto-Bantu *-béede with bóndo 'knee', Proto-Bantu *-dú_i. Both words start with the same implosive b, but the first syllable of béle is part of the noun stem, and no \widehat{LH} tone realization appears. The first syllable of bóndo, however, is historically a noun class prefix and carries the appropriate tone realization. Similarly, pairs such as džúwa 'sun', with no plural form, and džína 'name' (pl. maína), make the same point. Both words start with the same affricate dž, but the lack of singular/plural alternation for džúwa forces no interpretation of dž as a noun class prefix, and \widehat{LH} therefore fails to appear. For džína, however, the existence of the plural maína makes such an interpretation necessary, and the appropriate tone realization follows. Pairs such as these serve to eliminate interpretations of the data

which relate \widehat{LH} tone realizations to particular consonants rather than to the presence of a prefix boundary.

If an additional and stronger statement is added to (3) to require that all desyllabified noun class prefixes (before a stem with initial H) appear with \widehat{LH} tone realizations, several conditions must be placed on the statement to handle the large number of cases which do not conform. These cases fall into definable classes, and it is possible to argue for the reasonableness and naturalness of each of the necessary conditions. The stronger statement of association is not really essential to the main point of this paper, however, which requires only that the conditioning for \widehat{LH} tone realizations refer to noun class prefixes. I will not attempt to argue for a stronger statement, therefore, but instead move onto the discussion of depressor consonants.

5. DEPRESSOR CONSONANTS IN CHICHEWA

The discussion of depressor consonants in this paper is based on the transcriptions of two effects: 1) the lowering of final H in word-final H-H, and 2) the lowering of final L in word-final L-L. Depressor consonants have other effects on Chichewa tone. I have not examined these at all thoroughly, however, and it should be borne in mind throughout the rest of this paper that the discussion of depressor consonants is based exclusively on the two contexts just mentioned. In these two positions the following consonants or consonant sequences consistently lower tone: bv, bw, dz, kh, l, m, mb, mw, n, nd, ng, nj, nth, th, w, and z. The consonants m and l are erratic depressors; in some words they clearly lower tone and in others they clearly do not. The consonants f, k, p, s, and t occasionally appear with a final lower tone which may be in allophonic free variation with a nonlowered tone. There are two environments where word-final depression does not occur: 1) in words where either rule (1) or rule (2) has applied; and 2) in words with the tone patterns H-L-L# and H-'H-H#.

6. CORRESPONDENCES BETWEEN TONE-BEARING CONSONANTS IN NOUN CLASS PREFIXES AND DEPRESSOR CONSONANTS

The inventory of consonants which consistently appears with a lowered final tone (bv, bw, dz, kh, l, m, mb, mw, n, nd, ng, nth,

th, w, y, and z) bears a striking resemblance to the set of segments which occurs with \widehat{LH} tone realization in noun class prefixes (b, bw, dz, l, m, n, mw, ts, z, aspirates, nasal onsets). However, although a general comparison is suggestive, any claim of association requires more compelling evidence. For example, a demonstration of exclusively one-to-one correspondence with explanations for any counterexamples would be quite convincing. Unfortunately, this demonstration is not completely possible, largely because, at least in the data at hand, all of the relevant consonants do not occur in both of the necessary positions, regardless of the question of tone realization. Consequently, it is necessary to examine individual consonants and consonant clusters to check for distribution of occurrence. The cooccurrences of position distribution and tone realization that would suggest a claim of association between the two sets of consonants and their tonal properties, those that would be counterexamples to such a claim, and those that would not provide evidence in either direction are outlined below.

6.1. Configurations of Position Occurrence and Tone Realization that Suggest Association

There are two configurations of position occurrence and tone realization shown in (4) and (5) below that support a hypothesis of association. In (4) the consonant occurs exclusively with \widehat{LH} tone realization in noun class prefixes and with lowered tone in word-final position. These two tone realizations are hereafter referred to interchangeably as depression.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-----|-----|----------|-----|-----|---------|---|---|--|---------|--|----------|--|--|--|----------|---|--|--|-----|-----|---------|--|--|----------|---|---|
| <p>(4)</p> <table style="border-collapse: collapse; margin-left: 40px;"> <tr> <td style="padding-right: 10px;"></td> <td style="padding-right: 10px; text-align: center;">Beg</td> <td style="padding-right: 10px; text-align: center;">End</td> <td style="width: 20px;"></td> <td style="padding-right: 10px; text-align: center;">Beg</td> <td style="padding-right: 10px; text-align: center;">End</td> </tr> <tr> <td style="padding-right: 10px;">depress</td> <td style="border: 1px solid black; text-align: center; width: 20px;">X</td> <td style="border: 1px solid black; text-align: center; width: 20px;">X</td> <td style="padding: 0 10px;"> </td> <td style="padding-right: 10px;">depress</td> <td style="border: 1px solid black; text-align: center; width: 20px;"></td> </tr> <tr> <td style="padding-right: 10px;">~depress</td> <td style="border: 1px solid black; text-align: center; width: 20px;"></td> <td style="border: 1px solid black; text-align: center; width: 20px;"></td> <td style="padding: 0 10px;"> </td> <td style="padding-right: 10px;">~depress</td> <td style="border: 1px solid black; text-align: center; width: 20px;">X</td> </tr> </table> | | Beg | End | | Beg | End | depress | X | X | | depress | | ~depress | | | | ~depress | X | <p>(5)</p> <table style="border-collapse: collapse; margin-left: 40px;"> <tr> <td style="padding-right: 10px;"></td> <td style="padding-right: 10px; text-align: center;">Beg</td> <td style="padding-right: 10px; text-align: center;">End</td> </tr> <tr> <td style="padding-right: 10px;">depress</td> <td style="border: 1px solid black; text-align: center; width: 20px;"></td> <td style="border: 1px solid black; text-align: center; width: 20px;"></td> </tr> <tr> <td style="padding-right: 10px;">~depress</td> <td style="border: 1px solid black; text-align: center; width: 20px;">X</td> <td style="border: 1px solid black; text-align: center; width: 20px;">X</td> </tr> </table> | | Beg | End | depress | | | ~depress | X | X |
| | Beg | End | | Beg | End | | | | | | | | | | | | | | | | | | | | | | | |
| depress | X | X | | depress | | | | | | | | | | | | | | | | | | | | | | | | |
| ~depress | | | | ~depress | X | | | | | | | | | | | | | | | | | | | | | | | |
| | Beg | End | | | | | | | | | | | | | | | | | | | | | | | | | | |
| depress | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~depress | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | |

where: Beg indicates noun class prefix position

End indicates initial consonant of final syllable

depress indicates (a) the \widehat{LH} tone realization for Beg, or
(b) the lowered tone for End

~depress indicates (a) the absence of \widehat{LH} tone realization for Beg, or
(b) the absence of lowered tone for End

X indicates the occurrence of cases meeting the intersecting requirements

In (5) it occurs without depression in both positions.

| | | | | | |
|-----------|-----|-----|-----------|-----|-----|
| (6) | Beg | End | (7) | Beg | End |
| depress | X | | depress | | X |
| ~ depress | | X | ~ depress | X | |

6.2. Configurations of Position Occurrence and Tone Realization that Suggest Lack of Association

There are two kinds of configurations shown in (6) and (7) which disconfirm a hypothesis of association. In (6) the consonant is associated with depression in noun class prefixes, but is not associated with lowering of a final tone. In (7) it is associated with depression at the end, but is not associated with LH tone realizations at the beginning.

6.3. Configurations of Position Occurrence and Tone Realization that do not Provide Evidence for or Against an Association Hypothesis

Inconclusive configurations may fall into either of two classes:

(a) those where the consonant occurs only in one position, shown in (8) through (11), and (b) those where it is an erratic depressor, shown in (12) through (16). In addition, there are configurations with both problems simultaneously, shown in (17) and (18).

(a) the consonant occurs only in one position:

| | | | | | |
|-----------|-----|-----|-----------|-----|-----|
| (8) | Beg | End | (9) | Beg | End |
| depress | X | | depress | | X |
| ~ depress | | | ~ depress | | |
| (10) | Beg | End | (11) | Beg | End |
| depress | | | depress | | |
| ~ depress | X | | ~ depress | | X |

(b) the consonant is an erratic depressor:

| | | | | | |
|-----------|-----|-----|-----------|-----|-----|
| (12) | Beg | End | (13) | Beg | End |
| ~ depress | X | | ~ depress | | X |
| ~ depress | X | | ~ depress | X | |
| (14) | Beg | End | (15) | Beg | End |
| ~ depress | X | | ~ depress | X | |
| ~ depress | | X | ~ depress | X | |

| | | |
|-----------|-----|-----|
| (16) | Beg | End |
| depress | X | |
| ~ depress | X | |

(c) consonant occurs only in one position, and in addition, is an erratic depressor:

| | | | | | |
|-----------|-----|-----|-----------|-----|-----|
| (17) | Beg | End | (18) | Beg | End |
| depress | | X | depress | X | |
| ~ depress | | X | ~ depress | X | |

7. PRESENTATION OF CORRESPONDENCES

7.1. Configurations that Suggest Association

(a) the consonant occurs with depression in both word-initial and word-final position (cf. (4)):

bw, dz, mb, mw, n, nj, nth, th, z

(b) the consonant occurs without depression in both word-initial and word-final position (cf. (5)):

d

7.2. Configurations that Suggest Lack of Association

(a) the consonant is associated with a LH tone realization at the beginning of a word, but is not associated with depression at the end (cf. (6)):

none

(b) the consonant is associated with depression at the end, but is not associated with LH tone realizations at the beginning (cf. (7)):

none

7.3. Configurations that do not Provide Evidence in Either Direction

(a) the consonant occurs only in one position:

as in (8): b, ml, mf, mph, mv, qkhw, ns, ph

as in (9): bv, gw, nd, ng, w, y

as in (10): khw

as in (11): none

(b) the consonant is an erratic depressor:

as in (12): kh as in (15): none

as in (13): k as in (16): l, m

as in (14): p

(c) the consonant occurs only in one position, and in addition, is an erratic depressor:

as in (17): \emptyset , f, s, t

as in (18): ts, ch

In compiling the data summarized above, some examples were excluded from consideration. The bases for exclusion, given below, reflect the conditions discussed previously under which the consonants would not be expected to occur with depression.

(a) for the Beg column

- words which have a \emptyset noun class prefix: if there was no evidence, either from tonal realization or singular/plural alternation, for positing the existence of a desyllabified noun class prefix, it was assumed that none was present

(b) for the End column

- words subject to rule (1)
- words subject to rule (2)
- words with a H-L-L# or H-'H-H# tone pattern

Briefly, the data tend to confirm a hypothesis of association. There are a number of consonants with configurations of position occurrence and tone realization which suggest association, and there are none which clearly lead to the opposite conclusion. The direction of the data is considerably weakened, however, by the large number of consonants with inconclusive patterns. Among these latter consonants, b, ml, mf, mph, mv, qkhw, ns, ph, and khw have examples in only one position: word-initially. Cases need to be found in which these consonants are initiators of final syllables. The inconclusive configurations for bv, gw, nd, ng, w, and y reflect the mirror-image problem, occurrences exclusively in word-final position. The data for these consonants, therefore, must be supplemented by further examples in which these consonants occur in word-initial position as part of a noun prefix. A question arises as to how likely it is that such data will appear, and the answer is different for the different consonants. Cases for nd and ng can probably be found immediately; cases for w will require class 11=14 words with stem-initial vowels; it is possible that cases for y can be found in class 5 words of the same sort. Cases for gw, bw, and bv will require frozen forms.

The remaining consonants (kh, k, p, l, m, \emptyset , f, s, t, ts, and ch) are all cases of erratic depressors. The consonants l and m should be isolated immediately as the only voiced consonants in the group. They also have the same distinctive configuration of position occurrence and tone realization, with large numbers of occurrences in all four cells. This suggests that these consonants do, in fact, act as depressors at least some of the time. However, there also seem to be specific cases or environments, undetermined at present, where they do not.

The consonants kh, ch, and ts then become the only cases of erratic depression in the noun prefix position. The split data for ts is based on a single case of \widehat{LH} . That for kh and ch reflects the fact that stem-initial aspirated stops may not consistently require \widehat{LH} tone realizations, even when they can be analyzed as markers for class 5.

The inconclusiveness of the results for k, p, \emptyset , f, s, and t basically comes from the fact that in word-final position, these consonants sometimes are and sometimes are not associated with a lowered final tone. All of these are voiceless unaspirated consonants and precede lowered final tones in a comparatively small proportion of cases. The latter fact suggests that they are not consistent depressors. Instead, some form of free allophonic variation may be going on. This is already confirmed for s, since for this sound, three of the four examples marked for depression seemed to be spoken sometimes with depression and sometimes without. Alternatively, in some cases a lost penultimate L tone may be the source for tone lowering. Regardless, the voiceless unaspirated consonants and \emptyset should probably not be characterized as depressor consonants for Chichewa.

8. CONCLUSION

The interest of a possible link in Chichewa between 1) \widehat{LH} tone realizations on desyllabified noun class prefixes and 2) word-final depression associated with depressor consonants results largely from the surface resemblance which both of these tone realizations bear to those associated exclusively with depressor consonants in the Nguni languages, Tonga, and Shona. First described

for Nguni by Beach (1924), certain consonants were noted to exert a lowering effect on the following vowel. Doke (1926) noted exactly the same phenomenon in Zulu and it has subsequently been found in most other languages of the Nguni group. Rycroft (1975) provides a detailed description of the surface effects of depressor consonants in Swati as follows:

Depression: This prosodic feature comprises "breathy voice" phonation for the vowel onset (or throughout the vowel if tone is Low), linked with simultaneous lowered pitch realization. Depression occurs (a) whenever a vowel is preceded by a depressor consonant; and (b) (more rarely) without any conditioning consonant. This may occur either (i) on an initial vowel, or (ii) after a non-depressor consonant...

The main effects of depression on tonal realization are as follows: (a) on Low tones: (i) L takes lower pitch than would otherwise occur. The same low pitch realization is also adopted (or "echoed") by adjacent L tones that follow. (ii) With depression, a penultimate L tone that follows H tone does not take a falling onset. (b) H and F tones: These may react to depression as follows: (i) only the vowel onset may be affected, taking a rising-pitch on-glide; or (ii) in certain circumstances low pitch occurs instead.

A link similar in kind if not as prominent in degree has been found between consonants and tone in other languages in the area as well. It has been noted in Zambian Tonga by Carter (1962), and in various Shona dialects by Fortune (1969), Fivaz (1970), Mkanganwi (1972), and Dembetembe (1974). Although the interference of depressor consonants with the tonal system in these languages seems to be less than in Nguni, certain similarities suggest that the difference is one of degree, complexity, and convolutedness rather than a tonal phenomenon of a different nature. Thus, the classes of consonants associated with depression, insofar as the languages have parallel consonantal systems, are markedly similar. The effects of depressor consonants on the following vowel in both sets of languages, Nguni and nonNguni is similar in its surface manifestation as well. Thus, Fivaz (1970) notes that "certain of the consonantal syllable onsets cause an immediately following H to be realized as a rising glide". Compare this with Rycroft's (1975) description: "only the vowel onset may be affected, taking a rising-pitch on-glide". The effects on following L tones are also similar in both cases. For example, Fivaz notes that "a L after a depressor onset is lower in pitch than a L after a non-depressor".

