Tonology of the Disyllabic Medumba Noun

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Chapter 1

Introduction

In this paper I will revisit the tonology of Medumba nouns. This topic has been discussed in some length by Voorhoeve (1965) and Voorhoeve (1971). The first section of this paper will introduce the general methods necessary for making claims about the underlying tonal specifications of nouns; to accomplish this I draw heavily from the broader range of data presented by Voorhoeve. Following this, I will present an account of how monosyllabic nouns behave; this section will also make explicit what I claim to be the TBU as well as what underlying tonemes Medumba possesses. The data from this section is a combination of the data printed by Jan Voorhoeve and the efforts of Anna Belew, Nick Danis, Katie Franich, Cathy O'Connor and myself who comprise Medumba at Boston University (MBU). Finally, I will present new data on disyllabic nouns and propose the necessary underlying specifications as well as proposals for future work and hypothesis on the inventory of tone patterns that we should find in nouns.

The primary goal of this paper is to lay forth the tone system that has been proposed for monosyllabic nouns and to attempt to extend it to disyllabic nouns. I want to provide more solid evidence for the underlying structures we propose for monosyllabic nouns. I hope to be able to show that there is a correspondence between the floating tones present in monosyllabic nouns and the segmentally realized tones on monosyllabic nouns. Furthermore, we can begin to create broader generalizations about how tonemes are represented and how they interact in Medumba.

Chapter 2

Morphemes

Our current understanding of how tones in Medumba are underlying specified owes much to Jan Voorhoeve. In a series of papers he described the various morphemes that interact in Medumba. His work sets the foundation by presenting a possible account of the surface data.

Voorhoeve (1965) focused primarily on the behavior of nouns in Medumba; within this category, he solely considered monosyllabic nouns. This is not to say that there are no polysyllabic nouns in Medumba; however, this fact is confounded by the plethora of morphological markers and compound nouns. These cases cannot be used to generalize from because their behavior is dependent on more than one variable, namely the underlying tonal structure of their composite morphemes.

2.1 Compounds

It is important to be able to identify morphemes within the nouns we have chosen to examine; only monomorphemic roots are suitable for deriving generalizations from. To illustrate this point, we can turn to English compounds.

(1) a. i. bl'ack
ii. b'oard
iii. bl'ackboard

b. i. gr'een
ii. h'ouse
iii. gr'eenhouse

This often repeated example shows that compounding can effect prosodic features, like suprasegmentals. Forming a nominal compound destresses the head noun, which is the right noun in English compounds.[1] Tone, like stress, is a suprasegmental feature; we therefore expect that compounding may have some phonological effect on tone (Lehiste,

[1]Thank you to Nick Danis who pointed out that English compounding destresses the head as opposed to attracting stress to the left most noun; this analysis allows for the correct interpretation of data such as the following:

1970). It is these effects that can make it difficult for us to determine underlying forms. Similar effects can be observed in other languages.

2.2 Polymorphemic Words

While compounds may be relatively easy to identify, it is more difficult to identify derivational and inflectional morphology. The addition of morphemes to a root (affixation) can trigger phonological processes, these processes can complicate the data we must analyze. Therefore, it will make our task easier if we can avoid words containing multiple morphemes. Voorhoeve (1965) suggests several derivational affixes and provides tokens; lacking from his listing is a motivation for the morphemes or any sort of gloss. This list includes both verbs and nouns. It is divided into four sections: ambiguously polymorphemic words, unambiguously polymorphemic words, load words, and polysyllabic words. The first category presents a problem that requires further work. We lack the evidence needed to reconstruct suspected morphemes; however, by various other pieces of information, we are able to claim that certain individual tokens are polymorphemic.

2.2.1 Words with Ambiguous Morphemic Status

The examples cited below illustrate several techniques useful in eliminating words from out data; as previously mentioned it is crucial that our modeling of noun tones is based on monomorphemic nouns. Despite the fact that not all of the data in (2) is based on nouns, we can still adopt these principals when dealing with other data sets. The case in (2a) is deemed to contain two morphemes because the suffix /-tə̀/ is seen combining with other verbs, forming nouns. Since the word is a noun, we may conclude that it is derived from the verb /tsiə́/, even though we lack the base form. The second case, (2b), is judged to contain two morphemes based on knowledge of productive morphology in related languages. The third case uses knowledge of historical noun class markers to determine that a word contains multiple morphemes. Finally, (2d) contains reduplicants without corresponding base forms; the underlying assumption for such cases is that there is reduplication occurring. The worry in this case is that reduplication does not completely copy the tones associated to the base (Downing, 2003). I will still undertake an analysis of these forms as they seem to be a fairly robust class that acts predictably.

(1) hippopˈotamus

(2) lˈauncher

(3) hippopˈotamus-launcher

(4) * hiˈppopotamus-launcher

(2) Words with Ambiguous Morphemic Status from Voorhoeve (1965)

a. The derivational suffix /-tə̀/ which forms nouns from verbs in cases where the verb stem is unattested.

i. /tsiə́-tə̀/ ‘pulmonary disease’

ii. /tsiə́/ unattested

b. The derivational suffix /-nì̀/ which is productive in related languages.

i. /fə́-nì̀/ ‘to tease’

c. Nouns retaining their nominal prefix.

i. /mó-ŋkə́/ ‘servant’

ii. /bó-ŋkə́/ ‘servants’

d. Reduplicated forms without an attested base.

i. /ŋkwə̌ʔ-ŋkwáʔ/[2] ‘examination’

2.2.2 Words with Unambiguous Morphemic Status

The example below shows morphemes that have been clearly identified by form-meaning correspondence. These are taken from Voorhoeve (1965), which does not provide any gloss or support for these categorizations. They are provided above as a rough guide. I have avoided using nouns that contain these morphemes for the sake of simplicity, except for the last category in (3f), animal names, which holds a variety of bi- and trisyllabic morphemes which seem to pattern at least somewhat uniformly; specifically, animal names which also fit into (2d), above.

(3) Words with Unambiguous Morphemic Status from Voorhoeve (1965)

a. /kə̀-/ and /ŋkə̀-/

/kə̀-kág/ ‘arm pit’

b. /mə́-/

/mə́-gùm/ a type of dance

c. /nə́-/

/nə́-tʃáʔ/ a type of dance

d. /bə̀-/, /mbə̀-/

/bə̀-fə̀ ‘executioner of the chief’

e. /má-/

/má-ndá/ ‘adultery’

[2]This is the tone realization provided by Voorhoeve (1965); note that I do not follow this analysis. See example (39b-ii) in chapter 4 for my account.

f. Animal names which resemble compounds with unattested roots.

i. /ŋgŭm-má-tá/ ‘porcupine’

2.2.3 False Polysyllabic Nouns

This section will look at a set of nouns that appear to be disyllabic in isolation but become monosyllabic in any position other than utterance finally. These would appear to be exactly the sort of nouns to investigate; they are monomorphemic and polysyllabic. However, in any position other than utterance finally, the final vowel is deleted.[3]Examples of this alternation are provided below.

