Tone and accent in Saramaccan: Charting a deep split in the phonology of a language

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Abstract

Saramaccan, an Atlantic creole spoken in Surinam, has traditionally been analyzed as exhibiting a high-tone/low-tone opposition in its lexicon. However, while it is true that part of its lexicon exhibits a robust high/low opposition, the majority of its words are marked not for tone but pitch accent. The Saramaccan lexicon, therefore, is split with some words being marked for tone and other words marked for accent. This lexical split has important effects in the phrasal phonology of the language which, like the lexicon, is a mix between a tonal phrasal system and an accentual one.

Key words: Saramaccan, prosodic phonology, phrasal phonology, tone, accent

1 Introduction

This paper is, in some sense, an admission of failure. Following the lead of Voorhoeve (1961) and Rountree (1972a), I formerly believed Saramaccan, an Atlantic creole spoken in Surinam, to be essentially a tone language. Then, for a time, I believed that Saramaccan could be analyzed as a pitch-accent language. However, in the end, neither description manages to accurately portray the phonological facts, and I've given up trying to classify the language as tonal, accentual, or even anything in between. Instead, I will argue here that Saramaccan phonology is split, with some words belonging to an accentual part of the lexicon and others to a tonal part.

At first glance, Saramaccan passes one most critical test for being a tone language—minimal pairs exist in the language which apparently contrast solely in terms of their tone. Examples include: *bigí* 'begin' vs. *bígi* 'big', *búúú* 'ideophone for covering something' vs. *buúu* 'blood', and *fà* 'fun' and *fá* 'manner'. This last minimal

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pair, especially, makes Saramaccan look like a tone language since both words show different tone in the same relative position for a given series of segments. So, while the opposition between *bigí* 'begin' and *bígi* 'big' could potentially be viewed as a contrast between words marked for pitch accent, instead of tone, such an analysis is not immediately available for the opposition between *fà* 'fun' and *fá* 'manner'.

Despite the existence of such minimal pairs, however, there are definite complications in the language's phonology which make it look less than perfectly tonal. For example, a well-documented process of tonal plateauing in the language (Rountree, 1972a: 314–325) targets some "low" tones but not others. Examples illustrating this are given in (1). [1]

(1) a. Dí wómi kulé àlá. → Dí wóm**í** k**ú**lé àlá.
the man run there
"The man runs there."

b. Dí káìmà kulé àlá. → Dí káì**m**à k**ù**lé àlá.
the man run there
"The alligator runs there." (Rountree, 1972a: 316)

The citation form of the word meaning 'man' is *wómì* and the citation form of 'run' is *kùlé*. However, in (1a), the two forms respectively surface as *wómí* and *kúlé*, with all high tones. The citation form of the word meaning 'alligator' is *káìmà*, and it is superficially similar to the words *wómi* and *kulé* insofar as it surfaces with a mix of high tones and low tones in its citation form. [2] However, its final tones do not raise in the same syntactic environment, and, in fact, they never raise at all. Furthermore, replacing *wómi* with *káìmà* in (1b) causes *kulé* to surface in its citation form *kùlé* instead of the form *kúlé*.

As will be discussed in section 2, the critical difference between *káìmà*, one the one hand, and *wómi* and *kulé*, on the other, has to do with lexical specification. The

[1] The following convention will be maintained regarding tone marking: An acute accent (´) will be used to mark a high tone and a grave (`) will be used to mark low tone. Surface forms will be completely tone marked, reflecting their actual pronunciation. Underlying forms, however, will only show the tone marking which is taken to be specified in the lexicon either as the result of tonal specification or pitch accent. An intonationally conditioned mid-tone, observed to appear on utterance-final syllables and which is not phonemic, will be transcribed as a low tone.