Compare this with Rycroft's "L takes lower pitch than would otherwise occur".

Both Rycroft's description of Swati and Fivaz' description of Shona compare in an obvious way with the tone realizations discussed here for Chichewa. The \widehat{LH} tone realization on noun class prefixes in Chichewa is comparable to the realization of H as "a rising glide" in Shona or "rising-pitch on-glide" in Swati. The lowered final L's are identical across all of the languages. The difference between Chichewa and languages previously discussed in the literature is that in Chichewa the \widehat{LH} tone realization is associated with L tone retention by consonants in noun class prefixes, whereas in the other languages this conditioning factor does not appear. The question that arises is one of the significance of this difference.

It is, of course, possible to maintain that there is no association in Chichewa between the \widehat{LH} tone realizations on desyllabified noun class prefixes and the lowered final tones following depressor consonants. This position appears somewhat unattractive though, since under this assumption, it becomes completely fortuitous that (a) identical classes of consonants are involved in both cases, and that (b) there may even be a one-to-one correspondence between the consonants associated with these two tone realizations. In addition, the set of consonants involved in both cases is a little irregular. The curious interweaving among different classes of consonants in both cases, that is, including some voiced consonants but not others, including voiceless aspirated stops but not other voiceless stops and so forth, makes an assumption of no relationship rather unconvincing.

If one assumes that the same sets of consonants are involved in both cases and that this fact is not an accident, it is still not clear what the source for the link might be. If the link is language-internal analogy, one direction for the analogy seems much more likely than the other. This is the direction which starts with \widehat{LH} tones on noun class prefixes and moves to lowered tones in word-final position. The arguments for this, rather than the opposite direction of influence, come from a number of sources: 1) \widehat{LH} tone realization word initially, in a language

which otherwise has no rising tones, is much more striking perceptually than the word-final lowering, which tends to blend in with downdrift, downstep, and falling penultimate H. Generalizing from a more striking perceptual phenomenon to one which is less striking seems more reasonable than the reverse. 2) The relationship between noun class prefixes and \widehat{LH} tone realization is much more regular and transparent than that between depressor consonants and lowered final tones, where application of rules (1) and (2) and the variations of nondepressor consonants make the situation more murky. It seems more reasonable to generalize from a transparent and regular phenomenon than from one which is more opaque. 3) The variation between depression and nondepression which appears with nondepressor consonants in word-final position could indicate that the assignment of depression to depressor consonants and the assignment of nondepression to nondepressors has not completely solidified. The depressor consonants always trigger depression in the required environments, but the nondepressors also still appear with the variation of tone which was presumably allowed in both cases before a distinction between the two was made. 4) Frozen forms appear with \widehat{LH} tone realization on the noun class prefix, suggesting that this phenomenon has been part of the language for some time. 5) Noun class prefixes in Bantu are an identificatory feature of the language family. As such they can be posited for Proto-Bantu and even for Proto-Niger-Congo. Depressor consonants, on the other hand, appear to be a more recent areal phenomenon. These facts in themselves suggest that the tonal realizations on noun class prefixes probably predated the appearance of depressor consonants in Chichewa, thus making only one direction of influence possible.

On the other hand, it is possible that the link under discussion does not result from a language-internal connection at all. Instead, it could result from both sets of tone realizations being connected to a single language-external source. Thus, it is possible that the tone realizations discussed in this paper came about through borrowing from Tongo, Shona, and/or Nguni, with certain reassignments of function. Certain historical movements of tribes in the area and current employment patterns make borrowing a dis-

tinct possibility. Certain differences among the systems, however, also argue against it as a full explanation. Briefly, these are differences in complexity, function, and opacity which suggest the Chichewa realizations are recent innovations which have not yet been overlaid with subsequent language changes or assigned grammatical functions. Borrowings from Nguni would almost inevitably show signs of these, and borrowing from Shona or Tonga is much less likely than from Nguni. A more likely connection with these languages would be that through contact Chichewa speakers became sensitized to the intrinsic pitch-lowering effects of certain consonants as "phonologized" in neighboring languages, and subsequently began to use externally observed tone realizations for their own more transparent purposes. With this type of language-external source, the conditions for depression in Chichewa could well reflect historically earlier conditions for depression in the source languages.

If the position treated most fully in this this paper is correct, that is, if in Chichewa there is a historical direction of influence from tone realizations of noun class prefixes to those with depressor consonants, the implication is clear. The facts suggest noun class prefixes as a potential historical source of depressor consonants. The possibility presumably exists wherever depressor consonants are found in the area. Less narrowly, the facts suggest L-H tone sequences, consistently associated with a given set of consonants in initial position and undergoing removal of the first syllable, as sources for depressor consonants.

This proposed source, based on surface or phonetic retention of eroded tonemic information, is fundamentally different from that which is usually assumed. A more common proposal is that the tonal effects of depressor consonants result from articulatory constraints. This source requires phonologization of phonetic information rather than the reverse. Although there can be no doubt that articulatory constraints have an effect, the tonal behavior of these consonants is quite complex and clearly cannot be explained on this basis alone. Of the additional factors which may be operating, I wish to suggest the tonal/consonantal coding of a removed L tone. The \widehat{LH} tone realizations on desyllabified noun class pre-

fixes in Chichewa then become an early and transparent stage of this process. The effects later generalize to the consonants wherever they appear and still later may be overlaid with grammatical and juncture functions as well.

NOTES

¹I wish to thank Benson Kandoole of Monkey Bay, Malawi, for his time and patience in working with me on the data in this paper. I also wish to thank the members of two groups, the Seminar on Comparative Bantu Tonology, University of Southern California, and the Tone Seminar, University of California at Los Angeles, for observations and suggestions. I particularly want to thank Larry M. Hyman, leader of the first group, for his patience and repeated help. Obviously, none of these people is responsible for any possible errors in this paper.

²Chichewa does not have a preprefix.

³Proto-Bantu classes 11 and 14 are synchronically indistinguishable in Chichewa. That is, they have the same noun class prefix and the same system of concords.

⁴The H tone in L-H-L nouns seems to be in allophonic free variation with a falling tone for nouns in citation form. The nouns under (4) through *mikondo* 'spears' and the noun *chisóni* 'sorrow' under (12) were recorded with a F tone on the penultimate syllable. All remaining nouns under L-H-L were recorded with H.

⁵Note that category (7) differs from category (9) in that in the former case a historical prefix has become part of the (now trisyllabic) stem. No prefix is reconstructible for nouns in (9).

⁶This noun was recorded with a falling penultimate tone.

⁷Although this Proto-Bantu form does not initially seem obviously cognate with the Chichewa form, changes identical to those required for positing a relationship between the two appear elsewhere. Further examples of the loss of *g intervocalically in Chichewa are given below:

| | | |
|-----------------------------|---|------------------------|
| *-gána 'child' | > | mwáná 'child' (mu+ana) |
| *-gédi 'moon' | > | mwézi 'moon' (mu+ezi) |
| *-gunda 'cultivated ground' | > | múnda 'field' (mu+nda) |
| *-gína 'name' | > | džína 'name' (dz+ina) |
| *-gíno 'tooth' | > | džíno 'tooth' (dz+ino) |

REFERENCES

- Beach, D. 1924. The science of tonetics and its application to Bantu languages. *Bantu Studies* 2.75-106.
- Carter, H. 1962. Notes on the tonal system of Northern Rhodesian Plateau Tonga. *Colonial Research Study* #35. London.
- Dembetembe, N. 1974. Three Korekore dialects. *African Language Studies* 15.143-170.
- Doke, C. 1926. *The Phonetics of the Zulu Language*. Johannesburg: Witwatersrand University Press.
- Fivaz, D. 1970. *Shona Morphophonemics and Morphosyntax*. Ph.D. Dissertation, University of Witwatersrand.
- Fortune, G. 1969. *Shona grammatical constructions*. Ms. University of Rhodesia.
- Harding, D. 1966. *The Phonology and Morphology of Chinyanja*. Ph.D. Dissertation, University of California, Los Angeles.
- Mkanganwi, M. 1972. The relationship of coastal Ndaou to the Shona dialects. *African Language Studies* 31.111-138.
- Rycroft, D. 1975. Tone and depression in Nguni. Paper presented at the International Conference on Linguistics in Central and Southern Africa, University of Rhodesia.
- Stevick, E. and L. Hollander. 1965. *Chinyanja: Basic Course*. Washington, D.C.: Foreign Service Institute.
- Watkins, M. 1934. *A Grammar of Chichewa*. *Language Dissertations* 24. Supplement to *Language, Journal of the Linguistic Society of America*.

TONALLY IRREGULAR VERBS IN CHISHONA

BY

TINA L. BENNETT

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

1. INTRODUCTION¹

Shona (Chi-Shona), the classificatory name for a group of languages spoken in the Central and East-Central areas of Zimbabwe, as well as parts of Mozambique, was recently studied in a comprehensive dissertation by Derek Fivaz (1970). In this work, Fivaz states: "There are only two tone classes of verb roots, high and low. Stems whose roots are of the low class have all low tones in forms such as the infinitive, while those whose stems are of the high class have all but the fourth and subsequent tones, if any, high" (p.20). This statement is confirmed by the data collected for the present study. Fivaz continues: "There is, however, a small number of verb roots for which the above simple indication of class membership is an insufficient indication of their tonal properties. These roots require an indication of the tones on each syllable. The examples I have encountered all appear to belong to the high class..." (p.21). Stevick (1965) too recognized a "third tonal class", and it is among the tasks of this paper to present the results of an investigation into this third tonal class, as the "tonal patterning of these roots in the various conjugational forms has not been extensively investigated..." (Fivaz, p.22).

Some of those irregular verbs which turned up in the course of this research seem to correspond, in the infinitives, to those which Fivaz encountered. Because no irregular verbs belonging to class of low-toned roots were found, I was led in earlier (unpublished) work to posit the tone of the characteristic Bantu final vowel as low (L) in Shona, as wherever a high-toned suffix vowel appears it can be accounted for with a general rule of tone spreading that in certain cases spreads a high (H) tone onto an adjacent (following) L-toned syllable (cf. Fivaz, p.31). This phenomenon allows verb + extension forms to be automatically included in the analysis of simple verb forms,² while in other Bantu languages verbs with extensions require extensive analysis in themselves.

Some differences arose between the data I collected and those of Fivaz. These are probably due to two causes. First, Fivaz'

language assistant was a speaker of Zezuru (or "Shona", as my assistant, Chineni Mwayera, would call it). Chineni, on the other hand, seems to have exposure to several dialects, her parents being speakers from the Manyika region, and she having been raised in Zezuru-speaking areas. She describes her husband as having a "heavy" Zezuru accent, and thus it was possible for her to give me two forms of pronunciation in many cases, one representing her own dialect, the other that of her husband. Although the primary way in which these dialects seemed to differ was with respect to tones and tone phenomena, and thus Chineni's speech would be tonally divergent from either a "heavy" Zezuru speaker or a "pure" Manyika speaker, I nevertheless retained her as an assistant because I found the differences in themselves interesting, and felt they would not hinder research into irregular verbs too much. Therefore the title of this paper might be expanded to read "Tonally irregular verbs in one speaker of ChiShona". Note, finally, that Fivaz' assistant also had "extensive dialect experience" (p.xxiii) and this appears to be the rule rather than the exception among so-called Shona speakers.

C. M. Doke (1931) divides Shona into six main groups: Korekore (or Northern Shona), which includes some ten sub-dialects and over 170,000 speakers; Zezuru (or the Central Shona group), which consists of a dozen-odd sub-dialects and numbers over 180,000; Karanga, with six sub-dialects, which represents the Southern group and, at over 270,000 speakers, the largest of the Shona groups; Manyika, with fourteen sub-dialects, in the East-Central region, and numbering about 113,000; Ndau, totalling about 145,000 and encompassing five sub-dialects, located mostly in Mozambique, but with about a third of the population in Zimbabwe; and the Kallanga (or Western group) with seven sub-dialects and about 60,000 speakers (pp.8-15). These numbers are surely far too low now, but one would imagine the relative numerical distribution to be about the same. One can readily see the problem of dialect mixing in a language group where, even among the divisions, there are numerous sub-dialects, each differing from the other tonally, segmentally, and in vocabulary.

The second reason my data and Fivaz' may not quite match is perhaps the younger age of my speaker, who is in her early twenties, while Fivaz' assistant, Mr. Hodza, was "middle aged, and was born and brought up in a Zezuru-speaking area" (p.xxiii). Some differences occurred which were non-tonal in nature. For example, while Fivaz gives 'to study' as the gloss for the irregular verb kufúnda, Chineni insisted that it meant 'to learn' (a subtle semantic difference, perhaps). Wherever the data within this paper diverge significantly from those Fivaz gathered, it will be noted.

Since all the irregular verbs encountered in the research did belong to the H-class, I originally hypothesized that they were verbs to which, for some reason, tone spreading did not yet apply. I thought perhaps that spreading was a relatively new innovation in certain dialects (it does not occur in the same forms, with the same regularity, in all dialects of Shona, as will be noted below), but that a form had nevertheless to be in rather frequent use, and for a sufficient period of time, in order to undergo the process. Thus for example, some of the irregular verbs are clearly borrowings from English (e.g. kujámba 'to jump'). There may be others which represent borrowings from other Bantu languages, but this was not investigated. I then found that the irregular verbs themselves could not be treated as a tonal class, as they behaved differently from each other within paradigms, some patterning like verbs of the H class, some like verbs of the L class. In this manner the original problem became all the more fascinating.

2. REGULAR VERBS

As a first step, the tones of selected regular verbs were investigated in various conjugational forms, so that the irregular verbs could be later contrasted with them. Since this study is primarily concerned with tones, general comments on the segmental structure of verbs will be included but not elaborated on except in cases where the tones are affected. These segmental generalizations are applicable to all verbs, regular or irregular.

2.1. Tenses

Shona dialects exhibit five simple verb tenses: the habitual present (HAB), as in English 'I walk'; the continuous (C) 'I am walking'; the immediate past (P₁) 'I (just) walked'; the past (P₂) 'I (had) walked', 'I walked yesterday, three days ago, last year' etc.; and the future (F) 'I shall walk'. Each of these five tenses plays a role in more complex aspectual forms: conditionals ('if I walk'), subjunctives ('let me walk, that I walk'), relatives ('she who is walking'), and negatives ('they didn't walk'), though in this latter case P₁ and P₂ are collapsed into a single form peculiar to the negative (e.g. 'I didn't stay' *ha-ndí-ná-ku-gar-a*: NEG-I-COPULA *ni* + PAST *a* = *na*-class 15 prefix (for infinitives)-verb root-final suffix vowel *a*). Each tense possesses its own tonal properties, illustrating a heavy degree of interdependence between morphology and tonology.

2.2. Regular Paradigms

Table I summarizes the tonal paradigms for each tense and describes the segmental structure of each. Each tone (H or L) represents a syllable in the verb complex, and a dash (-) indicates that the tone is predictable lexically. The verb stems which were used to discover these paradigms are as follows (the root indicated in Table I is the stem minus the final vowel *-a*): *-bva* 'leave', *-nwá* 'drink', *-gara* 'stay', *-óná* 'see', *-tarisa* 'look', *-svétúká* 'jump'. In citation (infinitive) form, these stems are preceded by the class 15 concord marker *ku-* (L-toned).