(4) a. mbàbə̀‘dust’

3 3

i. mə́ jʊ́n mbàbə̀ ‘I saw the dust’

5 3 1 1

ii. mə́ jʊ́n mbàp gí ‘Did I see the dust?’

5 3 1 3

b. nzìlə̀ ‘fat’

3 3

i. mə́ jʊ́n nzìlə̀ ‘I saw the fat’

5 3 1 1

ii. mə jɯn nzìd gí ‘Did I see the fat?’

5 3 1 3

This particular subset of nouns is important to our understanding of contour tone formation. Consider a similar case in Hausa (Newman, 1995); when a bisyllabic word bears a high tone on the first syllable and a low on the second, the optional deletion of the final syllable results in a high low contour, a fall, on the remaining syllable.

(5) a. mákà ‘to you’

b. mátà ‘to her’

c. másà or mẫ ‘to him’

d. mínì or mî̀n ‘to me’

Unfortunately in the data available for Medumba, the tone of the final syllable is identical to that of the first. This means that the deletion of the second vowel does not help us determine if a contour has been formed since it would be

[3]The alternation could also be formulated as an epenthesis rule since the vowel is identical; however, it is not clear what environment would trigger epenthesis.

a “contour” of identical segments. Moreover, there may be only one root toneme that is spread to the epenthetic vowel, so deletion of that vowel would not result in a floating tone either. This phonological process can serve to inform what we know about tone spreading and stability, but it obscures the underlying structure of a morpheme thereby making words of this type a poor choice to examine as “true” disyllabic nouns.

2.3 Monomorphemic Words

There do exist nouns in Medumba that are both polysyllabic and monomorphemic. We have previously noted some cases of polysyllabic nouns that are also polymorphemic; these are inappropriate for the type of testing we wish to conduct.

We must consider that some polysyllabic may be loan words. This can complicate our analysis for several reasons: as loans, there is no underlying tonal specification (assuming they are from English or French into Medumba); we need to be able to account for how tone is assigned to these words. One possibility is that English stress is used to place high tones; as is the case in English loans into Yoruba when the initial syllable is stressed (Kenstowicz, 2004).[4]

(6) a. ˈpaper pépà

b. ˈbody bódì

c. ˈdollar dólà

d. ˈbarber bábà

Furthermore, loanwords may introduce new segments into the languages inventory. Continuing with the Yoruba data, when the final syllable is stressed in an English word, it is borrowed with a long vowel. Yoruba normally does not have vowel length distinctions; however, it is claimed that vowels are lengthened in order to capture both the main stress to tone mapping as well as the word final falling tone present in English. This is plausible in Yoruba since the basic tone bearing unit (TBU) is the syllable.[5]

(7) a. surˈvey soféè b. deˈlay dìléè

In conclusion, loan words do not always conform to the “basic” phonological properties of a language. For instance, we have seen they can generate otherwise unattested syllable types. Since the project of this paper is to analyze the tonology of polysyllabic nouns in Medumba, I will only briefly characterize loaned nouns.

[4] Yoruba has three underlying tones: high=´, low=`, and a mid tone, which is represented by an unmarked vowel.

[5] There are further strategies for monosyllabic words as well as vowel epenthesis.

Chapter 3

The Behavior of Monosyllabic Nouns

The following description of monosyllabic nouns draws from the work of Voorhoeve (1971); however, the vast majority of examples were also elicited and analyzed independently. When possible I have provided links to entries on the Endangered Language Documentation Electronic Resource (ELDER) that contain sound files and translations.

3.1 The Tone System of Medumba

To get this analysis off the ground I will assume some facts about Medumba; however, I recognize that the data my later necessitate that these assumptions be let go. To begin with, we must identify the tonal building blocks available to us. Voorhoeve (1965) presents a system with four level tones, many of which surface in complex environments. This is later simplified and restated in a more modern framework in Voorhoeve (1971). I follow the latter in using only two distinct underlying tonemes, high and low.

Tone diacritics are provided along with numerals indicating pitch and H's and L's indicating high and low tonemes respectively. A high tone will be marked by an acute accent (◌́) over a vowel, and low will be marked by a grave accent (◌̀) over a vowel; rising contours will be marked with a caron (◌̌) over a vowel and falling contours will be marked with a circumflex (◌̂) over a vowel. Phonetic representations of tone are given using a 1-5 scale with 1 representing the lowest tone and 5 the highest tone, at some points the scale needs to be lowered to include -1, this simple represents a pitch lower than 1. Tonemes shown in parenthesis represent floating tones that are not realized on any segment. Where there are no tonemes specified, I have avoided positing anything either because it is not relevant or because not all of the necessary data has been presented.

There has not been any in depth work that confirms this choice. If we remain within the realm of Medumba nouns, I believe that two underlying tones are sufficient to describe the system. [1]

[1] One fact that points strongly towards a high/low dichotomy is that following a downstepped high tone, a high tone will be produced at the same

Additionally I assume that contour tones are not atomic, that is, they can all be decomposed into high and low tones. This is not a particularly controversial stance given the tonal typology of West African languages (Yip, 2002); however there are instances of contour tones in non-final positions, which is where we might expect them to surface most readily, as in the Hausa data; however, as Manfredi (1993) notes, there are some African languages in which contours occur in nonfinal positions. I will analyze contour formation as multiple tonemes linking to one TBU. In general, Medumba seems to prefer allowing tones to have maximal surface impact, as we will see, floating tones downstep each other, which in turn lowers the ceiling on following high tones.

(8) Downstep

a. INPUT: /H (L) H/
DOWNSTEP: /H (L) !H/
OUTPUT: [5 3]

Additionally, we would expect that all highs following a downstepped high must be realized at the same level.

(9) High Tone Ceiling

a. INPUT: /H (L) H H/
DOWNSTEP: /H (L) !H H/
OUTPUT: [5 3 3]

This prediction will help to differentiate between a low tone and a downstepped high tone. We would expect that any high tone following a low tone will rise higher than that low tone; however, any high tone occurring after a downstepped high tone should be realized at the same level as a preceding downstepped high tone, as is illustrated in (9a) above.[2]

As a final assumption, any sequence of non-downstepped high tones will be realized at the same phonological level, not taking into account the general trend of F_0 decline as air pressure across the vocal folds drops.

Finally I do not make any claims about what the tone bearing unit is in Medumba. There does not seem to be phonemically contrastive vowel length, and diphthongs are unattested. Syllables of NCV and NCVC are attested but

level. If the downstepped high tone were in fact a mid tone, we would expect that a following high would be produced at a higher pitch; this is the same argumentation which Hyman (1985) employs in ruling out mid tones in Bamileke-Dschang.

[2]There are some complications to this statement. Consider the following examples, paying particular attention to the tone of the verb.