[2] The reasons for the explicit low-tone marking on *káìmà*, despite the fact that words like *wómi* and *kulé* also have low-tones in their citation forms, will be made clear in section 2 where it will be argued that a word like *káìmà* is lexically specified for tone while words like *wómi* and *kulé* are specified for accent.

word *káìmà* is fully lexically specified for tone while *wómi* and *kulé* are not, and low tones found in the citation forms of these words alternate predictably between high tones and low tones depending on their phonological and syntactic environment (as will be discussed in section 3.2).

There is something suspicious about the alternating tones in words like *wómi* and *kulé*. If the language were to show a true opposition between high tones and low tones, what would the lexical status be of words containing TBU's which do not participate in this opposition?

In fact, the split between words like *káìmà* and words like *wómi* or *kulé* goes far beyond the lexical specification of tones. A range of facts strongly point to an analysis where words like *káìmà* should be considered as belonging to a "tonal" part of Saramaccan's lexicon while words like *wómi* and *kulé* should be considered as belonging to an "accentual" part of its lexicon. A lexical split along these two parameters—tonal versus accentual—has not previously been reported for Saramaccan, or any other language as far as I am aware.

This split in the Saramaccan lexicon propagates itself through the rest of the language's phonology giving it both tonal and intonational properties. And, though it is difficult to formalize precisely, the descriptive picture of Saramaccan phonosyntax is one where an overarching accentual system must crucially refer to specific lexical tones. This implies that the split phonology of Saramaccan can not simply be analyzed as a lexical phenomenon but rather is a characteristic of the whole phonological system of the language. The purpose of this paper is to present the evidence for for, and document the nature of, this split.

The organization of this paper is as follows. Section 2 presents detailed arguments demonstrating a lexical split in Saramaccan between words marked for tone and words marked for accent. Section 3 then discusses the phrasal phonology of the language, with section 3.2 covering a tonal plateauing process found in the language in light of its tonal and intonational properties and section 3.3 covering the special, and revealing, tonal and intonational properties of serial verb phrases. Finally, section 4 briefly relates the data to claims about the relationship between intonational and lexical tones cross-linguistically as well as examining the Saramaccan facts with respect to ongoing debates about creole genesis.

The bias of the paper is towards creating a descriptively adequate picture of Saramaccan tonal phonology, though various theoretical devices are employed to make certain arguments more clear. In general, however, the theoretical tools which have been developed for phonological analysis of tonal and accentual systems were not designed with "split" systems like Saramaccan's in mind. Therefore, they are of limited value in analyzing the facts to be presented. [3]

[3] There is at least one exception to this statement. The theoretical device of a cophonology as discussed in, for example, Inkelas and Orgun (1998: 365), would be able to model at

While this paper is designed to make a particular argument about the typological status of Saramaccan's phonology, it should also be noted that it has the narrower aim of providing a thick description (in the sense of Geertz (1973)) of the tonal/accentual phonology of the language—something which has not previously been available. By this, I mean that I seek to provide a description of the prosodic phonology of the language which will bring out various descriptive insights not noted by the earlier authors, relate those insights to what is known about the typology of prosodic systems in general, and sketch out the critical generalizations internal to the language that any full formal analysis of its prosodic system will need to accurately describe.

2 The split lexicon of Saramaccan

2.1 Introduction

In this section it will be argued that Saramaccan's lexicon exhibits a split where the majority of its words are marked accentually but where there is also an important set of words which are, instead, marked tonally.

In order to understand the following discussion, some terms will first need be clearly defined. Throughout the paper, when using the term ACCENT, I follow the definition in Hyman (1978) where it is taken to be "simply an 'abstract' mark where a culmination of prosodic features occurs, thereby marking that syllable (or accent-bearing unit) with greater salience than surrounding syllables (4)." Based on this definition of accent, PITCH ACCENT will be understood to be a type of accent where a particular tone-bearing unit (TBU) [4] is specified abstractly for accentual prominence in the lexicon and where one of the primary phonological cues of this prominence is a particular tonal realization which is the same across all TBU's which have this marking (for a comparable definition see Hyman (1978: 4)). The relevant tonal realization in Saramaccan will always simply be a level high tone.