2.2.1. Habitual Tense. In the grammar of the language assistant from whom my data were gathered, no morphotonemic rules are required to account for the tone patterns of the HAB tense, assuming that the HAB morpheme *-no-* is H-toned.³ Thus, the form in (1),

(1) /*ndi-nó-ón-á*/ → [ndinóóná] 'I see'

is readily derived if we consider the final vowel to be underlyingly H-toned. That is, tone spreading has applied historically to the final vowel, which is then lexicalized as H for the H verb class. Similarly, we have a direct derivation for 'he stays':

(2) /*á-nó-gar-a*/ → [ánógara]

TABLE I
The Paradigms of Regular Verbs

| TENSE | VERB ROOT: | L | H | LL | HH | LLL | HHH |
|--------------------|----------------------------|--------------|--------------|-------|--------------|--------|----------------|
| HAB | | -HL | -HH | -HLL | -HHH | -HHLL | -HHHH |
| C | | -HHL | -HHH | -HHLL | -HHHH | -HHLLL | -HHHHH |
| P ₁ | | (L)H (H)L | (L)H (H)L | -HL | -HL | -HLL | -HLL |
| P ₂ , F | 1st, 2nd p.: 3rd pers.: | -HL | -HL -HH | -HHL | -HHL -HHH | -HHLL | -HHLL -HHHH |

CONCORD MARKER ("PRONOUN") + SEGMENTAL STRUCTURE

| | | | | |
|-----|-----------|---------|--------|-------------------|
| ndi | 'I' | -nó- | + stem | (HAB) |
| u | 'you sg.' | -rí-kú- | + stem | (C) |
| á | 'he, she' | -á- | + stem | (P ₁) |
| ti | 'we' | -á-ka- | + stem | (P ₂) |
| mu | 'you pl.' | -chá- | + stem | (F) |
| vá | 'they' | | | |

No tone spreading occurs, therefore, from the tense marker (TM) to the adjacent verb root.

2.2.2. Continuous Tense. The segmental indication of the C tense, the two morphemes *ri* and *ku*, consists of the copula and the class 15 (infinitive) prefix. While Table I gives the tone of *ku* as H, it can be either H or L. My assistant produces a H-toned prefix usually, but upon hearing it as L-toned one day, I queried her about the variation and she told me "some speakers say '*kù*'" (though she did not think she was among those speakers who did). Such variation seems to indicate a possible word-boundary between the copula and the prefix, so that the form in (3) is almost a serial complex:

(3) *ndirikubva* vs. *ndirikúbva* 'I am leaving'
cf. *ndirí* 'I am (being)'

For dialects such as Chineni's, one need posit a spreading rule whereby the H of the copula spreads to the following L-toned prefix:⁴

$$(4) \quad L \rightarrow H / H \left. \begin{array}{l} \text{cop} \\ \text{C tense} \end{array} \right\} \text{---}$$

Those speakers of dialects with L-toned -ku- either do not possess such a rule as (4), or it is possible that the spreading is blocked by a word boundary. However, such blockage is by no means always the case. Fivaz notices what he terms "external sandhi" across certain word boundaries (e.g. verb + noun), where the following tonal perturbations take place (p.33):

$$(5) \quad \dots H + LL \dots \rightarrow \dots H + HL \dots$$

ákaténgá mómbe 'he bought a head of cattle'
cf. mombe 'a head of cattle'

There is some evidence to indicate that the infinitive form of the verb functions as an NP: indeed, it takes a noun class prefix, it appears in certain complementizer positions, and so on. In an alternative grammar, which possesses rule (5) above (i.e. External Sandhi) but not rule (4), it is also quite possible that an infinitival form such as kubva 'to leave' is considered more "verb-like" and thus is unavailable as input to rule (5). I do not know if such dialects exist; I was unable to find data on the C tense in Fivaz (1970).

2.2.3. Immediate Past Tense. The analysis for the tone patterns occurring in the P₁ tense is quite complex. In the first place, a form such as (6) below is already segmentally obscure; as it is desirable to retain the pronoun ndi- 'I', we posit a rule of vowel elision and give the P₁ TM the form -a-: ndi + a → nda. Such a rule is attested in Fivaz (p.152).

$$(6) \quad /ndi-á-bv-a/ \rightarrow ndábva \rightarrow ndabvá \text{ 'he (just) left'}$$

To account for the appearance of a H on the final vowel (FV) -a of kubva (a L-toned verb) in this tense, the P₁ morpheme has been recognized with an underlying H tone. Through a "tone passing" rule alluded to in Fivaz (p.24, though not illustrated for this tense), the L of ndi- is passed onto the following P₁ morpheme

-á-, the H tone of which is then passed to the FV -a (since the root -bv- cannot carry tone, not having any syllabic segment). The vowel co-occurrence restrictions which cause the fusion of ndi-á- to nda- are in this manner responsible for the tonal perturbations as well.

For H-toned verbs such as kunwá 'to drink', the effects of tone passing are not so visible, as there is already a H-toned FV due to the aforementioned impossibility of tonal realization on a [-syllabic] root.

Problems arise, however, when roots of two or more syllables are considered. According to the tone patterns illustrated in Table I, the H-H root, in the second person, will appear as waóna 'you (just) saw'. The derivation is given in (7),

$$(7) \quad /u-á-ón-á/ \rightarrow [waóna]$$

allowing for previous application of tone spreading, or, alternatively, assuming that the FV is already marked as H or L in the lexicon. A general rule of glide formation may be found in many Bantu languages which transforms the vowel cluster u + a into wa. One would then expect the form waóná; that is, the L of u- is displaced onto the H-toned morpheme -á-,⁵ and the H is then displaced onto the root -ón-, into which it is absorbed, since -ón- is already H. How can one then account for the L-toned FV?

One alternative is to take the verb 'to see' from its abstract form, even before the tone spreading rule has raised the FV (i.e. /kuóna/). Now the H from the P₁ TM is free to displace to -ón-, where it remains, and the effects are only visible through the appearance of a L tone on the FV, as if absorption prevented spreading. (L. Hyman, in personal communication, describes it this way: "an aT [tone] cannot push another aT onto a following syllable".) This would be contingent upon the fact that the root consists of at least one vowel on which the H can be realized. All this, however, in addition to being somewhat dubious, is unnecessarily complicated. Looking at the tone patterns for the first and second persons (i.e. the L-toned pronouns), it is easy to see that there is always only one H tone in these forms, re-

ardless of the length of the verb, and that this H tone always appears in second position: LH, LHL, LHLL, and so on. Of course, these patterns are created by a complex set of rules with historical motivation,⁶ but I should not like to suggest that this is part of the knowledge of any speaker other than a Shona linguist. Rather, the above pattern generalization is probably more what speakers "know" about the P₁ tone paradigms. For the third person forms, one need only remember that these pronouns (or concord markers) are H-toned, and thus the pattern will begin in reverse. The remainder of the paradigm, for verb stems of two or more syllables, then patterns like the 1st and 2nd persons, but with a H-toned pronoun: HL, HHL, HHLL.

2.2.4. Past Tense. As in the P₁ tense, rather complex tone rules are required to account for the patterns which appear in the P₂ (as well as F) tense. Both vowel elision and resultant tonal displacement are involved. Let us take, for example, forms (8) and (9) below:

- (8) /ndi-á-ka-bv-a/ → [ndakábva] 'I (have) left'
 (9) /ndi-á-ka-ón-a/ → [ndakáóna] 'I saw/have seen'

When first the vowel of the pronoun ndi- 'I' is elided, the tone remains. The H of the P₁ TM -á- is then displaced to the P₂ TM -ka- (a L-toned morpheme). Now the L of -ka- is displaced to the FV in (8), or the root vowel in (9). In the case of (8), this final displacement causes no real problems, as the tone of the FV is L anyway. For forms such as (9), however, there are alternative explanations. If, for example, the FV is not yet H (i.e. spreading has not applied; the tone is not lexical), the L displaces to the root -ón-, creating a LH contour. In becoming L-toned,⁷ the H from -ón- is then further displaced to the FV. This results in a form *ndakáóná. Shona does not, to my knowledge, ever manifest such tone patterns on the verb. Due to the primacy of penultimate position, the above starred form becomes ndakáóna (Shona has penultimate stress which is best recognized by its vowel lengthening effect). The transformation L-H → H-L is attested in several other Bantu languages (see Byarushengo, Hyman and Tenenbaum 1976 for KiHaya, Kimenyi 1976 for Kinyarwanda, etc.). Nevertheless,

this first alternative is the most complex and should be avoided if possible.

A second possibility, again given that the FV is still L-toned, is that the L of -ka- undergoes "distal displacement" (van Spaandonck 1971).⁸ That is, it is displaced not to the adjacent syllable (the root -ón-), but rather to the FV two syllables from the morpheme whose tone is displaced.⁹ This vowel is already L, and the effects of displacement are thus not visible. This possibility has the additional favorable feature of preserving the tone of the root (H), which could not be done where the root consisted of a [-syllabic] element, as in kubva.

Another alternative is identical to the one above, except that spreading may have already occurred, making the FV H-toned. In this case, distal displacement of the L of -ka- results in the contour LH on the FV, which is then simplified to L (see notes 6 and 7).

Still another variation on the above theme treats the displacement in steps, so that the L is first displaced to the root (creating LH there), and in the simplification of the contour then further displaced to the final H vowel, again creating LH and subsequent simplification to L.

The P₂ analysis offered by Fivaz considers the morpheme -a-, appearing between the subject pronoun and the P₂ TM -ka- to be toneless, carrying then the tone of the subject morpheme. He then considers the "remote past" marker -ka- (along with future -cha-, potential -nga-, and "future negative" -sa-) to "show tonal dissimilation which in some cases is progressive, in some regressive, and in other cases dissimilation with the tone class of the verb root" (p.136). In this way, the form 'he looked' is derived as in (10), with -ka- deriving its tone by dissimilating from the tone of the L root (-tar(is)-) and thus becoming H (á-a-ká-táris-a).

- (10) /á-a-ka-taris-a/ → [ákátárisa]

The remaining á- of the subject pronoun and the toneless TM -a- then combine to be manifested simply as á- (ákátárisa). Similarly, a verb such as 'I gave' derives from the underlying form in (11),

(11) /ndi-á-ka-ḡ-a/ → [ndakápa]

where there is no spreading of the H tone of -ka- (kupa 'to give' is of the L class).

H-toned roots, however, are as troublesome for this analysis as for the one presented here. Fivaz cites a form takátenga 'we bought' (cf. kuténgá), where a H-toned stem is now appearing as L-toned. It is unclear how this transformation occurred. (Note that the form differs from the pattern exhibited in my data, namely LHHL, or takáténga, which shows the same phenomena as ndakáténga 'I bought'.) The analysis offered here allows distal displacement of a L tone from -ka- (or graded displacement, alternatively) and tonal realizations attributed to a *LH and *HL constraint.

Further support for a "displacement analysis" comes from Stevick (1965), whose Shona Basic Course represents Manyika varieties. In this text, which actually represents a "standardized" Manyika, the author is led to posit rising tone contours on the verb stems, e.g. kuúyá 'to come', takáúyá 'we came'; kusándá 'to work', takásándá 'we worked' (p.58). Stevick, whose data for the first and second person L-toned verbs agrees with mine, does so because for H verbs, in the central (westerly) regions, "the tones of the stem are low in those forms that have low tone on the subject prefix [i.e. 1st and 2nd persons]: tàkàúyá 'we came', cf. kúúyá 'to come', vákàúyá 'they came'.... Easterly, the tones of the stems are high: tákáúyá, vákáúyá" (p.52).

A different phenomenon is observed for H-toned verbs in the third person. In this case, the L displaced from -ka- does not appear to be realized anywhere, and this must be accounted for (but cf. both the Western and Eastern Manyika varieties as presented by Stevick, and reproduced above. Here the tones of the morphemes are preserved). One may want to utilize the fact that the 3rd person concord markers are H-toned, and then say that the rule of tone spreading is somehow more "vital" than that of displacement. For L-toned verbs, the final vowel remains L, and thus the L of -ka- may have been distally displaced to a syllable which was already L, as spreading occurred from the combination of the morpheme á- 'he' (and vá- 'they') and the past tense -á-. For H-

toned verbs, the forms become all H because, assuming the final -a has already become H following the H root, there are, in the underlying representation of the verb complex, four H and one L tone (á-á-ka-ón-á 'he saw'). In the case of the L-toned verbs, there are two H tones and three L's (á-á-ka-gar-a 'he stayed').¹⁰ The realizations on the surface of these forms makes the dialect studied here truly democratic (the FV "represents" tonally the value of the root of the verb). It should be obvious by now that rules such as spreading are quite dependent upon morphological categories; furthermore, there seem to be at least two different spreading rules, one applying to verbs abstractly--as when the FV becomes H adjacent to a H root, and the extensions do the same; the other applying in certain conjugational forms. The first type of tone spreading (TS) apparently does not apply in all cases (as with H-toned roots, P₁ tense), and both types must interact in complex ways with the effects of tonal displacement.

2.2.5. Future Tense. The similarity of patterning between the P₂ and F tenses might lead one at first to give the F TM -cha- a L tone value (as with -ka-), but a number of factors influence me to do the opposite. For example, the Shona equivalent of 'I will be' is ndichá. Since we have already established, and have been working with the tone of ndi- as L, the H which appears must be inherent in the morpheme -cha-. It may be that -cha- itself is a complex of two morphemes, such as cha + a or chi + a, but I have little evidence to either suggest or reject this; nor do I have reason to attribute the H to a more abstract cause such as a non-segmental morpheme. For all the L-toned forms, this presents no problems. Spreading accounts for a H on L-toned roots adjacent to the F morpheme (ndichágára 'I will stay'; cf. kugara 'to stay'). For H-toned verbs, however, the analysis is, as usual, more problematic. One need now account for the L-toned FV, in the 1st and 2nd persons, which appears with H-toned verbs (and this is the "little" evidence to suggest that the F TM -cha- deserves to be analyzed as a complex of a L-toned and a H-toned morpheme). It may again be necessary to claim that for this tense, TS from the root to the FV does not occur before the verb is conjugated; and then "conjugational" spreading, mentioned above, applies to the

forms in the 3rd person (i.e. those with H initial syllables). Whatever the explanation, due to the similarity of patterning in the P₂ and F tenses, as well as the similarity of segmental structure (nda-ka-X-a vs. ndi-cha-X-a), it is likely that once more speakers are internalizing patterns: LHL, LHHLL, LHHLL, and so on. (Again, 3rd person forms, possibly representing the more often used person,¹¹ have their own pattern.)