(1) â wʉ́ú zə̀ jʉ́ʉn lʉ́ʉm ɔ̀
5͡3 5 3 5͡2 1 -1
'Who is it that saw the blood?'

Concentrating on the left edge of the utterance, we can presume that a contour cannot downstep a following high tone; however, jʉʉn should not be able to rise above zə no matter its underlying tone. If zə were a downstepped high tone, then jʉʉn should only be produced at the same pitch or lower. If zə were a low tone, then jʉʉn itself should be produced lower due to terracing. This data may force us to conclude that segmentally realized low tones do not trigger downstep in the same way as floating tones do; in other words, terracing does not occur. On the other hand, as we will see with noun tones, we may discover complex underlying floating tones that can account for the surface pitch.

it is not clear if nasal consonants can host a tone. Contour tones do appear in nonfinal positions, which might suggest that moras should be the TBU if we have a one-to-one left-to-right tonal associationYip (2002); however this has not been properly investigated and the directionality of association may not be left-to-right.

3.1.1 Tone Patterns of Monosyllabic Nouns

Following from the assumption that Medumba has two underlyingly specified tones, high and low, and that the TBU is the syllable, we should expect to find only two tone patterns on monosyllabic nouns: high and low. The surface data does not support this conclusion.

(10) Monosyllabic Nouns in Isolation

a. High

i. mβʉ́ ‘dog’	ii. mɛ́n ‘child’	iii. lɨ́m ‘blood’
5	5	5

b. Low level

i. nàʔ ‘cow’[3]	ii. ndùn ‘cloud’	iii. kò ‘spear’
3	3	3

c. Falling

i. ŋgô ‘country’	ii. tôŋ ‘ear’	iii. mvə̂n ‘cheif’
31	31	31

This result seems to suggest that Medumba at the very least can combine high and low tones to form a contour on one syllable. This analysis would represent the falling tone as a combination of high and low tonemes; this is not supported by the phonetic data since the falling tones start at the same level as non-high tones. Furthermore, if this analysis were correct, falling tones should pattern with high tones with respect to their left edge. This does not seem to be the case.

(11) ‘I saw the chief of the ____’

a. mɔ́ jʉ́n mvə̀n { mɛ́n ‘child’ / lɨ́m ‘blood’ }
   5 3 1 3

[3]This example is drawn from Voorhoeve (1971)’s data.

b. mə́ jʊ́n mvə̀n { kò‘spear’ / ndùn‘cloud’ }
5 3 1 1

c. mə́ jʊ́n mvə̀n { ŋgô ‘country’ / tôŋ ‘ear’ }
5 3 1 1͡-14

The examples in (11) illustrate that monosyllabic nouns with high tones, such as those in (10a) do not pattern the same as those with falling tones, such as those in (10c).[5] This would have been the predicted result if a falling contour were actually a combination of a high tone followed by a low tone on one syllable. A high tone will return to the same level as a preceding high while a low will remain low. If falling tones were a complex contour tone, then we would have expected the pitch of (11c) to be [5 4 3 43].

This conclusion forces us to accept that there are either more then two underlying tonemes, specifically that there is a high toneme, a low toneme and a falling toneme, or that one morpheme may host multiple tones. I choose to follow the later since I have already accepted that contour tones can be distilled into combinations of high and low tones. If we were to describe three tonemes, we would certainly be missing some generalizations.

The behavior of the falling tones is in many ways similar to that of the low tones. Returning to the examples in (10c) and (10b), recall that both sets of nouns began at the same pitch; if we assume that they both have a low tone realized on the stem, then we might posit that the difference between a low and falling pitch is the tone to the right of the low. Since the target nouns are in isolation, we can only account for this by accepting the proposal that a morpheme can host multiple tones. In this case, we could say that a low followed by a high is realized not as a contour but as a stable low pitch. The falling pitch is a bit more complicated. If we want to maintain symmetry, we could propose that it is a low root tone followed by a low floating tone; however, for right now it seem to be just as good a proposal that the falling pitch is a low root tone without any floating tones following.

[4] In Voorhoeve (1971) the pitch of both ‘mvə̀n’ and the following noun are marked as falling in this frame. The pitch notation given above is from elicitations conduced by MBU; the difference in surface data does not really impact the conclusions drawn with respect to what the underlying tones of these words are. The only difference between the two reported pitches will be in the rules governing the behavior of the underlying tones. The crucial question, more explicitly, is what occurs to a string of low tones after the last high tone of an utterance. Voorhoeve (1971)’s data would indicate that such a string of low tones progressively falls, while the MBU data would indicate that no special rule needs to apply. See section (**??**) for more discussion on this issue.

[5] In the frame in (11), I have marked both the pronoun mə́ ‘I’ and the verb jʊ́n ‘see’ with high tone, yet they are realized at different pitch levels. I will assume that “jʊ́n” is a downstepped high. Furthermore, I assume that the pronoun mə́ is underlyingly toneless and receives a high tone from one of the tones borne by the verb. These series of assumptions have some supporting data, but there has not been enough investigation to make a conclusive statement about the underlying tonal specifications of verbs, nor will I attempt to make this pattern any more clear in this paper.

If both low and falling tone nouns are underlyingly low, then we would expect them to pattern together in some contexts. Recall that in the examples (11b) and (11c) the target word was not produced as high as in (11a). In this case the low and low falling tone patterns, are distinct from the patterning of the high tone noun. The examples below reaffirm that both pitch types are low tones since a following high toned syllable 'gí' is produced higher. Furthermore, they confirm that there must be floating tones on the right edge of realized monosyllabic monomorphemic nouns, this is elaborated on below.

(12) Did I see the _____?

a. High Tone Nouns

i. má júnˈ{ mβʊ́ 'dog' / ɲu 'snake' }ˈ gí
5 3 1 -1

b. Low and Falling Tone Nouns

i. má júnˈ{ ndùn 'cloud' / kò' spear' }ˈ gí
5 3 1 3

ii. má júnˈ{ mvən 'chief' / tòŋ 'ear' }ˈ gí
5 3 1 3

This alternation illustrates primarily that a high following a low will rise back to the level of a preceding high, as we have already supposed such as gí rising in pitch after the nouns in (12b) but not those in (12a). Furthermore, it appears that gí is downstepped following a high tone. This suggests that there should be a floating low tone between the high stem mβʊ́ and the question marker, but not after all high tones.

(13) Did I see the _____?

a. High Tone Nouns That Cause Downstep

i. má júnˈ{ mβʊ́ 'dog' / ʒú 'thing' }ˈ gí
5 3 1 -1

b. High Tone Nouns That Do Not Cause Downstep

i. má júnˈ{ tʃʊ́ 'tree' / ɲú 'snake' }ˈ gí
5 3 1 3

Strikingly, the nouns in (13b) have the same phonetic tone in isolation as those in (13a). The alternation in the tone of the following word must therefore be caused by some otherwise undetectable toneme between the noun and the

question marker. This conclusion supports our belief that low and falling nouns are both underlyingly low toned and some additional toneme on the right edge of the noun is causing the surface difference. Moreover, it highlights the downstep we noted before; there must be high tone nouns which have a floating low on their right edge (those that cause downstep) and high tone nouns that have either no tone, or a floating high tone on their right edge. This is similar to the conclusion about low and falling tones; we now have fairly robust evidence that nouns of either root tone can be followed by a floating low tone.