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least the lexical aspects of the split phonological system of Saramaccan—though, it would not be able to readily handle the phrasal aspects of the split to be discussed in section 3.2.

[4] In the transcription system used for Saramaccan here, any orthographic vowel can be a TBU. In some cases, adjacent vowels of the same quality could be considered a long vowel, and in others they seem to be in separate syllables. In any case, however, either half of a long vowel can be marked differently for tone from the other half. For example, the word *móon* 'more' has a high tone only on the first half of its long vowel, *taánga* 'strong', has a high tone only on the second half, and *bóónu* 'anger', has a high tone on both halves. Thus, the term TBU will be applied throughout for a short vowel or half of a long vowel. Furthermore, any specification of a particular tonal contour for a word (along the lines of HL, LHL, HØØ, etc.) will refer to TBU's—not syllables.

When using the term TONAL to describe a word or language, I take it to refer to a case where pitch is used to mark a paradigmatic contrast in a given language. For example, a tonal language will have a number of tonemes which can contrast with each other when marked on the same domain (i.e., the same TBU) on different words with the same segmental form. In this sense, the minimal pair *fà* and *fá* 'manner' in Saramaccan shows a paradigmatic tonal contrast where both words differ phonologically solely on the basis of which tone marks their only TBU. A comparable definition of tonal can be found in Hyman (1978: 2–3). (For definitions of the terms accent, pitch accent, and tonal comparable to the ones seen here, see also Remijsen (2001: 39–41; 2002: 585–7).)

The source of high tones in Saramaccan will be taken to sometimes be from lexical tonal specification and other times to be a reflex of pitch accent. So, saying that a word contains a surface high tone should not be intended to mean that the word is lexically marked for tone. The term TONE by itself will be used to refer both to lexically specified tones and tones associated with accent. Where distinguishing between the two is relevant, the term will be appropriately modified. I will sometimes use the term TONAL PHONOLOGY as a cover term referring to both tonal features of the grammar and intonational features which make use of tone.

Finally, previous researchers of Saramaccan have generally taken Saramaccan to be a tone language (Voorhoeve, 1961; Rountree, 1972a) (though see Devonish (1989: 48–55) for a different perspective derived, for the most part, from a comparison of Saramaccan with other Atlantic creoles). Thus, the argument in this section will focus on showing that an important class of words is lexically marked for accent, not tone, since this represents a new claim. Previously, this class of words was taken to be marked for tone. [5]

2.2 Rountree's four word classes

Rountree (1972a:314–18) can be first credited with placing Saramaccan words into distinct phonological classes with respect to tone marking. Her classes are exemplified in table 1. (Some examples taken from Rountree (1972a), Voorhoeve (1961), and Ham (1999).)

Rountree classified words in Saramaccan into four classes, as indicated in the table. The first three of these classes contain words fully specified for tone. Words in classes (i) and (ii) are fairly common, while words in class (iii) are somewhat rare.

[5] It is worth pointing out here that some of the results and conclusions in this section were anticipated by Devonish (1989). However, he had access to only a small amount of the data which was used in coming to the conclusions here, which has resulted in his analysis being less complete and differing from the one here in very significant ways. Most critically, Devonish was not aware of the existence of words which, here, are considered "tonal".