3. THE IRREGULAR VERBS

Fivaz lists the following verbs as among those with roots which "require an indication of the tones on each syllable" (and I have numbered them for convenience of later reference):

- | | | | |
|--------------------------|--------------------------|---------------------|-----------------------|
| 1. kufúka | 'to cover with blanket' | 9. kudóka | 'to set (the sun)' |
| 2. kufára | 'to be happy' | 10. kunyárára | 'to be quiet' |
| 3. kudzíya | 'to warm' | 11. kusímúdzza | 'to lift' |
| 4. kutúra | 'to set down heavy load' | 12. kusímúka | 'to stand up' |
| 5. kufúnda | 'to study' | 13. kutónhóra | 'to be cold' |
| 6. kudfbha ¹² | 'to dip' | 14. kutúríkira | 'to translate' |
| 7. kukúwa | 'to shout' | 15. kushámwarídzana | 'to be friendly with' |
| 8. kukúhwa motó | 'to light a fire' | cf. shámwarí | 'friend' |

The assistant used for this study diverged from Fivaz' Mr. Hodza in some interesting ways. For form (1), Chineni believed that the use of the voiceless plosive -k- was "Manyika", and gave the word as kufúgá (with H-toned FV), glossing it simply as 'to cover' (while 'to be covered with something' was kufúgídzá, a form with an extension--transitive or applied, perhaps). Forms (2), (3), (4), (6), and (9) were produced with final H tone; (5) was glossed as 'to learn'; (6), most likely an English borrowing (but see below), was 'to dip a kettle, I think to wash it...'; and (7) was never heard of. The forms (10) - (12) were agreed upon, but (14) and (15) each had a H tone added: kutúríkira became kutúríkíra, and kushámwarídzana became kushámwáridzana.¹³ This latter is quite unusual (in Fivaz' data) due to the L sandwiched between two H's.

Apparently, Chineni's dialect has "regularized" most of the verbs which in Mr. Hodza's dialect were anomalous. This could be due to regional differences, but most likely Chineni represents

the younger Shona speakers, and the regularization must indicate the innovative and now prevalent nature of TS in the language.

To this list we can append another form, (16) kujámba 'to jump', a clear borrowing. It is often the case that borrowed forms turn out to be irregular, but not always: kudfbhá has been regularized for Chineni, kujámba has not. There is also a (regular) form kupómbá 'to pump'.

3.1. Irregular Paradigms

The paradigms for irregular verbs, illustrated in Table II below, differ to some extent from those of the regular verbs (Table I). To illustrate the tone patterns, four verbs were chosen, two of two and two of three syllables each (including FV): kufúnda 'to learn', kujámba 'to jump', kusímúka 'to stand up', and kunyárára 'to be quiet'. The segmental morphemes are the same for these verbs as they are for the regular varieties. In general, the verbs pattern as H-toned regular verbs with the exception of the FV, to which spreading does not apply (cf. the infinitive forms).

One particularly unusual feature appears in the HAB tense, and this is the variable manifestation of a H on the TM -no-. While Chineni presented the forms with a H tone on -no-, she held that it was quite acceptable to pronounce it as L. This morpheme, recall, has previously been established as having H tone. The variability is problematic, for if we could attribute it to another form of spreading, this time of a L tone, then why would the same phenomenon not appear on the regular verbs, nor with the TM in kujámba (which, the assistant claims, is always H-toned)? One could also hypothesize that this "L spreading" was due to both a L prefix (there can be no L-toned TM -no- adjacent to the H-toned 3rd person prefixes á- and vá-) preceding -no- and a L-toned root following, but there is no evidence for this in most cases, and there is counter-evidence in some cases (see below, discussion and conclusion), where the reconstructions, supported by comparative evidence, are H-toned roots. Perhaps the answer is that as irregular verbs these forms are learned by rote, and thus the variation can be due to faulty memory or somewhat random use of an innovative L-spreading rule with some speakers. Chineni holds that it is pos-

TABLE II

The Paradigms of Irregular Verbs

| TENSE | VERB ROOT: | kufúnda | kujámba ¹⁴ | kusímúka | kunyárára |
|----------------|------------|--------------------|----------------------------------|----------------------|----------------------|
| HAB | | -H/L HL | -H ¹⁵ HL | -H/L HHL | -H/L HHL |
| C | | -HHHL | -HHHL | -HHHHL | -HHHHL |
| P ₁ | | (L) LH (H) LL | (L) HL (H) LL | -HLL | (L) HHL (H) HLL |
| P ₂ | | -HHL ¹⁶ | (L) HLL (H) HHL ¹⁷ | (L) HHLL (H) HHHL | (L) HHLL (H) HHHL |
| F | | -H H/L L | -HL ¹⁸ L | (L) HHLL (H) HHHL | (L) HHLL (H) HHHL |

sible that younger speakers use the H -no- more consistently. Recall, however, the statement in note 3 to the effect that the H-toned -no- differed from the data Fivaz gathered. There is dialectal variation here (cf. Fivaz, p.133, fn. 1), and this is a factor which may ultimately figure importantly in seeking an explanation for irregularity (see below). Note that my assistant asserts that the form ndinojámba 'I jump' may never have a H-toned TM, to her knowledge, and thus (as can be seen more vividly in further perusing Table II) even the irregular verbs themselves do not behave as a class.

There is less variability with the C tense, which patterns, as did the HAB, like the C tense for regular H-toned verbs except for the L-toned FV. From these two tenses it is thus tempting to say that irregular verbs were all H tone roots originally,¹⁹ from which TS is incomplete.

For P₁, the disyllabic irregular verbs pattern regularly in the 1st and 2nd persons; the trisyllabic stems behave as 3rd person regular forms (recall that H and L verbs are neutralized in P₁). For one trisyllabic stem, -símúka, the 1st and 2nd persons

as well seem regular,²⁰ and so we may say that this form is regularized for this tense.

The disyllabic stems differ in the 3rd person from regular verbs because the tone of the root is L here. This is difficult to explain. In H-toned verbs, the root remains H for this tense. In L-toned verbs, TS occurs from the H-toned prefix á- (combined with the P₁ TM -á-). Hence even if kufúnda were, for example, interpreted by speakers in this tense (unlikely anyway) to be a L-toned verb, why has TS been "blocked" in this position? This also despite the strong tendency in the past tense to minimize H and L contrasts. I cannot offer any explanation,²¹ other than the possibility that this disyllabic stem is indeed interpreted as L, and TS has not occurred for the same reasons it has not applied to the FV, which is precisely the problem under consideration (below).

In kunyárára, TS occurs even though the resulting tone pattern differs from the generalized P₁ pattern (for trisyllabic stems) L-H-L-L. We thus have a contrast between two more irregular verbs which we would like some day to understand.

Provided that the pattern of the 3rd person P₂ form for kujámba (ákájámba) is correct (see note 17), these patterns differ from those of the regular verbs not at all in the 1st and 2nd persons, and the disyllabic stems pattern like the L-toned regular verbs in the 3rd person. (Above, it was also necessary to speculate that the disyllabic verbs were treated in some cases as L-toned--and sans TS.) The trisyllabic stems are irregular, differing from the H-toned regular stems, as usual, in the appearance of a L FV in the 3rd person.

For the F tense, if the root in the kufúnda form is taken to be H (as it in fact appears to be), then the patterning for this tense is identical to the L regular verbs; and for trisyllabic stems, 1st and 2nd persons, the patterns fit the generalized regular pattern. Otherwise, the tones are divergent in the usual way: they lack a final H (in the 3rd person) which would allow classification of them as H regular verbs; and one of them, kujámba, lacks (for some reason) a H-toned root (as does kufúnda, variably). This results in its differing from both H and L regular verbs.

What is the tonal nature of irregular verbs? Without attempting any detailed analysis of the rules which could create such highly diverse (as well as variable) tone patterns as those seen in Table II, two simple generalizations can be proposed. First, tempting though it is, due to the inconsistency in patterning, to cry that the application of tones on these verbs is random, it most certainly is not. The language assistant could readily supply judgements of tonal acceptability, and there were tones I supplied which she vehemently rejected (although I believed I was repeating just what I'd heard her say). What seemed unsystematic to this researcher thus must have been quite systematic to the speaker, and it is this systematicity which continues to elude me.

Secondly, the irregular verbs appear, simply put, to pattern sometimes closer to L-toned regular verbs, sometimes closer to H-toned regular verbs, but they more often resemble the latter. In certain cases where the grammar does not distinguish between H and L roots, in conjugation, irregular verbs are not irregular at all. In this way they are continually floating between H and L and the region where the two meet. Since there is an area of the grammar where three "classes" fall together in this manner, it may be possible that at some time in the distant future Shona will have lost the H-L distinction, just as now some of the irregular verbs have been regularized to H verbs. Such a statement is perhaps akin to the claim that a language can "lose its tones" and become a restricted tone system such as Safwa, or atonal as is Swahili (although a different set of circumstances, perhaps, led to the latter event). There are different types of irregular verbs, as we have seen, some of which behave more readily like regular verbs than others, and this may be evidence of the leveling out of distinctions which is one aspect of a language's striving toward regularity.²²

3.2. Etymology of the Irregular Verbs

The remaining task, since it has not been possible to explain the tonal behavior of the irregular verbs in any detail, is to endeavor to discover the origins of these verbs. Some of them, we know, have been borrowed from English, and it is then not wholly unnatural to hypothesize that all of the irregular verbs are bor-

rowings of some sort (although it is not the case, at this stage anyway, that all borrowings are irregular). It also seems normal enough to look at Proto-Bantu (PB) reconstructions for possible regularities in the etymology of these forms, and these are just the two lines of investigation which have been undertaken.

Aside from the fairly evident English borrowings, which have been noted, the latter course of inquiry (i.e. the historical) will be reported first, as the appearance of a PB root for an irregular verb precludes its having been borrowed at least from outside the Bantu group.

Three main sources were consulted for this part of the research: A. E. Meeussen's "Bantu Grammatical Reconstructions"; Joseph H. Greenberg's "The Tonal System of Proto-Bantu"; and most importantly, Malcolm Guthrie's Comparative Bantu: An Introduction to the Comparative Linguistics and Prehistory of the Bantu Languages. The latter two proved most helpful for lexical work. What follows is another list of the irregular verbs with historical information, where available, and discussion.

1. kufúka 'to cover with a blanket'. No form in Guthrie. The expected antecedent would be something like **-púk-²³, and there was a form *-púk- 'dig up', fling up (earth)', which becomes in the extended form (*-púkud-) the Xhosa and Zulu -fukus-, -fukuz-, respectively, from Proto-Zulu *-kúk- or *-túk-. One might propose an etymology whereby a semantic change occurred in Shona which turned the gloss 'fling up (earth)' into 'bury', which later evolved into 'cover (with something)'. (Cf. *-púkò- 'mole'). Note that this proto-form is L-toned.

A considerably less likely origin for this form would be *-túkò-, realized in Venda as vusúku and meaning 'night'. This however stretches the semantic (and phonological) imagination to a rather gross extent, as the relationship would be somewhat poetic: 'night' thought of as 'covering' the earth with a blanket, as it were, of stars, or darkness, and so on. For this reason I would not sanction a serious proposal of *-túkò- as the origin of kufúka. (Note that this root is H-toned, with the verb root probably *-túk-.)

2. kufára 'to be happy'. The expected reconstruction is **-pad-. Guthrie's *-pád- means 'scrape' (Greenberg concurs) - Suthu -fal-; *-pádà- 'forehead'; *-pádá- 'kind of antelope', also 'baldness'. All of these seem unlikely sources, due to the glosses.

One might posit an irregular development from *-bád-, which would be expected to become **-bhar- or **-bar- in Shona. Some of the glosses for this PB form come a little closer to being realistic, but not much: *-bád- 'count'; *-bád- 'split'; *-bád- 'marry' (could it be that this developed into 'to be happy'?); *-bád- 'shine' (remotely possible); *-bád- 'begin' (transitive) and so on. A Kongo form, probably from *-bád- 'marry', is -bal- 'copulate', which through borrowing and segmental adaptation could conceivably result in -fár-

'to be happy', but it would be the first case I know of of a semantic joke catching on historically. Let it suffice to be said that there is as yet no satisfactory PB form for *kufára*, and thus one cannot eliminate the possibility of borrowing from a non-Bantu group.

3. *kudzíya* 'to warm'. *-dʒg- 'become burnt' is a somewhat questionable etymology, as the clear reflexes are items with a Northern distribution (Guthrie's zones A, B, C, and D--Guthrie, Vol. 3, p.166). An "opposite" alternative is the form *-dʒf- 'cold', though both semantic and sound (for the second consonant) changes might cause some problems. Note that both of these possibilities are H-toned roots.

4. *kuṭúra* 'to set down a heavy load'. From *-túúd- 'put down (a load)'; cf. the extension *-túúd- (Manyika -twar-), 'probably due to a PB-X²⁴ item' (Guthrie, Vol. 4, p.126). H-toned root reconstruction.

5. *kuṭúnda* 'to learn (or study)'. Possibly from *-túnd- 'become full' (e.g. full of knowledge, wisdom). In Zulu and Xhosa *t > f / __ [ɸ, ʋ, and thus the initial f in the Shona form is understandable, provided that the semantic change is acceptable. Says Guthrie: "These entries may be due to a source-item that emerged in the north-west in the Bantu period" (Vol. 4, p.130), as the distribution he lists is limited. "There are three other C.S. [comparative series] with this meaning: C.S. 685²⁵ *-dúúd- [western] ...; C.S. 1296 *-mém- [eastern] ...; C.S. 1840 *-túnd- [western]... In view of the very restricted distribution of these three C.S., it seems probable that the PB-X item meaning 'to become full' is reflected in C.S. 2047 [the forms *-yʒgad-, *yʒgud-] but there remains the question its shape" (Vol. 4, p.177).

*-yʒgad may thus have developed as an extension with *-túnd-, being realized with full word status in certain languages, undergoing semantic changes. The word exists in Zulu.

Greenberg posits *-túnd- 'chastise, teach', which appears as a H root with a L-toned FV in Venda, Zulu, and Kongo, the first two of which are neighboring languages. Venda is just south of the Karanga area, and the Ndau dialect is known to be heavily influenced by Zulu (Doke 1931). Note that the reconstructions are H-toned.

6. *kuḍbha* 'to dip'. This appears to be an English borrowing, but interestingly enough Guthrie has posited a reconstruction *-dʒb- 'dip', the offspring of which are said to be found in zones A, B, and H, with no mention of zone S, the Shona area (where *-dʒb- would appear as *kudhuba, or something similar, in the infinitive). It is believed to be "arisen from the source item of C.S. 731 [-dʒb- 'fish', with more general distribution] by a mutation of meaning involving generalization from 'to dip a basket to catch (fish)' to 'to dip' (Vol. 3, p.196).

There is also a form *-dʒbá- 'water', not particularly found in the south-central areas; with the meaning 'pool' ('well') or 'deep water', and L tones on both syllables, the form appears as Manyika *dziwa*. Since PB *-j- following d usually results in d or dh (instead of r), and since the high vowel of English 'dip' may be interpreted in a similar manner as PB *-j- (though this may not be relevant), it is still reasonable to assume that *kuḍbha* is an English borrowing. Its similarity to a Bantu root might only aid in its being established as a Shona lexical item.

7. *kukúwa* 'to shout'. There are two alternatives, these being *-kúg- 'bark' and *-kúy- 'cry out', which may be from the same source item (cf. Guthrie, Vol. 3, p.309). Both are H-toned.

8. *kukúhwa motó* 'to light a fire'. No evidence was found for a PB root.

9. *kudóka* 'to set (sun)'. Only a remote possibility was uncovered, that of metathesis from *-gòdò- 'evening', though reflexes are not listed for zone S (in Guthrie), nor has metathesis been particularly noted to occur between PB and Shona.

10. *kunyárára* 'to be quiet'. This is somewhat difficult as the verb may have been morphologically complex in origin, perhaps as follows:

*ni - a - daad - a > nyara(a)ra
COP ? root FV

The Ganda reflex of the PB reconstruction *-dádá- 'lie down, sleep' appears to be -laal- 'become calm'. We have again a H-toned origin.