We can find additional evidence for floating tones on the right edge by forming *wh*-questions. In the *wh*-questions of the form 'Who saw the *x*?', a toneless clause marker 'ɔ' is added to the end of the clause Watters (2003). This marker vowel alternates in tone; I claim that this alternation is simply the association of a floating suffixal tone from the root noun associating with the vowel.[6]

(14) Who saw the _____?

a. â wɔ́ zə̀ jʊ́ŋ { mβʊ́ 'dog' / ʒú 'thing' } ɔ
   5͡3 5 3 51 3 1

b. â wɔ́ zə̀ jʊ́ŋ { tʃʊ́ 'tree' / ɲú 'snake' } ɔ
   5͡3 5 3 51 3 3

The one caveat of the claim that ɔ is toneless and hosts the right edge floating tone of a preceding noun is that since all syllables must have a tonal specification, we must assume that a default tone is assigned to toneless syllables in cases where no floating tones can associate to a toneless syllable. In most West African languages, the default tone is low (Hyman, 2000), if we assume the same of Medumba, then it becomes less clear that we have identified a floating low tone on some noun stems.

The examples above may still constitute evidence that there is a floating high tone following the root low tone in stable low tone nouns. In conjunction with the split between high tone nouns that do and do not cause downstep, there is ample support that monosyllabic nouns carry more than one tone. Furthermore, we now have evidence that a high tone root can be followed by either a floating low, or a floating high. For the sake of symmetry we may accept the same distribution for low tone roots.

I propose the following underlying representations:

[6] Two numbers attached by a text tie, such as 1͡2 indicate that a tone is a glide realized on one syllable, much in the same way the symbol is used to indicate vowel quality transitions.

(15) Underlying forms for Monosyllabic Nouns

a. High Tone That Does Not Cause Downstep

i. H(H)

b. High Tone That Causes Downstep

i. H(L)

c. Low Tone

i. L(H)

d. Low Falling Tone

i. L(L)[7]

This system allows for a four way distinctions on monosyllables; thus far only the left edge has been analyzed, if we accept that there are floating tones to the left of every syllable, then we may also want to investigate the possibility that there are floating tones to the right of every syllable.

3.1.2 The Associative Construction

Previously I have presented data using the associative construction, as in (11); this construction turns out to be far more opaque than suggested. The associative construction is a well known phenomenon in African linguistics, for an overview see Welmers (1963). In Proto-Bantu, the associative marker has been reconstructed as a vowel bearing a high tone(Hyman, 2000); as Welmers (1963) notes, several Bantu languages do not appear to have a segmental associative marker. The particular semantic implications of the associative construction are difficult to tease apart.

Welmers (1963) asserts that the associative construction can be used to describe a variety of associations (material, contents, place of origin, place of use, time of use, function, possessor), in some languages the associative construction replaces adjective-noun concord (Loŋkundo). Furthermore, he states that the syntax of the associative construction may contrast with noun compounding.

All of these semantic facts, combined with the difficulty of pinning down a nonsegmental morpheme has made this particular set of data difficult to acquire, much less analyze. In some cases, the more recently recorded productions of this construction do not resemble previously attested surface forms presented in Voorhoeve (1971) and reproduced in Hyman (2003). Because the relative complexity of this problem, I have defaulted to Voorhoeve and Hyman's account;

[7] This is the only pattern that I have not been able to provide strong evidence for; however, I am willing to accept it for the sake of symmetry. Depending on what we believe about downstep, we might be able to posit a low tone to prevent a following high tone to be downstepped. If we choose to believe that any span of low tones will cause downstep, then even this would not be particularly compelling evidence. Also see the low tone downstep proposed in (41)

however, I will note where the surface data we collected differs from that presented by Voorhoeve. The basic shape of the puzzle is exemplified below with the posited tonal representations and actual pitches given.

(16) ____ of ____

a. mɛ́n mɛ́n
H(L) H(L)
5 5

b. tʃʉ́ mɛ́n
H(H) H(L)
5 3

c. ʒú mɛ́n
H(L) H(L)
5 1

This patterning does not follow from the previous proposals we have made about the underlying tone shapes of high tone nouns. First consider the pitch of (16a); an underlying series of high-low-high apparently results in the pitch realization we normally associate with a high tone followed by a nondownstepped high. This suggests that our previous assertions were wrong or incomplete leaving two options; we remove some of the underlying structure we have proposed or we add additional nonsegmental structure.

More confusion is added when we consider that (16b) *does* downstep, where we would predict that it does not. Why does mɛ́n downstep in (16b) but not in (16a) where we would predict it does? To explain this downstep we could change either the floating high tone on the right edge of tʃʉ́, or insert a low tone before the high root tone of mɛ́n. At this point either solution will yield the same result, though modifying the structure we have already evidenced for words like tʃʉ́ is less preferable without additional evidence.

Even more puzzling is the pitch pattern of ʒú mɛ́n in (16c). We obtain the downstep we predict, but the pitch seems to have dropped lower than we would expect. Furthermore, the proposed tonemes of (16c) is identical to that of (16a) yet the results are strikingly different. We see that we would require an additional downstepped high tone in order for the high tone on the second 'child' to be double-downstepped (Hyman, 2003). This is illustrated below.

(17) ʒú mɛ́n
H(L) (!H)(L) !H(L)
5 1

To recapitulate, (16b) suggests that we need a floating low tone in order to receive the downstepped pattern we observe. (16a) suggests we need to remove a low tone, or add a low tone. The first option is less favorable as it would require modification of a structure that we have evidence to support. The second option may not be as clear a solution but it is supported by both (16a) and (16b). It relies on the assumption that downstep occurs in exactly the context described:

(18) DOWNSTEP: A high tone following a single low preceded by any number of high tones is produced at a lower pitch than any preceding high tones.

This rules out the possibility in contexts such as those shown below:

(19) INPUT: /H (L) (L) H/
DOWNSTEP: N/A
OUTPUT: [5 5]

Therefore, adding in a low tone between the nouns in (16a) will prevent downstep from occurring. On the other hand, had we attempted to add an additional high tone the sequence would still have qualified for downstep application, the only difference being that a floating high tone would be downstepped, lowering the ceiling and therefore lowering the realized pitch of the root high tone on mén. This option is shown below.