Table 1
Rountree's (1972a) tonal classication of Saramaccan

	CLASS	WORD	TONES	GLOSS
	Tonally Specified	*hɛ́n*	H	'he, then'
		sósó	HH	'only'
(i)	High tones only	*búúú*	HHH	'ideophone for covering'
		kúlúlúú	HHHH	'ideophone for straight'
		bà	L	'carry (mass noun)'
(ii)	Low tones only	*bɔ̀sɔ̀*	LL	'loosen'
		lègèdè	LLL	'lie'
		pètèpètè	LLLL	'consistency of salve'
		éì	HL	'if'
		àkí	LH	'here'
(iii)	High and low tones	*káìmà*	HLL	'alligator'
		kúnà-kúnà	HLHL	'old, worn out'
		tótómbòtí	HHLH	'woodpecker'
		séségùùsé	HHLLHH	'kind of fish'
	Accentually Specified	*foló*	ØH	'flower'
		náki	HØ	'hit'
(iv)	One high tone or two	*taánga*	ØHØ	'strong'
	adjacent high tones,	*maaní*	ØØH	'screen,sift'
	rest unspecified	*sukuáti*	ØØHØ	'chocolate drink'
		amɛɛkán	ØØØH	'American'
		íngísi	HHØ	'English'
		olóísi	ØHHØ	'clock'

The fourth class is the largest (Rountree, 1972a: 316), and all the common tonal patterns seen in that class are exemplified in the table.

Rountree herself does not claim that the words in classes (i–iii) are tonally specified and those in class (iv) are accentually specified. However, she does single out class (iv) words as being the only words containing "changeable low tones (1972a:316)". Her tonal category of "changeable low" TBU is characterized here as a TBU unspecified for tone because the distinguishing feature of these TBU's is that they predictably surface with a high or low tone depending on their phonosyntactic environment. As a default (in citation form, for example), these TBU's surface with

low tones. Thus, a word like *taánga* ‘strong’ will be pronounced *tàángà* in isolation. The example in (2) shows an environment where the final TBU of *tàángà* is realized with a high tone.

(2) dí taánga wómi → dí tàáng**á** wómì
the strong man
“the strong man”

Roughly speaking, within phonological phrases, a type of tonal plateauing occurs in Saramaccan wherein “changeable low” TBU’s surface with high tones when flanked by high-tone TBU’s. The final TBU of *taánga* in (2) has been affected by this process and is, thus, realized with a high tone. Since the surface tone on Rountree’s “changeable low” TBU’s is phonologically predictable, I take them to be lexically unspecified for tone. The processes which cause these TBU’s to be realized with a high tone, instead of a default low tone, will be discussed in detail in section 3.

Table 1 exemplifies the common tonal patterns found in Saramaccan. Because of this, we can state the generalizations given in (3) about the distribution of tone marking in the Saramaccan lexicon.

(3) a. No word can be completely unspecified for surface tone.
b. If a word contains a TBU marked as surfacing with a low tone, it is completely specified for tone.
c. If a word contains more than one TBU underlying marked as surfacing with tone, it is completely specified for tone.

Of the generalizations in (3), generalization (3c) needs to be clarified somewhat since the last two words in table 1 both have more than one high-tone TBU. However, since, in class (iv) words, these two TBU’s are always adjacent and, with few exceptions, belong to a phonologically well-defined subclass of words which will be discussed in section 2.5, I take there to be only one TBU underlyingly specified as surfacing with a high tone on these words—the realization of the second high-tone TBU will be shown to be predictable.

I have identified at least one monomorphemic word which is an exception to the generalizations in (3): *anákìtá* ‘biting ant’ which has the tonal form ØHLH. This word seems to be of mixed class—having some characteristics of words in Rountree’s classes (iii) and (iv). Voorhoeve identifies about ten words (out of a sample of 1500 words) which also seem to be of mixed class (1961: 154). All but one of the words he gives begin with *a* like *anákìtá*, and the one exception to this, *obílògbén* ‘a type of snake’, also begins with a vowel.

I take these words to be basically tonal words which are preceded by an (unstressed)

underlyingly toneless vowel. It is tempting to call these vowels prefixes of some sort, and many of them may be the result of transfer of prefixed words or of a prefix itself from African languages into Saramaccan. Alleyne (1980: 154–8), for example, has suggested a link between some instances of initial *a* in Saramaccan and an *a* noun class prefix found in Niger-Congo languages. It is difficult to make a strong synchronic case that these words are prefixed since no particular meaning can be associated with these initial vowels. However, it seems plausible that the existence of these mixed class words is, at least diachronically, tied to the existence of a vocalic nominal prefix. I take this fact to be the reason for their exceptional behavior and do not include them in the discussion to follow.