11. *kusímúdza* 'to lift'. Should be from **-tím-ud- or **-tímud-. I am unable to trace the etymology of this form, unless it finds its genesis in a form *-tʃm- 'dig' plus the reversive-active *-ud-, now a part of the stem in Shona (i.e. to lift (up) is to do the reverse of dig (down)).

12. *kusímúka* 'to stand up'. This form appears to contain a verb root (quite likely the same as in 11) plus an extension, and the expected source is *-tʃm(uk)-. There are two surely related items: *tʃtʃmuk- 'become startled' (> Yao -sisimuk-) and *tʃtʃmuk- 'wake up' (> Ganda -sisimuk-, < *-cʃcʃmuk-). We would need to account for (1) the loss of a syllable, (2) a semantic change (though not a difficult one), and (3) the appearance of a H-tone to retain these two shapes as sources. I might tend to agree with Guthrie, for now, that it is not "feasible to set up a valid C.S. [and consequently a valid source], since there are too many instances of multivalence. The most that can be said is that all these items might reflect as PB-B item of uncertain shape" (Vol. 4, p.114).

13. *kuṭónhóra* 'to be cold'. The latter half of the root is surely from *-pód-²⁶ 'become cold, cool down' (Manyika -por-, Xhosa and Zulu -phol-). There is also a meaning 'get well, become cured', a possible PB-X meaning mutation (Guthrie, Vol. 4, p.68), presumably from the notion of a fever's breaking, and the consequential 'become cold (cool)'. The Shambala reflex of *-pód- is -hólá-: it is quite expected for a voiceless plosive in a reconstruction to appear as h in Shona as well; and the aspirate ph of the Xhosa and Zulu form -phol- makes the alternation more lucid (cf. *kúkú 'fowl', Shona *huku*; *ntu 'man', Shona (mu)nhu). The *d > r in Shona is also well-attested--the liquid is an l in other languages (e.g. 'rain' *-búḍà-, Shambala *fúḷá* and Shona *mvura*).

The source of -tón- is more enigmatic: there is *-ton- meaning (1) 'hurt (a sore)', with an eastern distribution (Manyika -tonis-); (2) 'drip', with a distribution north, central, or eastern plus one extra zone; and (3) 'speckle'. The noun *-tóná- 'spot, speckle' (class 5/6) enjoys a Western distribution. If one can imagine the notion 'hurt' as applying to an illness such as fever, combined with the form *-pód- 'cool down', the full verb can be more easily seen as referring to the state of being 'cold' (or even of having a cold). The generalization to 'to be cold' more or less renders one morpheme *-tón-, useless. Again, the reconstructions (for both roots) are H-toned.

14. *kuṭúrfkíra* 'to translate, interpret'. The expected reconstructions might be **-tu-di-kid- or **-tud-ik-id- or **-tudik-id-, and so on, none of which could be found. The *-di- could be a copula; there is a form *-kíd- 'grind, rub', and also *-túd- 'pierce', as well as a causative *-ik-, and the applied suffix *-id-;

but these are all very difficult to tie together, and much more so to relate to the Shona verb (imagine **-tud-ik-id-, 'to cause to pierce' + applied suffix, or some such thing). I will say, at this point, rather that a suitable etymology is not yet available.

15. *kushámwarídzana* 'to be friendly with'. As already indicated above, this verb is derived from the noun *shámwarí* 'friend'. It is primarily H-toned.

16. *kujámba* 'to jump'. Borrowed from English, where the drop from H on the penultimate to L on the final syllable probably represents the descending pitch pattern of the primary stress on the English verb pronounced in isolation.

4. DISCUSSION AND CONCLUSIONS

One observation seems to stand out among all the rest in the preceding discussion, and that is that for the five forms we have been able to find (at least partial) etymologies for (numbers 4, 5, 7, 9, and 13), the PB root was H. This means it can probably be safely supposed that the irregular verbs were always H-toned roots, and their anomalousness is not somehow due to an original L tone. (One might expect, for example, a period of irregularity if a form were transforming its tones.) Oddly enough, this is not always the case with the regular verbs: *kusvíká* 'to arrive' reconstructs as *-plk- (with a H-toned FV in Zulu: *píká*; see Greenberg, p.207); *kwyéndá* 'to go' is descended from *-gènd-, and so on. There are, of course, a large number of verbs agreeing with the reconstructed PB tones, e.g. *kutúamá* 'to send', from *-tóm-; *kuzívá* 'to know', from *-zéb- 'know, be able'.²⁷ It is not reasonable, however, on the basis of five forms against a host of more uncertain ones, to make much of this similarity among the PB roots. But it is possible the H-toned origins represent just what forms are available for TS: a H-toned root (e.g. *-túúd- 'put down') acquires a FV which is L, and the new form is pronounced H-L until a TS rule enters the language (in this case). The rule may not affect all forms immediately; later, younger speakers may regularize according to the TS rule that is already in the grammar and operating for other H-toned verbs.

While some irregular verbs can be considered borrowed, and while one may want to speculate that all borrowed words are, at least initially, irregular (tonally or otherwise), it cannot be said that all the irregular verbs are borrowed from outside the

Bantu group. For approximately 30% of the forms we have fairly certain PB etymologies; for nearly 70% we still have no adequate explanation. The possibility exists, though, that many of the 30% represent borrowings into Shona from other Bantu languages; that is, a PB form may have dropped out of use in the group of dialects we now call "Shona", and was later reintroduced into the lexicon. As for the 70% uncertainties, borrowing from non-Bantu languages in the area has not been eliminated as a plausible source. A fruitful line of research would be to undertake extensive comparative study to uncover cognates of the 70% of the verbs whose origins are still mysterious. If no cognates were found (Guthrie's and Greenberg's lists were not however all encompassing) in Bantu languages, the probability of borrowing is greater, and non-Bantu languages in adjacent regions could then be investigated.

Evidence for the view that the 30% with PB roots may have been lost in Shona and then reintroduced at some later date is not at all definitive. One must look at the tonal shapes of the forms in neighboring Bantu areas. For example, *kufúnda* is irregular in Shona, but occurs regularly with the same tones in Venda, Zulu and Kongo, the first two of which are languages spoken in nearby regions. Again, more extensive research is needed before there can be more support for the notion of borrowing "intra-familiam", to coin a phrase; and evidence will probably never be conclusive.

This work represents a general summary of the tonal behavior of regular and irregular verbs based on the data obtained from one speaker of Shona. It is by no means complete. While the source of those verbs which exhibit regularity in tonal representations has not been proven beyond a reasonable doubt, three sources are suggested, the first of which has already been discussed to a certain extent: 1) borrowing; 2) derivation; 3) infrequency of usage.

Evidence for the first, as we have seen, comes from such forms as *kujámba*, which has been borrowed from English. That derivation from non-verbal origins, or compounding, is a possible source of irregularity is intimated by the form *kushámwarídzana* (now regular for at least one speaker) from the noun *shámwarí*. Nouns do not adhere to as severely restricted tone patterns as verbs, and thus

the pattern H-L-H is not unusual. The verb merely displays the tones of its nominal ancestor. Verbs such as kutónhóra and kunyárára are compounds of two or more "verb" roots (most likely), given that we allow the copula -ni- full word status in kunyárára. Thus, if such derivations are relatively recent, they may not have been reinterpreted yet as whole (simplex) lexical items.

Finally, it is possible that infrequency of usage results in non-regular tonal patterning. It has been mentioned that what many linguists consider the most frequently used person (the third) can command its own patterning (see note 11), sometimes resulting in leveling, perhaps. It follows that a less frequently used form might tend to resist leveling. Probably no one can say just what makes some words more amenable to daily use than others, but it certainly the case that frequency distributions for lexical items can be successfully calculated and cover a wide range. This diversity should be expected to have consequences. Granted, this paragraph is the most speculative of a series of highly speculative paragraphs.

These three possible sources are bound together by a common feature. The irregular verbs are irregular due to the fact that the rule of TS, so persistent in many areas of Shona grammar, does not apply.²⁸ Now TS is a language specific phenomenon: comparative data reveal, of course, that it is common in many Bantu languages for a H verb root to end with a L FV, or to exhibit L extensions, and so on. TS developed at some point after a group of dialects or languages (i.e. Shona) had separated itself from other Bantu dialects. The rule does not a) affect all forms (some morphological classes are immune to it), nor b) apply consistently to all dialects in the Shona group. For example, the Zezuru plural/formal imperative 'drink!' appears as inwáyí (cf. kunwá 'to drink'); the Manyika form is inwáyí. The Zezuru derived noun 'preacher, teacher' pronounced mufúndísi appears in Manyika as mufúndisi.²⁹ Many other examples can be found where these two dialects diverge in regard to the application (or extent of application) of TS. Similarly, within a single dialect, TS is variable, as we have seen in various places in this study.

It is possible, in addition, that there were at least two TS rules introduced into the Shona language: one which results in H

tones created by TS becoming eventually part of the lexical, or morphological, representation of the verb. This would be an older rule, presumably. The other TS rule would be one which to this day remains a phonological (tonological) process not yet lexicalized. Whatever the source of the rules, they would not apply consistently if either of them developed while a dialect split were occurring in Proto-Shona (or later): that is, some of the sub-groups, depending upon which time they broke off from the parent dialect, would be more affected by the rule than others which had perhaps splintered off at an earlier time. Similarly, words which came into use during this variable period, through borrowing or coinage, derivation, or just through infrequent and sporadic usage might be less affected by the rules than words which were more firmly established, and in more general usage in the speech community. The possibility also exists that a third (or nth) period of TS is operating now, which results in the difference between the two assistants used by Fivaz and me. One might then imagine a rather "stratified" grammar, like the cross-section of a mountain, relating the history of TS rules in Shona. A deepest lamination would show no such rule, a later layer may show it (for example, the lexicalized H tones which did not exist in PB, the deepest layer); then another stratum later of another TS rule, and so on.

No doubt there are several alternative explanations which will appear in the course of further research, research which encompasses a wider range of dialects and languages. Irregularity in rule application has always been a vital aspect of any language, and its causes have perplexed historical linguists for centuries. The possibilities set forth here are highly speculative, and are in the traditional spirit of utilizing irregular forms as an indication of a language's history, but differ perhaps from that spirit in also suggesting that irregularities may hold a clue to the new and innovative features of a language.

NOTES

¹The research for this paper was partially supported by a California Work-Study Grant. I would like to acknowledge the help of Larry M. Hyman of U.S.C., Jean-Marie Hombert of U.C.L.A., and Chineni Mwayera of U.S.C. (without whose patience and tireless re-

petition of words and phrases the work would not have been possible); and finally, the members of the Seminar in Comparative Bantu Tonology, 1975-76, U.S.C. and U.C.L.A. affiliates alike.

²In the following infinitive forms, for example, the tonomorphs H, HH, HHH occur with the high roots, and the tonomorphs L, LL, LLL with the low roots.

| | | | |
|-----------|-----------|----------|------------|
| kudyá | 'to eat' | kubva | 'to leave' |
| kuténgá | 'to buy' | kubvunza | 'to ask' |
| kuténgésá | 'to sell' | kutarisa | 'to look' |

"Which of the three H tonomorphs occurs is of course dependent upon the number of syllables in the verb stem, and the same applies to L tonomorphs. There are then only two tonal morphemes involved in this case: /H-HH-HHH/ and /L-LL-LLL/" (Fivaz 1970:31).

³This form -no- represents the first divergence from Fivaz, whose assistant gave, e.g. ányódyá 'he eats' for the H-toned verb kudyá 'to eat', while Chineni gives ányódyá. His assistant gave the form ndínóbvá 'I leave' for the L-toned verb kubva 'to leave', where Chineni gives ndínóbva. Fivaz' assistant possesses a rule which dissimilates -no- to the tone of the root; then the H tone spreads from -no- onto the root, or so Fivaz claims. It would seem that Chineni's grammar is less complex for this tense than is Mr. Hodza's. As Fivaz himself says: "There is some dialectal variation in the tone of /-no-/" (p.133, fn. 1).

⁴In all infinitive forms of the verbs, and in those dialects where constructions such as the C verb complex are treated (including orthographically, e.g. Stevick 1965:88) as two words, verb -rf- plus infinitive, the prefix ku- is L-toned.

⁵I borrow the term "displacement", as a synonym for what Fivaz calls "tone passing", from van Spaandonck (1971). I use it to refer both to simple displacement of a tone to an adjacent (or even non-adjacent) syllable, as well as the displacement caused by segmental fusions.

⁶Larry Hyman (personal communication) suggests a constraint *HL and *LH (falling and rising tones, respectively), which contours probably didn't exist in Proto-Bantu. Different Bantu languages resolved the evolution of tone contours due to the loss of segments, loss of syllabicity, and so on in different ways. Some languages developed rising and falling contours, some developed rules of the type LH → H. In this way the constraint against tone contours may result in their simplification, when displacement and other phenomena cause, e.g. FV's, to carry LH and HL contours. Hyman proposes the following to account for the facts of HHH verbs:

ù + â + HHH > ù + á + 'HHH > ù + á + LLL > wǎ + LLL > wà + HLL

First the posited L of the *HL of *â causes downstepping of a following sequence of H's; then all 'H's (downstepped H's) become L, and then the displacement occurs. Highly hypothetically, he suggests that the L of â may be from the kù- prefix historically.

⁷HL and LH contours tend to undergo adaptation and simplification as a natural process (Hyman and Schuh 1974); sequences such as LHLH tend also to display downdrift in some cases, especially where sonorant consonants intervene (Hombert 1974:181).

⁸van Spaandonck (1971), however, does not use Shona in illustrations of "déplacement tonal", proximal or distal.

⁹"...nous devons tenir compte de la possibilité d'un MT [morphotoneme] représenté plus loin que sur la syllabe qui suit immédiatement" (van Spaandonck 1971:157).

¹⁰Larry Hyman (personal communication) suggests that for L verbs we might begin with a H tone on the FV. The derivation for, e.g. 'they stayed' would be:

vǎ + á + kà + gǎr + á → vǎkagará → vǎkagára → vǎkágára

That is, the tone of the FV could be different for each tense (with first a leftward displacement and then a TS rule applying).

¹¹The fact that verbs inflected for the third person may be the more widely used group is a possible explanation for TS applying to these forms and not to first and second person forms for the P₂ and F tenses. Insofar as spreading is a recent innovation, and more apparent in the younger speaker I worked with than in the assistants used for earlier works on Shona, it may thus apply to the more frequently used forms and reflect a "drift" of some sort (see conclusion). The early emergence of the third person has been noted in child language, and this supports somewhat the opinion that it is used more frequently than the other persons. See, for one of many examples, p.265 of Velta Rūķe-Draviņa's "On the Emergence of Inflection in Child Language: A Contribution Based on Latvian Speech Data".

¹²bh and dh represent I.P.A. b and d respectively. This is a relatively new development in Shona orthography, which distinguishes explosive, tone-depressing b and d (bh and dh) from implosive b and d.

¹³Fivaz noted that TS doesn't extend beyond the third syllable and thus nos. 14 and 15 in Chineni's dialect are in fact regular. I have found this same limit on the extent of TS in several forms.