(20) INPUT: /H (L) (H) H/
DOWNSTEP: /H (L) (!H) H/
OUTPUT: [5 3]

Thus far we have proposed two structures to account for three surface patterns observed in the associative construction. For (16a), the addition of a low tone to prevent downstep. For (16b) the addition of a low tone to cause downstep. And for (16c) the addition of a high tone followed by a low tone to create a sequence of a downstepped floating high tone followed by a downstepped segmental high tone. To make these new proposals more clear, (16) is reproduced below with a floating high tone between ʒú and mén and floating low tones before mén.

(21) ____ of ____

a. mén mén
H(L) (L)H(L)
5 5

b. tʃúı mén
H(H) (L)!H(L)
5 3

c. ʒú mén
H(L) (!H) (L)!H(L)
5 1

These observations seem disparate. However, we can notice that mén consistently has a low tone on its left edge. This is a promising consistency. If we consider (21c) alone, we have six tones for two syllables. We can already attribute four tones to the lexical forms of the nouns. We may also suspect that the consistent low tone on the left edge of mén is the associative marker. However, when placed in the simple declarative frame 'I saw the ____' mén is produced as if it were downstepped following a downstepped high tone. In fact all nouns that we have noted to be produced at a high pitch in isolation.

(22) ‘I saw the _____

a. mə́ jʊ́n { tʃʊ́ ‘tree’ / ʒú ‘thing’ / mɛ́n ‘child’ }
5 3 1

b. mə́ jʊ́n { ndʊ̀n ‘cloud’ / kò ‘spear’ }
5 3 1

c. mə́ jʊ́n { mvə̂n ‘chief’ / bâm ‘belly’ }
5 3 1͡-1

If we believe that jʊ́n ‘see’ is a high tone, then we only have two available explanations for the downstep of high tone nouns following it, disregarding how the verb itself became downstepped. There must be a low tone to cause the downstep, this tone may either belong to the verb, on the left edge, or the noun, on the right edge. As we have seen the associative construction gives us reason to posit a low tone on the right edge of high tone nouns; we may therefore conclude that all of the high tone nouns which we have thus far examined host three tones: a low tone on the right edge, a high root tone and a variably high or low tone on the left edge.

In accepting this hypothesis we create a new problem. The consistent low tone cannot be the associative marker. We know based on studies conducted in other similar languages that the associative marker can be a tone without any segmental realization; however there is no strong evidence for such an additional tone, save for the case of ʒú mɛ́n. If we attempt to generalize that the associative marker (AM) must be a high tone, then we predict additional downstep in (21a). If we apply the same logic to (21b) we find that the surface pitch would be unchanged by the insertion of a high tone. The most straightforward solution is to allow the tone of the AM to vary between high and low tone; according to Voorhoeve (1971) this tone is not predictable and correlates with noun classes. It is unclear if this is true, but the data presented thus far seems to necessitate such an analysis.

There is another set of facts that make this analysis yet more complicated. Consider the contrastive examples presented below, from Hyman (2003).

(23) ʒú AM mɛ́n
H(L) (!H) (L)!H(H)
5 1

(24) ʒú AM sáŋ
H(L) (?) (L)!H(H)
5 3

Comparing the underlying structure we have accepted for mɛ́n with that for sáŋ we find that it's not possible to reconcile the two patterns by simply changing the one variable available to use, the tone of the AM. The two predicted outcomes for (24) are given below.

(25) ʒú AM sáŋ
H(L) (!H) (L)!H(H)
5 1

(26) ʒú AM sáŋ
H(L) (L) (L)H(H)
5 5

In order to account for the observed pitch in (24), we must accept that sáŋ has either a high tone prefix or no tonal prefix at all. We can observe that the AM tone must be high toned to be downstepped by the floating low tone on the right edge of ʒú.

(27) ʒú AM sáŋ
H(L) (!H) (H)H(H)
5 3

(28) ʒú AM sáŋ
H(L) (!H) (∅)H(H)
5 3

(29) ʒú AM sáŋ
H(L) (L) (H)H(H)
5 5

(30) ʒú AM sáŋ
H(L) (L) (∅)H(H)
5 5

We could posit a high floating tone on the left edge, or nothing. For the sake of symmetry, we might want to accept a high tone; however, independent historical evidence would suggest otherwise.

In Proto-Bantu, 'bird', the reflex of sáŋ, belonged to a class of nouns with no prefix. 'Child', the reflex of mɛ́n, belonged to a class of nouns with a low tone prefix(Voorhoeve, 1965; Hyman, 2000). As Medumba does not seem to possess noun class prefixes segmentally, we might posit that the floating tones on the left edge are their suprasegmental remnants. This explanation gives independent motivation to our claim that high tone nouns such as mɛ́n have a floating low tone on their left edge; furthermore if we accept that the left edge floating tone is the remnant of a noun class prefix, then words like sáŋ would have no floating tones before them.

If we accept this conclusion then we must also assume that the verb jʊ́n 'see' has a floating low tone on the right edge in order to downstep high tone nouns without a prefix, since they are still produced as downstepped high tones. Under this assumption, all of the (L)H(T) pattern nouns would not be produced as downstepped high tones since as we have seen sequences of H(L)(L)H do not cause the second high tone to downstep. This is an extremely convoluted problem.

The data gathered by Medumba at Boston University (MBU) has shown that essentially all high tone nouns downstep in the frame 'I see _____'. This forces us to either reject the toneless prefixes, or to reject the notion that H(L_n)H[8] does cause downstep. Obviously neither is particularly favorable; however, some of the data elicited by the MBU does not agree with that presented by Voorhoeve (1971). There seem to be far more contours than reported by Voorhoeve (1971), particularly in the associative construction. For this discrepancy to be significant there needs to be a systematic relicitation of associative constructions; in addition, since the MBU elicitations have only consulted one speaker, having more speakers may clarify exactly the nature of the disagreement between datasets.

Nevertheless, there are significant theoretical conclusions which both data sets support. Namely, that monosyllabic nouns host more than just a single tone. This observation will become more significant when we turn to disyllabic nouns.

To summarize these conclusions about monosyllabic high tone nouns, I have schematized the four patterns of tones that high tone nouns can possess. Tokens are listed in the example below.

(31) Tone Patterns of High Root Tone Monosyllabic Nouns

a. (L) H (H) *c.f.* tʃʊ́

b. (L) H (L) *c.f.* mɛ́n

c. (∅) H (H) *c.f.* sáŋ

d. (∅) H (L) *c.f.* n/a

Our final inventory of tonal shapes for monosyllabic nouns is given below.

(32) High Root Tone

a. (L) H (L)

b. (L) H (H)

c. (∅) H (L)

d. (∅) H (H)

(33) Low Root Tone

a. (L) L (L)

b. (L) L (H)

c. (∅) L (L)

d. (∅) L (H)

[8] Where *n* represents any number of unassociated low tones

A list of unsolved issues is summarized below.

(34) **Downstep following 'jʊ́n'**:Where does the low tone that downsteps high tone nouns following the verb jʊ́n come from?