Examining the generalizations in (3), it quickly becomes apparent that generalizations (3b) and (3c) together imply the existence of a "tonal" part of the lexicon—that is, there is a distinct part of the lexicon which contains entries marked as having invariant tone on all of their TBU's. This part of the lexicon would correspond to classes (i–iii) in table 1.

If one were to examine just this part of the lexicon alone, then Saramaccan would appear to be a language with a rather robust two-tone opposition. The only potentially strange thing about the language are some of the gaps in class (iii). For example, no word with an HLH pattern has been identified. However, class (iii) words are not particularly numerous and are hard to identify from the published sources of the language where low-tone TBU's and TBU's unspecified for tone are both orthographically unmarked. Therefore, these gaps probably do not reflect any phonologically significant patterns in the language.

As we saw above with the minimal pair *fà* 'fun' and *fá* 'manner', there are words which exhibit a paradigmatic contrast on the basis of tone. Such pairs are important evidence that phonological tone is operational in this language. Another case of such paradigmatic contrast is in the pronominal system of Saramaccan where emphatic and non-emphatic pronouns can contrast solely on the basis of tone as seen in table 2. These forms are reported in Voorhoeve (1961: 161).

Table 2
Emphatic and non-emphatic pronouns in Sarmaccan

	NON-EMPHATIC		EMPHATIC	
PER	SG	PL	SG	PL
1st	*mì*	*ù*	*mí*	*ú*
2nd	*ì*	*ùn*	*í*	*ún*
3rd	*à*	*dè*	*hén*	*dé*

As can be seen in table 2, five of the six pronouns in Saramaccan oppose their non-emphatic and emphatic forms solely on the basis of a tone contrast, where high tone is associated with emphatic forms and low tone with non-emphatic forms.

These oppositions illustrate some of the most noticeable tonal minimal pairs in the grammar of the language.

There is another area of Saramaccan grammar which, though not narrowly lexical, which provides further evidence that tone is an active feature of the language's phonology. The only productive derivational suffix in Saramaccan, the agentive suffix *-ma*, surfaces with a low tone when suffixed to a word ending with a high tone or a TBU unspecified for tone, but it surfaces with a high tone when suffixed to a word ending with a lexical low tone as the examples in table 3 indicate.

Table 3
-ma words in Saramaccan

WORD	TONE	GLOSS	ROOT	GLOSS
lúkumà	HØL	'spectator'	*lúku*	'look'
koósumà	ØHØL	'woman'	*koósu*	'skirt'
paímà	ØHL	'mother of many children'	*paí*	'give birth'
lègèdèmá	LLLH	'liar'	*lègèdè*	'lie'
káìmàmá	HLLH	'alligator man'	*káìmà*	'alligator'

The most straightforward analysis of the data in table 3 is that the agentive suffix in Sarmaccan is underlyingly *-mà* and it dissimilated to *-má* when immediately preceded by a lexical low tone. Importantly, the contrast between words like *lúkumà* and *káìmàmá* shows clearly that this tone alternation is conditioned not by the citation/surface tones of a word but by its lexical tonal specification.

The alternation exemplified in table 3 is some of the strongest evidence for the phonological reality of underlying tones since, otherwise, it would be very difficult to devise phonological criteria which would allow one to predict the surface form of *-ma* when it follows a word which is, here, taken to end in a TBU unspecified for tone versus a word taken to end a lexical low tone.