¹⁴Both of the vowels of -jám̄ba are realized with somewhat contoured tones (see figure 1, below), making it very difficult to determine whether the tones are H or L. To my ear, the vowels in kufúnda and kujám̄ba sounded almost "mid-toned", especially the final vowels. Yet kujám̄ba was always much more difficult to hear. Work at the U.C.L.A. Phonetics Laboratory with the help of Jean-Marie Hombert revealed the following facts in a comparison of L-toned kugara 'to sit, stay, live', H-toned kuóná 'to see', and irregular verbs kufúnda and kujám̄ba: 1) The frequency range of the FV in the H-toned example in the negative past construction hand'kúóná 'I didn't see' is 172 to 182 cps. (Tones of H or L FV's tend to be lower than the corresponding tones on, for example, root vowels.) 2) The L-toned FV of the verb kugara in the negative

past construction *handínákugara* is represented by a frequency range of 147-156 cps.--the latter figure representing the frequency nearest the root, the former nearest the end of the utterance. 3) The L-toned root vowel ranges from 156 (near the final -r) to 164 (near the -g, a depressor consonant) cps. The real effects of depressor consonants are seen when they precede H tones (see below). 4) The root vowel of the irregular *kujám̄ba*, preceded by a depressor consonant, ranges from 147 to 161 cps.; the FV 139 to 143 cps. 5) The root vowel of the irregular *kufúnda* ranges from 185 to 196 cps. (clearly H-toned); the FV 147-159 cps.

The effects of a depressor consonant such as -j- are clearly seen in the differences between the H tone of *kufúnda* and the H tone of *kujám̄ba*. The latter is in the usual L tone range. How can it be called a H tone? There are two reasons: 1) The contour is revealing. In the early part of the vowel, the frequency drops from 159 to 147 cps., and then rises to 161 cps. This is characteristic of H tones preceded by depressor consonants: the contour becomes LH. 2) The root vowel of *kujám̄ba* is H relative to the FV of the same word, which is well below the frequency range for "normal" L tones (below 170 cps.; this FV never reaches 150). When depressed H tones occur in the same construction with L tones, the L tones which follow are realized as lower than usual, presumably to preserve the H-L contrast in the face of the damaging effects of depressor consonants.

I have included graphic representations of the above facts in figures 1 and 2 below.

¹⁵This H does not reach the level of either the preceding morpheme -á- or the following morpheme -jám̄b-, which (see note 14) is depressed. The assistant did not accept my pronunciation of *anojamba* as HLHL.

¹⁶This final L always sounds slightly raised to me, as do many of the FV's of irregular verbs. It does fall, however, and phonetic analysis (see note 14) does not support my impression of the tones as raised.

¹⁷Uncertain transcription. Four people, upon listening to the same form, judged it to be four different patterns: HHHH, HLHL, HLHH, and HHHL. Since the author of this paper had the last opinion, this is the one I am considering correct. It is supported by the pattern of *ákáfúnda*, though it has been seen that what one irregular verb does is not very strong evidence for what another one will do.

¹⁸This is also a questionable transcription. The tone of the root in this form was higher than that of the following vowel, but lower than that of the preceding future morpheme -chá-.

¹⁹Originally in Shona, that is. Obviously, a form like *kujám̄ba* (borrowed from English) did not originally have tone. It is interesting to speculate why it was given H tone. One can imagine that polysyllabic words might enter the Shona lexicon with a H tone where the word originally had stress. The word 'baptize', now pronounced *kubábátídzá*, may have been, at the time of borrowing,

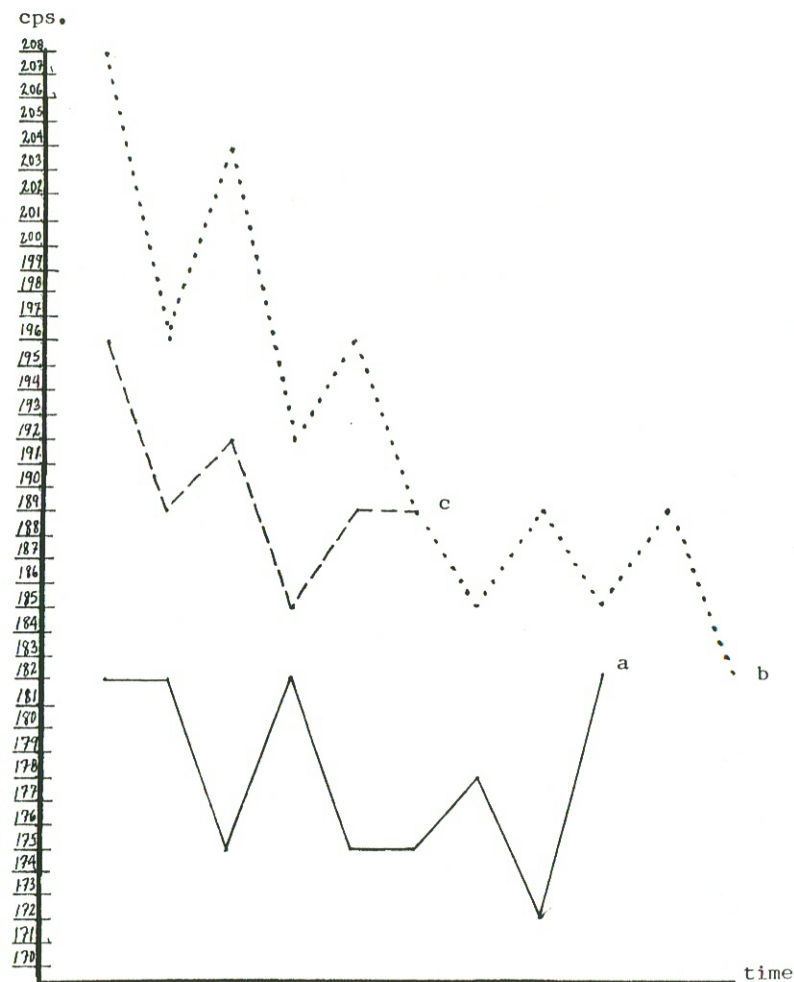


FIGURE 2

Range of frequencies in pronunciation of
 a) final vowel of *handínákuóná* (" I didn't see ") (H) ———
 b) final vowel of *kusvétúká* (" to jump ") (H)
 c) root vowel of *kufúnda* (H) - - - -

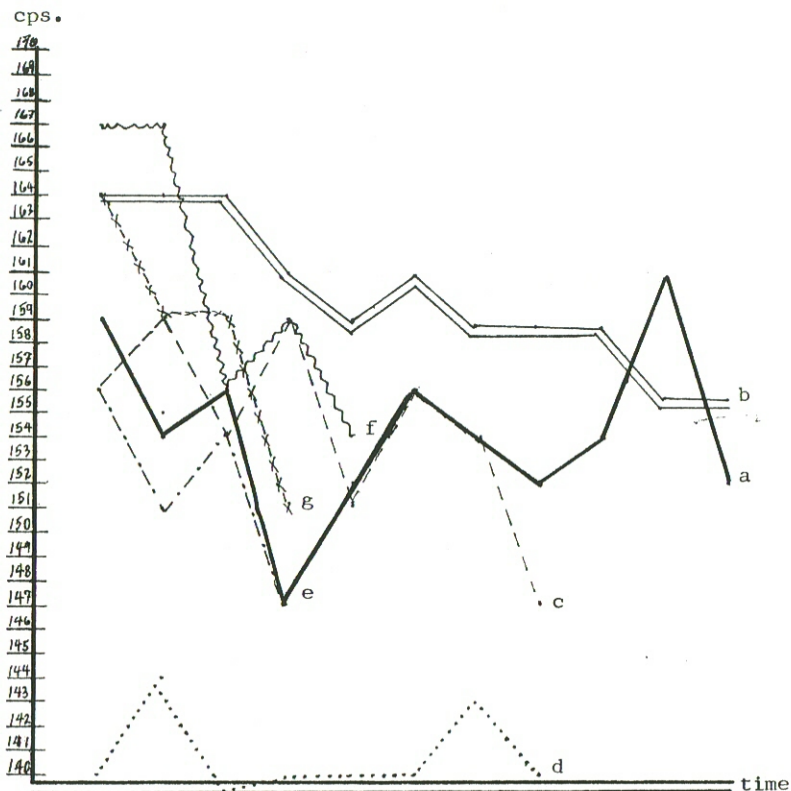


FIGURE 1

- Range of frequencies in pronunciation of
- a) root vowel in kujámba (depressed H) —
 - b) root vowel in kugara (L) ==
 - c) FV in ndinófúnda ("I learn") (L) ----
 - d) FV in handínákujámba ("I didn't jump") (L)
 - e) FV in kugara (L) - - - -
 - f) FV in kutarisá ("to look") (L) ~~~~
 - g) FV in irregular verb kusímúka ("to stand up") (L) *-*-*

*kubábatidza. TS would have since applied to the form, as in the case of Mr. Hodza's kudíbhá becoming Chineni's kudíbhá. Monosyllabic words such as "dip", "jump" and "pump" (kupómbá), however, do not exhibit (in English) a syllable which is stressed in comparison to other syllables. It may be the "unmarked" case that words are borrowed with H tone--I've encountered no L borrowed words (among the verbs--borrowed nouns exhibit a wide range of tonal patterns). Larry Hyman (personal communication) contends that the vowels in the English words sound falling, and are then simplified, presumably, to H tones through natural processes already discussed above; more on this idea appears in note 21.

The effects of strong penultimate stress in Shona must also be considered. Note that the addition of Shona morphological markers like the prefix ku- and the FV -a put the borrowed monosyllabic word in penultimate position.

²⁰This is a tentative statement. Like many tones adjacent to the bilabial nasal m, the tone actually emerges as falling. To my ear, however, the contour starts at a lower level than the previous H tone. It has, in fact, always been my experience in Shona that a falling tone after a bilabial nasal is L.

²¹Larry Hyman (personal communication) suggests trying the contour HL (rather than H) to derive the irregular verbs. This would, for example, explain the L-toned final vowel as receiving its tone through displacement, I presume. The one reason that I am hesitant to attempt this kind of analysis is the lack of historical evidence to account for a L tone to create a HL contour, but the suggestion is of course quite plausible, and ought to be investigated in the future.

²²Regularity is of course efficient for the speaker of a language, in terms of storage in the brain, but may not be particularly efficient for the hearer of the language who would like forms to be as non-homophonous and diverse (to the extent that regularity is precluded) as possible, thus to aid in facility (non-ambiguity) of perception. It is interesting that I have not encountered any minimal pairs of H vs. L or regular vs. irregular verbs which might tend to block any drift toward absolute regularization (and no doubt the resultant extinction of the language).

²³To distinguish starred forms from proto-forms, a double asterisk (***) will indicate the former non-occurring forms; a single asterisk (*) marks PB reconstructions. y and j represent tightly closed varieties (à la Meeussen). These contrast with u and i and have different historical consequences.

²⁴"...The really significant thing is that exactly the same sound-shifts operate throughout all the sections of the common language, which must mean that certain variations were already present in Proto-Bantu when sound-shifting began to occur. The simplest hypothesis to account for the observed state of affairs is one that assigns the source items of the C.S. [comparative series] in the regional sections to separate dialects within Proto-Bantu. Thus it may be inferred that the western section of Common Bantu contains

reflexes of a distinct ancestor language, which may be referred to as Proto-Bantu A (abbr. PB-A), while the eastern section can be regarded as providing evidence for the probable existence of a further ancestor language Proto-Bantu B (abbr. PB-B). It then follows that the ultimate ancestor of the whole family, distinguish as Proto-Bantu X (abbr. PB-X), has to be treated as the source both of the items whose reflexes occur in the general section, and of the two Proto-Bantu dialects A and B...." (Guthrie 1970, Vol. 1, p.84).

²⁵The numerical indices are Guthrie's.

²⁶Greenberg reconstructs the vowel as ɔ, Guthrie as o.

²⁷Interestingly, but probably not significantly, I couldn't find examples of L roots in Shona which were H in reconstructions.

²⁸At the stage during which the verbs are irregular. That regularization is gradually taking place has already been seen.

²⁹Note that this is in the same morphological set as the irregular verb kufúnda 'to study, learn, *teach'.

REFERENCES

- Byarushengo, Ernest, Larry M. Hyman, and Sarah Tenenbaum. 1976. Tone, accent, and assertion in Haya (in this volume).
- Doke, C. M. and B. W. Vilakazi. 1953. Zulu-English Dictionary. Johannesburg: Witwatersrand University Press.
- Doke, C. M., D. McK. Malcolm, and J. M. A. Sikakona. 1958. English and Zulu Dictionary. Johannesburg: Witwatersrand University Press.
- Fivaz, Derek. 1970. Shona Morphophonemics and Morphosyntax. Unpublished Ph.D. Dissertation, Department of African Languages, University of Witwatersrand, Johannesburg.
- Greenberg, Joseph. 1948. The tonal system of Proto-Bantu. *Word* 4.196-208.
- Guthrie, Malcolm. 1970. *Comparative Bantu: An Introduction to the Comparative Linguistics and Prehistory of the Bantu Languages*. Hants, England: Gregg International Publishers, Ltd.
- Hombert, Jean-Marie. 1974. Universals of downdrift: their phonetic basis and significance for a theory of tone. *Studies in African Linguistics*, Supplement 5, 169-183.
- Hyman, Larry M. and Russell G. Schuh. 1974. Universals of tone rules: evidence from West Africa. *Linguistic Inquiry* 5.81-115.
- Johnston, Sir Harry. 1922. *A Comparative Study of the Bantu and Semi-Bantu Languages*. Oxford: Clarendon Press.
- Kimenyi, Alexandre. 1976. Tone Anticipation in Kinyarwanda (in this volume).
- Kolbe, Rev. F. W. 1888. *A Language Study Based on Bantu or an Inquiry into the Laws of Root Formation, etc.* London: Trübner & Co.

- Meeussen, A. E. 1967. Bantu grammatical reconstructions. *Annales, Musée Royal de l'Afrique Centrale, Série in-8°, Sciences Humaines* n.61, 79-122. Tervuren.
- Meinhof, Carl. 1899. *Grundriss einer Lautlehre der Bantusprachen*. Leipzig: Deutschen Morgenländischen Gesellschaft.
- Meinhof, Carl. 1948. *Grundzüge einer Vergleichenden Grammatik der Bantusprachen*. Hamburg: Verlag von Eckhardt und Messtorff.
- Rūķe-Draviņa, Velta. 1959. On the emergence of inflection in child language: a contribution based on Latvian speech data. In C. Ferguson and D. Slobin (eds.), *Studies in Child Language Development*, 252-267. 1973. New York: Holt, Rinehart and Winston, Inc.
- Stevick, Earl W. (ed.). 1965. *Shona Basic Course*. Washington D.C.: Foreign Service Institute, Department of State.
- van Spaandonck, Marcel. 1971. *L'Analyse Morphotonologique dans les Langues Bantoues*. Paris: Société d'Etudes Linguistiques et Anthropologiques de France (trans. Luc Bouquiaux).