(35) **Prefixless high tone roots**: Do we have evidence to support the claim that some high tone nouns do not have a low prefix? How can we account for the downstep of these high tone nouns if they do not have a low tone prefix?

(36) **Downstep**: Can any span of low tones between two high tones trigger downstep, or is downstep only triggered by the exact HLH sequence as Voorhoeve (1971) suggests?

(37) **Contour tones**: Is there s systematic correspondence between the data reported by Voorhoeve (1971) and that gathered by the MBU?

Chapter 4

The Behavior of Disyllabic Nouns

Having established an inventory of Medumba monosyllabic nouns, and observing that they contain at least one floating tone, we may posit that disyllabic nouns are simply the full segmental realizations of these patterns. That is to say, where ever we see a pattern of the shape (T_1) T_2 (T_3), where T represents either the H or L toneme, we expect that for a bisyllabic noun we will find patterns of type (T_1) T_2 T_3 or T_1 T_2 (T_3), for trisyllabic nouns T_1 T_2 T_3, and for nouns with more syllables, we would expect the left most or right most tones to spread, depending on alignment with our templates. These expectations are made explicit below.

(38) Predicted Underlying Tones of Polysyllabic Nouns[1]

a. Disyllabic Nouns

i. (L) H (L) → L H (L)

ii. (L) H (L) → (L) H L

iii. (L) H (H) → L H (H)

iv. (L) H (H) → (L) H H

v. H (L) → H L

vi. H (H) → H H

vii. (L) L (L) → L L(L)

viii. (L) L (L) → (L) L L

ix. (L) L (H) → L L (H)

x. (L) L (H) → (L) L H

xi. L (L) → L L

xii. L (H) → L H

b. Trisyllabic Nouns

i. (L) H (L) → L H L

ii. (L) H (H) → L H H

iii. H (L) → H H L

iv. H (L) → H L L

[1] All of the predictions are based on the assumption that the only type of prefix that any noun can have is a low tone and that both low and high tone roots have this, despite the lack of evidence to show that low tone roots have a low tone prefix.

v. H (H) → H H H

vi. (L) L (L) → L L L

vii. (L) L (H) → L L H

viii. L (L) → L L L

ix. L (H) → L L H

x. L (H) → L H H

c. X-syllabic Nouns[2]

i. (L) H (L) → L H L L . . .

ii. (L) H (L) → . . . L L H L

iii. (L) H (H) → L H H H . . .

iv. (L) H (H) → . . . L L H H

v. H (L) → H L L L . . .

vi. H (L) → . . . H H H L

vii. H (H) →. . . H H H H . . .

viii. (L) L (L) → . . . L L L L . . .

ix. (L) L (H) → L L H H . . .

x. (L) L (H) →. . . L L L H

xi. L (L) → . . . L L L L . . .

xii. L (H) → L H H H . . .

xiii. L (H) → . . . L L L H

This is not the sort of distribution that is observed in the (admittedly small) data sample. All of the data presented in the following section of the paper is gathered by MBU members and myself. No other descriptive work has been done on this set of Medumba nouns as far as I know.

(39) Disyllabic Nouns in Isolation

a. Falling

i. kôŋgà ‘mountain’
5͡3 3

ii. kûʔŋgà name of a dance
5͡3 3

b. Low level

i. ŋàʔŋàʔ ‘mosquitoe’
3 3

ii. ŋkwàŋkwà ‘examination’
3 3

c. Rising

i. ŋgàláŋ ‘time’
3 5

ii. kwĭtʃù ‘plant parasite’
3͡5 3

[2]I have omitted the logically possible, but typologically strange, cases in which the left most tone spreads left and the right most tone spreads right. Spreading in both directions seems rather unexpected, and therefore I will not include it in these predictions.

The first unexpected aspect is the presence of contour tones on disyllabic nouns. Based on the behavior of floating tones on monosyllabic nouns, we did not expect to see contours on the first syllable of a disyllabic noun. We may have expected to see the "falling" contour on the final syllable, in the cases where a low tone was not followed by a floating high tone. This possibility is not ruled out by our data, it is simply not yet attested.

4.1 Low Tone Disyllabic Nouns

For the moment we are in a position to make claims about the level low tone disyllabic nouns. If the behavior of low tones is consistent, we would expect that they all have a floating high tone on their right edge; if not, we would have predicted a pitch contour of [3 $\widehat{31}$]. Luckily we have already developed tests which can discern between sequences of L(H) and L(L). Specifically, the frames in (11) and (22) have this property. Below, we have placed our low disyllabic nouns in the simple declarative frame.

(40) I saw the _____

a. mə́ jʊ́n { ŋàʔŋàʔ 'mosquitoe' / ŋkwàŋkwà 'examination' }
5 3 1 1

From the example above we can see that the low tone disyllabic nouns do not behave like falling tone monosyllabic nouns, which would have a falling contour in the final position. From just this frame, we could conceivably think that these nouns have high tones, despite the lower pitch in isolation.

The behavior of stable low tones and falling low tones is teased apart following mvən in the associative construction, as in the frame in (11). If the target noun is a sequence of low tones, it will progressively fall, or form a falling contour. This could be considered low tone downstep.[3]

[3]This does occur in the examples in (22c) and (11c), the amount of falling low tones makes it less obvious then would be in disyllabic low toned nouns where we would predict a sequence of three downstepped low tones. Again remember that Voorhoeve (1971) reports that both 'mvə̂n and the following L(L) noun will have falling contours. The data gathered by MBU does not show this; this would mean that for us low tone downstep is actually an event that only occurs to the final low tone of an utterance. I describe low tone downstep as it occurs in Voorhoeve (1971)'s data only because we might otherwise be tempted to posit a right edge boundary tone. A boundary tone seems like more of a leap than a rule that downsteps low tones, even if it only applies to the final low in a sequence of lows that are not followed by any high tones. The alternative low tone downstep which the MBU data supports is given below.

(1) LOW TONE DOWNSTEP: The last low tone of any sequence of low tones following the last high tone of an utterance will become a falling contour.

a. INPUT: /H L L L/
DOWNSTEP: /H L !L !L/
OUTPUT: [5 3 3 $\widehat{31}$]

(41) LOW TONE DOWNSTEP: Any sequence of low tones following the last high tone of an utterance will progressively become lower.

a. INPUT: /H L L L/
DOWNSTEP: /H L !L !L/
OUTPUT: [5 3 2 1]

We predict that low disyllabic nouns will stay as low as the low toned noun 'mvàn'; furthermore, we predict that the disyllabic nouns will not lower in pitch or form a falling contour. If this prediction is correct we will posit a high floating tone on the right edge of the disyllabic low nouns.

(42) I saw the chief of ____

a. má jún mvən { ŋàʔŋàʔ 'mosquitoe' / ŋkwàŋkwà 'examination' }
5 3 1 1 1

As predicted, these nouns pattern like stable low tone monosyllabic nouns. Compare the behavior of the low disyllabic nouns in (40) to the behavior of both level low and falling monosyllabic nouns in the same frame, in (43a) and (43b), respectively.

(43) 'I saw the chief of the ____'

a. má jún mvən { kò'spear' / ndùn'cloud' }
5 3 1 1

b. má jún mvən { ŋgô 'country' / tôŋ 'ear' }
5 3 1 1-1

The fact that the low tones following mvən do not lower in pitch indicates that there must be a high tone somewhere in the sequence preventing low tone downstep from applying. We can conclude that the underlying representation for low stable disyllabic nouns must have a high floating tone on the right edge. We may also wish to propose a low floating tone prefix on the left edge in order to maintain the position that all nouns have a floating low tone prefix. Of course, a floating low tone before a segmentally realized low tone is difficult to prove, so this position isn't particularly attractive from a synchronic point of view. Both options are shown below.

(44) Underlying Tonal Representations of Low Tone Disyllabic Nouns

a. /L L (H)/

b. /(L) L L (H)/

Since our goal is to investigate if and how the patterns identified in monosyllabic nouns map to disyllabic nouns, if we consult the mappings presented at the onset of this chapter in (38a), we find that one choice will map to our analyzed form, namely the one in (44a) above.

(45) (L) L (H) → L L (H)

What this prediction entails is that the first syllable of these nouns is actually the segmental realization of a noun class prefix. Prima facia this seems like a poor conclusion; however, if we could reconstruct a prefix that was a reduplicant of the base, then we would be in a much better position. There are of course other possibilities that we must consider in the cases of reduplication. As Downing (2003) suggests, tonal reduplication rarely occurs; this might provide a different sort of evidence for the tone system of Medumba, namely how default tones are assigned. For now, I will leave this question open allowing for a reanalysis once more reduplicated forms have been gathered.

4.2 Falling Disyllabic Nouns

The disyllabic nouns with falling tones prove more problematic to tease apart than the low tone disyllables. Before becoming involved in the puzzle of contour tones, let's examine how falling tone behave in familiar frames.

(46) I saw the chief of the ____

a. mə́ jʉ́n mvə̀n { kôŋgà 'mountain' / kûʔŋgà 'the name of a dance' }
5 3 1 3̂1 1

In the fist case, we know that the first syllable must bear a high tone; the other possibility would be an extension of the L(L) contour we observe with nouns like mvən in isolation. We can show that koŋga and kuʔŋga behave differently from falling tone monosyllabic nouns because they rise after a low tone where the falling tone nouns would continue to fall in the word final position due to low tone downstep, show in (41) above. If they were simply a low tone attached to the first syllable, without and underlying specification for later syllables, we would predict that following mvən they would be produced at the same level, then proceed to fall.

(47) I saw the ____

a. mə́ jʉ́n { kôŋgà 'mountain' / kûʔŋgà 'the name of a dance' }
5 3 3̂1 1

Recalling the puzzle of toneless prefixes presented in section 3.1.2, we have yet another complication. There was previously no clear evidence to point us to the source of downstep of high tones following the verb jʉ́n 'see'; for

most high tone monosyllables it seems that the low tone prefix on the left edge would downstep the high root tone. However, as we saw, verbs like sáŋ that have been claimed to lack any prefixal tone still downstep following jʊ́ʊ́n.

It does not seem that koŋga or kuʔŋga downstep. This is troubling since it adds a third complication. Recall that the data elicited by BUWGoM did not include double downsteps, but did indicate that sáŋ downsteps following jʊ́ʊ́n. Going solely on our data, it seems like all nouns should have a low tone prefix. If we follow this analysis then we would predict to not find some of the attested phenomenon described by Voorhoeve (1971) and Hyman (2003).

For now, I will adopt a model in which downstep of high tone monosyllabic nouns is caused by a low tone prefix, not by a floating low tone on the right edge of jʊ́ʊ́n. This allows us to explain why koŋga and kuʔŋga do not downstep following a downstepped high tone.

(48) HIGH TONE FOLLOWING DOWNSTEPPED HIGH:

/H (L) !H H/ → [5 3 3]

If we accept this hypothesis and maintain that the polysyllabic tone patterns must be derived from the monosyllabic patterns, then we have generated a new problem. All high tone roots are preceded by a low tone prefix and no evidence suggests a high tone prefix on monosyllabic nouns. We have no monosyllabic pattern that will map to any sequence /H L. . . /.

In order to obtain such a pattern we would have to allow for a toneless prefix or a high tone prefix, neither of which seems to be necessitated by the most recently elicited data

(49) (∅) H (L) → H͡L L

(50) (H) H (L) → (H) H͡L L

This requires that the floating low tone suffix must form a contour on the first syllable, and then either spread to the second syllable, or a low tone must be assigned to the second syllable by default.

With respect to the right edge, falling disyllabic nouns behave like low stem monosyllables and high stem monosyllables with non-low tones on their right edge. In other words, they do not downstep following high tones.

(51) Did I see the ____

a. mɔ́ jʊ́ʊ́n { kôŋgà ‘mountain’ / kûʔŋgà ‘the name of a dance’ } gí

5 3 3͡1 1 3

Recall that this frame differentiates between high stem monosyllabic nouns with floating high tones and floating low tones. In this case, it presents a puzzle for us; how do we treat a sequence of /H L L H/ for the purpose of downstep? Recall that this issue is important because of the problems given at the closing of section 3.1.2. If we follow Voorhoeve

(1971), we have evidence that we must have two low tones between the initial high tone on the target noun and the high tone on gi.

If we follow the idea that the low tone forms a contour with the high then proceeds to spread, we might be able to treat the spread low as two occurrences of a low tone, thereby generating to correct environment to prevent downstep.

In conclusion, it seems plausible that falling disyllabic nouns are underlyingly /HL/ with the high tone forming a contour with the low tone on the first syllable and then the low spreading to all following syllables. This hypothesis could gain support if we found trisyllabic nouns that seem to behave the same way: a H͡L contour on the fist syllable followed by a stretch of low tones. One predicted effect is low tone downstep if we could find words long enough. We would predict this since we have posited that the low tone must somehow "count as" two tones in order to block downstep.

4.3 Rising Tone Disyllabic Nouns

The disyllabic nouns with rising tones are a less contiguous class than the previous two; we have two distinct patterns, [3͡5 3] and [3 5]. For the moment I will focus on the more straightforward [3 5], ŋgalaŋ 'time'. First, let's place the noun in the familiar declarative frame.

(52) I saw the ____

a. mə́ jʊ́ʊn { ŋgàláŋ 'time' }
   5 3 1 3

We already know that there must be a high tone in the root, since it ends as high as jʊ́ʊn, a downstepped high tone. We also know that there are no intervening downstepped high tones since the high tone ceiling has not been lowered. This would be unproblematic were it not for the dip in pitch between the verb and the last syllable of the noun. One possible explanation is that segmental low tones do not trigger pitch lowering even if they match the environment for downstep.