BIBLIOGRAPHY OF BANTU TONE STUDIES

COMPILED BY

TINA L. BENNETT

AND

LARRY M. HYMAN

DEPARTMENT OF LINGUISTICS
UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

Published by the Department of Linguistics
University of Southern California
Los Angeles, California 90007

JOURNAL ABBREVIATIONS:

- Afr. Ling. : Africana Linguistica (Tervuren)
ALR : African Language Review
ALS : African Language Studies
Ann. Ling. : Annales du Musée Royal de l'Afrique Centrale
(Tervuren)
AS : African Studies
AuÜ : Afrika und Übersee
BS : Bantu Studies
BSOAS : Bulletin of the School of Oriental and Africa
Studies (London)
IJAL : International Journal of American Linguistics
KO : Kongo-Overzee
MIO : Mitteilungen des Instituts für Orientforschung
MSOS : Mitteilungen des Seminars für Orientalische
Sprachen
SAL : Studies in African Linguistics
SCOPIIL : Southern California Occasional Papers in Linguistics
SELAF : Société d'Etudes Linguistiques et Anthropologiques
de France
SL : Studies in Linguistics
ZPhon : Zeitschrift für Phonetik, Sprachwissenschaft, und
Kommunikationsforschung

1. ARMSTRONG, L. E. 1940. The Phonetic and Tonal Structure of Kikuyu. London: Humphrey Milford.
2. ARVANITES, L. 1976. Kimbundu nominals: tone patterns in two contexts. In Hyman (1976c), 131-140.
3. Asongwed, T. and L. M. Hyman. 1976. Morphotology of the Ngamambo Noun. In Hyman (1976c), 23-56.
4. ATKINS, G. 1953. The tonal structure of Portuguese loan words in Kimbundu. *Boletim de Filologia* 14.340-342.
5. AUSTEN, C. L. 1974. Anatomy of the tonal system of a Bantu language. Papers from the Fifth Conference on African Linguistics, SAL Supplement 5.21-33.
6. BATIBO, H. 1976. A new approach to Sukuma tone. In Hyman (1976c), 241-257.
7. BEACH, D. M. 1924. The science of tonetics and its application to Bantu languages. BS 2.75-106.
8. BENNETT, P. 1974. Towards an adequate account of Kikuyu tone. Ms.
9. BENNETT, T. L. 1976. Tonally irregular verbs in Shona. In Hyman (1976c), 287-319.
10. BEUCHAT, P.-D. 1962. Additional notes on the tonomorphology of the Tsonga noun. AS 21.105-122.
11. BEUCHAT, P.-D. 1963/1964. A restatement of Zulu verb conjugation. Part I: AS 22.137-69. Part II: AS 23.35-49. Part III: AS 23.67-87.
12. BOT BA NJOCK, H. M. 1964. Les tons en Basa. JAL 3.252-259.
13. BURSSSENS, A. 1938. Tonologisch Onderzoek van het Luba, het Hoofdtelwoord. KO 4.25-38.
14. BURSSSENS, A. 1939a. Le Luba, langue à intonation et la tambour-signal. Proc. of the 3rd Int'l. Congr. of Phon. Sci., 504-507. Ghent.
15. BURSSSENS, A. 1939b. Tonologische Schets van het Tshiluba (Kasayi). Antwerp: De Sikkel.
16. BURSSSENS, A. 1939c. Le tshiluba, langue à intonation. Africa 12.267-285.
17. BURSSSENS, A. 1957. Notes on African tone languages. In L. Kaiser (ed.), Manual of Phonetics, 330-335. Amsterdam: North Holland Publishing Co.
18. BYARUSHENGO, E. R., L. M. HYMAN, and S. TENENBAUM. 1976. Tone, accent, and assertion in Haya. In Hyman (1976c), 183-205.
19. CARRINGTON, J. F. 1940. The Tonetics of Lokele. Yakasu.
20. CARRINGTON, J. F. 1943. The tonal structure of Kele (Lokele). AS 2.193-209.
21. CARTER, H. 1962. Notes on the tonal system of Northern Rhodesian Plateau Tonga. Colonial Research Study #35. London.
22. CARTER, H. 1971/1972. Morphotology of Zambian Tonga. Part I: ALS 12.1-30. Part II: ALS 13.52-97.
23. CARTER, H. 1973a. Syntax and tone in Kongo. SOAS, London.
24. CARTER, H. 1973b. Tonal data in Comparative Bantu. ALS 14.36-52.
25. CARTER, H. 1974. Negative structures in the syntactic tone-phrasing system of Kongo. BSOAS 37.29-40.

26. CHAGAS, J. E. 1976. The tonal structure of Ólusamia. In Hyman (1976c), 217-240.
27. COLE, D. 1969. Tonal morphology in Tswana. Ethnological and Linguistic Studies in Honor of N. J. van Warmelo, 39-45. Dept. of Bantu Admin. and Development, South Africa.
28. COLE-BEUCHAT, P.-D. 1959. Tonomorphology of the Tsonga noun. AS 18.113-145.
29. COOK, E.-D. 1972. On the relativity of tones. *Lingua* 29.30-37.
30. COPE, A. T. 1959. Zulu tonology. Auŭ 43.190-200.
31. COPE, A. T. 1966. Zulu Phonology, Tonology, and Tonal Grammar. Ph.D. Dissertation, University of Natal, Durban.
32. COPE, A. T. 1970. Zulu tonal morphology. JAL 9.11-52.
33. COUPEZ, A. and A. E. MEEUSSEN. 1961. Notation pratique de la quantité vocalique et de la tonalité en rundi et rwanda. *Orbis* 10.428-433.
34. DAHL, E. 1904. Die Töne und Akzente im Kinyamwezi. MSOS 7.
35. DE BLOIS, K. F. 1975. Bukusu Generative Phonology and Aspects of Bantu Structure. Ann. Ling., Tervuren.
36. DE BOECK, L. B. 1950a. De tonologie der naamwoorden te Ebuku. KO 16.281-291.
37. DE BOECK, L. B. 1950b. De tonologie der naamwoorden van Iniele en Bokonzi. KO 16.112-124.
38. DE BOECK, L. B. 1950c. De tonologie der naamwoorden te Maleke-Moleke en Moloba. KO 16.212-223.
39. DE BOECK, L. B. 1951. La tonologie des parlans bantous du nord-ouest du Congo Belge. Bulletin des Séances de l'Institut Royal Belge 22.900-919.
40. DE ROP, A. 1953. Het toonsysteem van het Lomongo en het Oerbantoe. KO 19.413-419.
41. DE WITTE, P. 1953. Over de tonologie van het Kikongo. KO 19.306-316.
42. DUGAST, I. 1971. Grammaire du Tunen. Paris: Klincksieck.
43. DUNSTAN, M. E. 1966a. Tone and Concord Systems in Ngwe Nominals. Ph.D. Dissertation, University of London.
44. DUNSTAN, M. E. 1966b. Tone on disyllabic nouns in Ngwe. JWAL 3.33-38.
45. EDMONDSON, T. and J. T. BENDOR-SAMUEL. 1966. Tone pattern of Etung. JAL 5.1-6.
46. ELIMELECH, B. 1976. Noun tonology in Kombe. In Hyman (1976c), 113-130.
47. ELLINGTON, J. 1970-71. Tone and segmental sound change in a Bantu language. ALR 9.148-158.
48. ENDEMANN, K. 1901. Beiträge zu dem Capitel von den Tönen in den sogenannten Bantusprachen. MSOS 6.37-41.
49. FIVAZ, D. 1967. Outline of Shona tonal grammar. Ms.
50. FIVAZ, D. 1970. Shona Morphophonemics and Morphosyntax. Ph.D. Dissertation, Witwatersrand University, Johannesburg.
51. FORD, K. C. 1973. Prolegomena to the analysis of Kikuyu tones. Ms.
52. FORD, K. C. 1974. Tone and intonation in Kikuyu. Report of the Univer-

- sity of Nairobi research project. Ms.
53. FORD, K. C. 1975. The tones of nouns in Kikuyu. SAL 6.49-64.
 54. FORD, K. C. 1975. Tone in Kikamba. Ms., University of Nairobi.
 55. GLEASON, H. A., Jr. 1961. Rev. of Richardson (1959). Language 37.300ff.
 56. GREENBERG, J. H. 1948. The tonal system of Proto-Bantu. Word 4.196-201.
 57. GUARISMA, G. 1971. Problèmes de tons en Bafia. In Notes Linguistiques: Tons, Catégories Grammaticales et Syntagmatique, 128-131. Paris: SELAF.
 58. GUARISMA, G. 1973. Le Nom en Bafia. Paris: SELAF.
 59. GUTHRIE, M. 1940-42. Tone ranges in a two-tone language (Lingala). BSOAS 10.469-478.
 60. HARRIES, L. 1952. Some tonal principles of the Kikuyu language. Word 8.140-144.
 61. HENY, F. 1971. Explanatory tone assignment rules in Bantu. In C-W. Kim and H. Stahlke (ed.), Papers in African Linguistics, 175-199. Edmonton, Alberta: Linguistic Research, Inc.
 62. HENY, F. 1974. Ganda tone as pitch-accent. Paper presented at Colloquium on Suprasegmental Phonology, Leiden University. Ms.
 63. HENY, F. n.d. Tone and the verbal complex in Zezuru. Ms.
 64. HOMBERT, J-M. 1974. Universals of downdrift: their phonetic basis and significance for a theory of tone. SAL Supplement 5.169-183.
 65. HOMBERT, J-M. 1976. Noun classes and tone in Ngié. In Hyman (1976c), 1-21.
 66. HULSTAERT, G. 1934. Les tons en Lonkundo. Anthropos 29.57-97, 399-419.
 67. HULSTAERT, G. 1935. Over de tonen in het Lonkundo. KO 1.258ff.
 68. HULSTAERT, G. 1941. Tonetiek van het Lomongo en Tshiluba. Aequatoria 4.56-58.
 69. HULSTAERT, G. 1950. Tonologie van het Lomongo. KO 16.139-147.
 70. HULSTAERT, G. 1961a. Grammaire du Lomongo. Première Partie: Phonologie. Ann. Ling., Tervuren.
 71. HULSTAERT, G. 1961b. La persistance des tons en lomongo. Aequatoria 24.102-105.
 72. HYMAN, L. M. 1972. A Phonological Study of Fe?fe?-Bamileke. SAL Supplement 4.
 73. HYMAN, L. M. 1973. The role of consonant types in natural tonal assimilations. In L. M. Hyman (ed.), Consonant Types and Tone, 151-179. SCOPIL 1.
 74. HYMAN, L. M. 1976a. D'où vient le ton haut du fe?fe?-bamileke? In L. M. Hyman, L. C. Jacobson, and R. G. Schuh (eds.), Papers in African Linguistics in Honor of Wm. E. Welmers, 123-134. SAL Supplement 6.
 75. HYMAN, L. M. 1976b. A reanalysis of tonal downstep. Paper presented at Winter Linguistic Society of America Meeting, Philadelphia, December 28-30.
 76. HYMAN, L. M. (ed.). 1976c. Studies in Bantu Tonology. SCOPIL 3. Los Angeles: University of Southern California.
 77. HYMAN, L. M. and R. G. SCHUH. 1974. Universals of tone rules: evidence from West Africa. Linguistic Inquiry 5.81-115.

78. HYMAN, L. M. and M. TADADJEU. 1976. Floating tones in Mbam-Nkam. In Hyman (1976c), 57-111.
79. JACOBS, J. 1957. Long consonants and their tonal function in Tetela. KO 23.200-212.
80. JACOBS, J. 1962. De belangrijkste elementen van het Tetela-toonsysteem. Afr. Ling. 1.32ff. Tervuren.
81. JEFFREYS, M. D. W. 1945. Some historical notes on African tone languages. AS 4.135-145.
82. JOHNSON, L. 1976. Devoicing, tone, and stress in Runyankore. In Hyman (1976c), 207-216.
83. JOHNSTON, T. F. 1973. Speech-tone and other forces in Tsonga music. SAL 4.49-70.
84. JONES, D. 1927. Words distinguished by tone in Sechuana. Festschrift Meinhof, 88-98. Hamburg.
85. JONES, D. 1928. The tones of Sechuana nouns. Memoir 6, International Institute of African Languages and Cultures.
86. KÄHLER-MEYER, E. 1962. Studien zur tonalen Struktur der Bantusprachen. Part I, Shambala: AuÜ 46.1-42. Part II, Chasu: AuÜ 46.250-295.
87. KÄHLER-MEYER, E. 1963a. Töne und Akzente in der Formenlehre des Chasu (Tanzania). AuÜ 47.89-133.
88. KÄHLER-MEYER, E. 1963b. Bantu-Tonsprachen und -Nichttonsprachen in Tanganyika. ZPhon 16.101-112.
89. KÄHLER-MEYER, E. 1966-67. Tonal behaviour in the word-structure of African class languages. AuÜ 50.279-290.
90. KÄHLER-MEYER, E. 1967-68. The tones in Urbantu. AuÜ 51.81-90.
91. KÄHLER-MEYER, E. 1969. Gibt es sprachhistorische Beziehungen der Töne im Kinga (Tanzania)? Ethnological and Linguistic Studies in Honour of N. J. van Warmelo, 1-12. Pretoria: Government Printer.
92. KÄHLER-MEYER, E. 1971. Niger-Congo, Eastern Bantu. In T. Sebeok (ed.), Current Trends in Linguistics 7.307-356. Linguistics in Sub-Saharan Africa.
93. KIMENYI, A. 1976. Tone anticipation in Kinyarwanda. In Hyman (1976c), 167-181.
94. KNAPPERT, J. 1961. Derivation and tone deflection in Cindau and some other Bantu languages. AuÜ 45.169-189.
95. KNAPPERT, J. 1962. The tonology of Zulu verbs of three syllables. Afr. Ling. 1.43-56. Tervuren.
96. KNAPPERT, J. 1968. On tonemes as qualities of vowels. Linguistics 46.5-10.
97. KÖHLER, O. 1956. Das Tonsystem des Verbum im Südsotho. MIO 4.435-475.
98. KÖHLER, O. 1958. Tongestalt und Tonmuster in der Infinitiv des Verbum im Herero. AuÜ 42.97-110, 159-172.
99. KUNENE, D. 1972. A preliminary study of downstepping in Southern Sotho. AS 31.1-24.
100. LAMAN, K. E. 1922. The Musical Accent or Intonation in the Kongo Language. Stockholm.