(53) OVERT LOW TONES DO NOT CAUSE DOWNSTEP: For any sequence of /H L H/ the second high tone will be produced at the same level as the preceding high.

	INPUT:	/H	L	H/
a.	DOWNSTEP:		N/A	
	OUTPUT:	[5	3	5]

Of course there is another option to account for this data. If we again assume that low tone prefixes are prevalent, then such a prefix would prevent the high tone from being downstepped since there would be two intervening low tones between it and the high tone on the verb (one segmental and one floating low tone).

(54) Possible Underlying Representation for ŋgalaŋ ‘time’

a. /(L) L H/

b. /L H/

As mentioned previously, it’s not clear what sort of test would distinguish between the sequence /(L) L. . . / and /L. . . /. To maintain consistency with my previous supposition that Voorhoeve (1971)’s data does encapsulate some important generalizations, namely that the vast majority of noun have a low prefix and that high tone downstep occurs when exactly one low tone intervenes, I will maintain that ŋgalaŋ has the underlying tonal specification given in (54a).

When placed in the question frame, we find evidence for another floating tone.

(55) Did I see the ____

a. mɔ́ jʊ́ʊn { ŋgàláŋ ‘time’ } gí
5 3 1 3 1

The fact that the high tone on gi, the question marker, is produced as a downstepped high indicates that there must be a floating low one on the right edge of ŋgalaŋ. This is the same patterning we find with high tone monosyllabic nouns that have a floating low tone on the right edge, these are shown in (13a). We now have evidence that our underlying tonal representation should be of the following shape:

(56) /(L) L H (L)/

Having come to a loose conclusion about the first rising pattern, let us now turn to the second rising pattern: [3$\widehat{35}$ 3]. Before even turning to the data, we can posit a rough underlying tonal representation based on what we have seen with the other rising pattern [3 5] and what we have to suppose about contour tones.

(57) /L$\widehat{\text{H}}$ L/

We expect that all tests to will provide identical results to those conducted on the low tone disyllables. This is due to our current understanding of contour tones. The rise on the first syllable must be underlyingly a L$\widehat{\text{H}}$ glide, however, any toneme to the right would only be able to see the low tone. Furthermore, we have the puzzle of how the contour tone came to be and why it does not form when the floating low tone prefix follows a monosyllabic high tone.

Below are shown the possible monosyllable tone patterns that could give rise to the L$\widehat{\text{H}}$ L pattern.

(58) L (H) → L$\widehat{\text{H}}$ L

(59) (L) L (H) → (L) L$\widehat{\text{H}}$ L

(60) (L) H (L)→ L$\widehat{\text{H}}$ L

The first case assumes that low tone is assigned to the remaining syllable by a default rule. This is not a particularly unlikely case, however it does not account for why the low and high tone are associated to one syllable, or even why the high tone does not spread right to produce /L͡H H/. The same scenario applies to the second case, but additionally we would predict that there is a low floating tone on the left edge; as has been mentioned before, diagnosing a floating low tone before another low tone is rather difficult.

We must also consider what our theory would predict about a case in which a high tone precedes the L͡H contour; specifically, we need to be able to predict weather or not a high tone which is part of a contour can be downstepped, as in the example below.

(61) CONTOUR TONE DOWNSTEP: /H L͡H/ → /H L!͡H/ → [5 1͡3]

This seems unlikely and is contradicted by the claim that overt low tones do not cause downstep, shown in (53) above. We must assume that if a low tone forms a contour with a high tone that downstep cannot apply to that low; this makes some sort of since if we consider downstep to by a type of coarticulation and contour formation a similar type of coarticulation.

One final note before we turn to an analysis of kwitʃɯ; though Voorhoeve (1971) claims that 'tree parasite'[4] is polysyllabic and monomorphemic, it does seem to have the morpheme 'tree' tʃúˊ. These seem to have been distinct for Voorhoeve (1971) and it seems unlikely that he missed such an obvious compound since much of his data makes use of 'tree' tʃúˊ in various frames. For this reason I will continue to analyze it as monomorphemic.

Turning to the simple declarative frame, we can observe that kwitʃɯ does not appear to downstep.

(62) I saw the ____

a. mə́ jɯ́ɯn { kwǐtʃùɪ 'plant parasite' }
   5 3 1͡3 1

The same holds in the interrogative sentence:

(63) Did I see the ____

a. mə́ jɯ́ɯn { kwî̌tʃùɪ 'plant parasite' } gí
   5 3 1͡3 1 3

The behavior of the left edge is what he would have predicted given the underlying form /(L͡)H L/. Since the first syllable begins at a lower pitch than the previous downstepped high tone we might be tempted to propose a downstepped high tone; however, the full contour rises to the same pitch as the previous high, indicating that the contour is indeed a low-high sequence.

[4] 'Parasitic Plant' in Voorhoeve (1965)'s gloss. Ariane Ngabeu, my informant described a parasite that grows on a plant, not a plant that is parasitic. I have reglossed accordingly.

We must again invoke the notion that overt low tones do not cause downstep, shown in (53), in order to explain why the question marker ‘gí’ is produced as high as the preceding high tone. This unproblematically demonstrates that our initial prediction of this tone pattern, in (57) was correct. If we follow the assumption that all nouns have a low tone prefix, as we did with ŋgalaŋ, then our final underlying representation for kwitʃɯ should be as show below.

(64) /(L) L͡H L/

What is left is to identify the difference between disyllabic nouns with a rising contour and disyllabic nouns with a low tone on the first syllable and a high tone on the second syllable. We would hope that they are actually derived from different patters if we maintain that all of the monosyllabic tone patterns will map to polysyllabic nouns. Again the issue that prevents us from being able to conclude from which monosyllabic pattern these polysyllabic nouns derived is the floating low tone prefix.

In essence this particular conundrum cannot be solved by synchronic analysis; as I have mentioned, it is difficult to discern the effects of a low floating tone preceding a low segmental tone. In order to come to a satisfactory conclusion, a historical reconstruction of the segmental material of noun prefixes will need to be performed.

Chapter 5

Conclusion

Although I have not been able to robustly demonstrate that monosyllabic noun tone patterns map to polysyllabic nouns, I have made a case for this proposal. The significance of this project is to strengthen our reasons for proposing that all monosyllabic nouns have floating tones associated with them. If we could pin down the same pattern of tones that are realized on segments we may have stronger evidence for the complex behavior of nouns in Medumba. Furthermore we could make more meaningful statements about why nouns behave the way they do and more deeply investigate what other features pattern together with tone sequences; in particular, inflectional morphemes that may correspond to a noun class system.

As a secondary goal, I have attempted to point out which issues must be investigated in order to provide conclusive evidence for tone rules and underlying tone specifications. These issues require more data gathering in the field as well as historical reconstruction. There are still a plethora of unexplored areas of Medumba that can benefit from analysis. Hopefully this paper can serve as a foundation for further research.

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