101. LAMAN, K. E. 1927. The musical accent of the Teke language. *Festschrift Meinhof*, 118ff. Hamburg.
102. LANHAM, L. W. 1958. The tonemes of Xhosa. *AS* 17.65-81.
103. LANHAM, L. W. 1963. The tonemes of Xhosa: a restatement. *SL* 17.35-58.
104. LETELE, G. L. 1955. *The Role of Tone in the Southern Sotho Language*. London.
105. LOUW, J. A. 1968. The Intonation of the Sentence and its Constituent Parts in Xhosa and Tsonga. Pretoria.
106. LOUW, J. A. 1969. The tone sequences of the potential form in Zulu and Xhosa. *Ethnological and Linguistic Studies in Honour of N. J. van Warmelo*, 122-132. Pretoria: Government Printer.
107. LOUW, J. A. 1971. The tonal paradigm of the verb in Xhosa. In Six, Veronika et al (eds.), *Afrikanische Sprachen und Kulturen--ein Querschnitt*, 102-113. Hamburg: Deutsches Institut für Afrika-Forschung.
108. LOVINS, J. 1971a. Melodic conspiracies in Lomongo tonology. *CLS* 7.469-478.
109. LOVINS, J. 1971b. The tonology of Lomongo reduplication. *SAL* 2.257-270.
110. McCAWLEY, J. D. 1970. Some tonal systems that come close to being pitch-accent but don't quite make it. *CLS* 6.526-532.
111. McCAWLEY, J. D. 1973a. Global rules and Bangubangu tone. In M. Kenstowicz and C. W. Kisseberth (eds.), *Issues in Phonological Theory*, 160-168. The Hague: Mouton.
112. McCAWLEY, J. D. 1973b. Some Tonga tone rules. In S. R. Anderson and P. Kiparsky (eds.), *A Festschrift for Morris Halle*, 140-152. New York: Holt, Rinehart, & Winston.
113. MADDIESON, I. 1976. Tone reversal in Ciluba--a new theory. In Hyman (1976c), 141-165.
114. MANN, W. H. 1969. Tone-marking in an African language, with application to Bemba. *ALR* 8.98-107.
115. MATEENE, K. C. 1967. Particularité tonale du verbe en nyanga. *AS* 26. 107-112.
116. MATHIVA, M. E. R. 1968. The toneme patterns of the Venda noun. *Journal of Social Research* 16.78-82.
117. MEEUSSEN, A. E. 1954. The tone of prefixes in Common Bantu. *Africa* 24.48-52.
118. MEEUSSEN, A. E. 1955. Tonunterschiede als Reflexe von Quantitätsunterschieden im Shambala. In J. Lukas (ed.), *Afrikanistische Studien*, 154-156. Berlin: Akademie Verlag.
119. MEEUSSEN, A. E. 1958. Morfotonologie van de vervoeging in het Suthu. *Zaire* 12.383-392.
120. MEEUSSEN, A. E. 1960. Le ton de l'infixe en bantou. *Aequatoria* 23.130-135.
121. MEEUSSEN, A. E. 1961. Le ton des extensions en bantou. *Orbis* 10.424-427.
122. MEEUSSEN, A. E. 1962. Die tonen van subjunctief en imperatief in het Bantoe. *Afr. Ling.* 1.57-74. Tervuren.
123. MEEUSSEN, A. E. 1963. Morphotonology of the Tonga verb. *JAL* 2.72-92.

124. MEEUSSEN, A. E. 1965. A preliminary tonal analysis of Ganda verb forms. *JAL* 4.108-113.
125. MEEUSSEN, A. E. 1966. Syntactic tones of nouns in Ganda, a preliminary synthesis. In Y. Lebrun (ed.), *Linguistic Research in Belgium*, 77-86.
126. MEEUSSEN, A. E. 1971a. Zur Morphotologie des Yaka. In Six, Veronika et al (eds.), *Afrikanische Sprachen und Kulturen--ein Querschnitt*, 125-131. Hamburg: Deutsches Institut für Afrikaforschung.
127. MEEUSSEN, A. E. 1971b. Notes on conjugation and tone in Yao. *Afr. Ling.* 5.197-204. Tervuren.
128. MEEUSSEN, A. E. 1974a. A note on global rules in Bangubangu tone. *SAL* 5.95-99.
129. MEEUSSEN, A. E. 1974b. Notes on tone in Ganda. *BSOAS* 37.148-156.
130. MEEUSSEN, A. E. and D. NEMBE. 1964. Principes de tonologie yombe (Congo Occidental). *JAL* 3.135-161.
131. MEINHOF, C. 1933. Musikalischer Ton und Stärkeakzent. *Indogermanische Forschungen* 51.181-195.
132. MELZIAN, H. J. 1931. Die Frage der Mitteltöne im Duala. *MSOS* 33.159-212.
133. NDOLO, P. 1972. Essai sur la Tonalité et la Flexion Verbale du Gimbala. Tervuren: Archives d'Anthropologie 19.
134. NEKES, H. 1911a. Die Bedeutung des musikalischen Tones in den Bantu-sprachen. *Anthropos* 6.546-574.
135. NEKES, H. 1911b. Die musikalische Töne in der Dualasprache. *Anthropos* 6.911-919.
136. NEKES, H. 1928. Zur Tonologie in den Bantu-Sprachen. In *Festschrift P. W. Schmidt*, 80-92. Vienna.
137. NISSIM, G. 1973. Les tons en Njo. Ms., University of Yaounde.
138. NKONGOLA, M. and I. MADDIESON. 1973. Luba tonology and the development of downstep. Paper presented at 4th Annual Conf. on Afr. Ling., New York.
139. NURSE, D. and G. PHILIPPSON. 1975. Tones in Old Moshi (Chaga). Ms., Dar es Salaam.
140. PAULIAN, C. 1975. *Le Kukuya, Langue Teke du Congo*. Paris: SELAF.
141. POLAK-BYNON, L. 1975. A Shi Grammar. *Ann. Ling.*, Tervuren.
142. PRATT, M. 1972. Tone in some Kikuyu verb forms. *SAL* 3.325-378.
143. PRICE, T. 1944. The tonal structure of the Ngombe verb. *AS* 3.28-30.
144. RICHARDSON, I. 1959. *The Role of Tone in the Structure of Sųkųma*. London: School of Oriental and African Studies.
145. RICHARDSON, I. 1971. Displaced tones in Sukuma. In C-W. Kim and H. Stahlke, *Papers in African Linguistics* 219-227. Edmonton, Alberta: Linguistic Research, Inc.
146. ROMBAUTS, H. 1949. Tonétique du Lonkonda. *KO* 15.10-23.
147. RYCROFT, D. 1963. Tone in Zulu nouns. *ALS* 4.43-68.
148. RYCROFT, D. 1975. Tone and depression in Nguni. Paper presented at the International Conf. on Linguistics in Central & Southern Africa, University of Rhodesia.

149. SAMARIN, W. S. 1952. Intonation in tone languages. AS 11.80-84.
150. SCHACHTER, P. 1976. An unnatural class of consonants in siSwati. In L. M. Hyman, L. C. Jacobson, and R. G. Schuh (eds.), Papers in African Linguistics in Honor of Wm. E. Welmers, 211-220. SAL Supplement 6.
151. SCHADEBERG, T. C. 1971. Zur Lautstruktur des Kinga (Tanzania). Marburg.
152. SCHADEBERG, T. C. 1973. Kinga: a restricted tone system. SAL 4.23-48.
153. SCHADEBERG, T. C. 1976. Anticipation of tone: evidence from Bantu. Paper presented at the 7th Conf. on Afr. Ling., Gainesville, Florida.
154. SCHMIDT, W. 1912. Einiges über afrikanische Tonsprachen. Anthropos 7. 783-791.
155. SCHUMANN, P. 1918. Der musikalische Ton in der Benasprache. Zeitschrift für Kongo-Studien 8.145-169.
156. SHARMAN, J. C. and A. E. MEEUSSEN. 1955. The representation of structural tones, with special reference to the tonal behaviour of the verb in Bemba, Northern Rhodesia. Africa 25.393-405.
157. SHARP, A. E. 1954. A tonal analysis of the disyllabic noun in the Machame dialect of Chaga. BSOAS 16.157-169.
158. SKOLASTER, P. H. 1914. Die musikalische Töne in der Basasprache. Anthropos 9.740-758.
159. SNOXALL, R. A. 1943. Tone in Swahili--does it exist? Journal of the East African Swahili Committee 17.4-6.
160. SPA, J. J. Traits et Tons en Enya. Tervuren: Archives d'Anthropologie 20.
161. STAPPERS, L. 1944-45. De middelhoge toon in het Tshiluba. KO 10-11.261-264.
162. STAPPERS, L. 1949. Tonologische Bijdrage tot de Studie van het Werkwoord in het Tshiluba. Brussels.
163. STAPPERS, L. 1952. Het toonsysteem van het Buina Milembwe (Zuid-Kisongye). KO 18.199-242.
164. STAPPERS, L. 1953. De toongroepen en hun wijzigingen in de taal van de Aphende. KO 19.376-379.
165. STAPPERS, L. 1962. Toonstructuur van het werkwoord in het Musolo. Afr. Ling. 1.99-121.
166. STAPPERS, L. 1968. Principes de la structure tonale du verbe en kaonde. Recueil Commemoratif du 10e Anniversaire de la Faculte de Philosophie et de Lettres, 257-264. Louvain.
167. STEVICK, E. W. 1969a. Pitch and duration in Ganda. JAL 8.1-28.
168. STEVICK, E. W. 1969b. Tone in Bantu. IJAL 35.330-341.
169. STOLL, A. 1955. Tonétique des Langues Bantoues et Semi-Bantoues du Cameroun. Yaounde: I.F.A.N.
170. TADADJEU, M. 1974. Floating tones, shifting rules, and downstep in Dschang-Bamileke. In W. Leben (ed.), Proc. of the 5th Annual Conf. on Afr. Ling., Stanford, 283-290. SAL Supplement 5.
171. TAYLOR, C. 1959. A Simplified Runyankore-Rukiga-English and English-Runyankore-Rukiga Dictionary, xiii-xxi. Kampala: The Eagle Press.
172. TIRRONEN, T. E. 1957. Über semantische Tonhöhen im Ndonga. ZPhon 10. 163-166.

173. TRITHART, L. 1976. Desyllabified noun class prefixes and depressor consonants in Chichewa. In Hyman (1976c), 259-286.
174. TUCKER, A. N. 1964. Systems of tone-marking in African languages. BSOAS 26.594-611.
175. TUCKER, A. N. 1967. Introduction on the tonal system. In R. A. Snoxall, Luganda-English Dictionary. Oxford.
176. TUCKER, A. N. and M. BRYAN. 1970. Tonal classification of nouns in Ngazija. ALS 11.351-382.
177. VAN AVERMAET, E. 1945. Les tons en Kiluba Samba et le tambour-téléphone. Aequatoria 8.1-12.
178. VAN CAENEGHEM, R. 1950. Aanvullingen bij een tonologische studie. Aequatoria 13.81-92.
179. VAN DEN EYNDE, K. 1960. Tonologie en Morfologie van het Cokwe. Louvain.
180. VAN SPAANDONCK, M. 1967. Morfotonologische Analyse in Bantutalen. Academisch Proefschrift, Rijksuniversiteit de Gent.
181. VAN SPAANDONCK, M. 1971a. L'Analyse Morphotonologique dans les Langues Bantoues (trans. by L. Bouquiaux). Paris: SELAF 23-24.
182. VAN SPAANDONCK, M. 1971b. On the so-called reversive tonal system of Ciluba. SAL 2.131-144.
183. VAN THIEL, H. 1947. Tonetiek van het Lingombe. Aequatoria 10.70-77.
184. VOELTZ, E. n.d. Topics in tonal assignment in Xhosa. Ms.
185. VON ESSEN, O. 1971. Bedeutungsbestimmende Silbentonehöhen in der Sprache der Herero. In Six, Veronika et al (eds.), Afrikanische Sprachen und Kulturen--ein Querschnitt, 88-94. Hamburg: Deutsches Institut für Afrikaforschung.
186. VOORHOEVE, J. 1968. Towards a typology of tone systems. Linguistics 46.99-114.
187. VOORHOEVE, J. 1971. Tonology of the Bamileke noun. JAL 10.44-53.
188. VOORHOEVE, J. 1973. Safwa as a restricted tone system. SAL 4.1-22.
189. VORBICHLER, A. 1966. Zur tonalen Struktur des Verbalsystems im Wald-Bira. Neue Afrikanistische Studien, 256-264. Hamburg.
190. WELMERS, W. E. 1959. Tonemics, morphotonemics, and tonal morphemes. General Linguistics 4.1-9.
191. WESTPHAL, E. O. J. 1951. The tone of verb stems in Xhosa. AS 10.107-112.
192. WESTPHAL, E. O. J. 1962. Venda: tonal structure and intonation. AS 21.49-69.
193. WESTPHAL, E. O. J. and S. M. TINDLENI. 1967. Tonal profiles of Xhosa nominals and verbo-nominals. Communications from the School of African Studies, New Series 32. University of Cape Town.
194. WURM, V. M. 1947. Words distinguished by tone in Duala. Journal of the American Oriental Society 67.136-138.

[ADDITIONS AND CORRECTIONS MOST WELCOME]

LANGUAGE INDEX TO BANTU TONE BIBLIOGRAPHY

- Bafia A.53 - 57, 58
 Bamileke [Grassfields] - 43, 44, 72, 74, 75, 78, 137, 169, 170, 186, 187
 Bangangte [see Bamileke]
 Bangubangu D-L.27 - 111, 128
 Basa A.43 - 12, 158
 Bemba M.42 - 114, 156
 Bena G.63 - 155
 Bira D.32 - 189
 Chaga E.62 - 139, 157
 Chasu G.22 - 86, 87
 Chewa N.31b - 173
 Chokwe K.11 - 179
 Chuana [see Tswana]
 Dschang [see Bamileke]
 Duala A.24 - 132, 135, 169, 194
 Ebuku A.21(?) - 36
 Enya D.14 - 160
 Etung [Ekoid] - 45
 Ewondo A.72a - 169
 Fe?fe? [see Bamileke]
 Ganda J.15 - 61, 62, 110, 124, 125, 129, 167, 175
 Haya J.22 - 18
 Herero R.31 - 98, 185
 Iniele - 37
 Kamba E.55 - 54
 Kaonde L.41 - 166
 Kele C.55 - 19, 20
 Kikuyu E.51 - 1, 8, 51, 52, 53, 60, 142
 Kinga G.65 - 91, 151, 152
 Kombe A.33 - 46
 Kongo H.16 - 23, 25, 41, 100, 130
 Konzi - 37
 Kukuya [see Teke]
 Kusu [see Luhya]
 Leke - 38
 Luba L.31, 33 - 13, 14, 15, 16, 38, 113, 138, 161, 162, 177, 182
 Luhya J.32 - 5, 26, 35
 Mbala K.51 - 133
 Mbundu H.21 - 2, 4
 Mongo C.61 - 29, 40, 66, 67, 68, 69, 70, 71, 108, 109
 Ndonga R.22 - 172
 Nen A.44 - 42
 Ngala C.36 - 59
 Ngamambo [Grassfields] - 3
 Ngazija G.44a - 176
 Ngie [Grassfields] - 65
 Ngombe C.41 - 47, 143, 183
 Ngwe [see Bamileke]
 Njo [see Bamileke]
 Nkonda C.64 - 146
 Nkundo [see Mongo]
 Nkore J.13 - 82, 171
 Nyamwezi F.22 - 34
 Nyanga D.43 - 115
 Nyoro J.11 - 174
 Phende K.52 - 164
 Rundi J.62 - 33
 Rwanda J.61 - 33, 93
 Safwa M.25 - 188
 Samia [see Luhya]
 Shambala G.23 - 86, 118
 Shi J.53 - 141
 Shona S.10 - 9, 49, 50, 61, 63, 94
 Songye L.23 - 163, 165
 Sotho S.30 - 97, 99, 104, 119
 Sukuma F.21 - 6, 55, 144, 145
 Swahili G.42 - 159

- Swati S.43 - 148, 150
 Teke B.78 - 101, 140
 Tetela C.71 - 79, 80
 Tonga M.64 - 21, 22, 61, 112, 123
 Tsonga S.53b - 10, 28, 83, 105
 Tswa [see Mongo]
 Tswana S.31 - 27, 84, 85
 Venda S.21 - 116, 192
 Xhosa S.41 - 102, 103, 105, 106, 107, 184, 191, 193
 Yaka H.31 - 126
 Yao P.21 - 127
 Yombe [see Kongo]
 Zulu S.42 - 11, 30, 31, 32, 95, 106, 147