We see, then, that there clearly appears to be a class of "tonal" words in Rountree's classes (i–iii) which have invariant tones and show paradigmatic tonal contrasts, and, furthermore, there is other evidence that tone is phonologically active in the languge. However, the largest class of words in Saramaccan, class (iv) words, is extremely restricted in its marking of tone in a way which makes it hard to consider words in this class to be properly tonal. A high tone surfaces on only one or two TBU's in these words—and if on two TBU's, then they must be adjacent. Furthermore, as can be seen in examples like the one in (2) the underlying H/Ø opposition of tone marking in these words can be neutralized on the surface by tone raising processes found in the language, something which is never seen for words in classes (i–iii).

If class (iv) words were examined on their own, Saramaccan would look more like

a language that makes use of distinctive accent—specifically pitch accent—rather than tone. That is, the nature of the high tones in class (iv) words is such that they do not appear to be in paradigmatic contrast to low tones. Rather, it seems these words are marked in a way which simply specifies that a high tone must appear in a particular position on the word.

These generalizations are the beginnings of an argument that there is a tonal and an accentual part of Saramaccan's lexicon. In the next section, I will carefully examine the phonological properties of the surface high-tone marking in class (iv) words. Evidence suggesting that the high tone is a manifestation of pitch accent, instead of tone, will come from two related areas: the restricted positioning of high-tone marking on class (iv) words and the relationship between high-tone marking and word stress.

2.3 The limited distribution of high tones on class (iv) words

If class (iv) words in Saramaccan were marked with accent in its most restricted form, then its location would be completely predictable in a given word. However, as the data in table 1 indicates, the location of the high-tone TBU is not completely predictable. It can be word-initial (cf. *wómi* 'man'), word-medial (cf. *sukuáti* 'chocolate drink'), or word-final (cf. *kulé* 'run'). [6] More importantly, minimal pairs exist solely on the basis of surface position of a high tone. Examples include: *bigí* 'begin' vs. *bígi* 'big' and *pái* 'father-in-law' vs. *paí* 'give birth'. Class (iv) words can also contrast with words in other classes on the basis of surface tone, an example being *búúú* 'ideophone for covering something' vs. *buúu* 'blood'.

However, despite the fact that the location of the high-tone TBU's in class (iv) words is not completely predictable, there are some restrictions on their placement. The first has already been mentioned: If a word has more than one high-tone TBU, then the TBU's must be adjacent. As table 1 indicates, though, the gaps go beyond this one simple restriction, since the class (iv) words in that table exemplify all the common tonal patterns found in class (iv) words in Saramaccan.

To interpret the gaps in the tonal contours, a close examination was made of Rountree and Glock's (1977) word list of the language, which has about 1300 words in Saramaccan marked for high tone (about 500 of which have three or more TBU's) and a more cursory examination was made of a more recent word list with over 3500 entries (Rountree, Asodanoe, and Glock, 2000). Both word lists revealed the same important facts about how tone is distributed in class (iv) words. [7]

[6] Historically, Ham (1999: 55) points out that in borrowed words of European origin the high-tone syllable in Saramaccan tends to correspond to the stressed syllable in the word's original language.

[7] The discussion that follows is limited to words with four or fewer TBU's since too few

Most class (iv) words have only one high tone on either their final or penultimate TBU. In the important subclass of class (iv) words with two adjacent high tones, the high tones are always marked on a word's antepenultimate and penultimate TBU's. (These words will figure prominently in the discussion of the relationship between stress and tone in section 2.5.) There are words which are exceptions to these patterns but almost all are polymorphemic. Also, with only one known exception, the word *fóótóo* 'photograph' no monomorphemic class (iv) word has more than two high-tone TBU's.

Examples of polymorphemic words which violate the restrictions mentioned above fall into three groups: reduplications like, *tekúteku* 'hiccup' and *pɛ́nɛ́pɛnɛ* 'naked', which have their own rules with respect to how tone is derived in them (see Voorhoeve (1961:155–6) for a complete description); compounds like, *hógífóu* 'owl' (from *hógi* 'evil' and *fóu* 'bird') and *hɔ́níwáta* 'honey' (from *hɔ́ni* 'bee' and *wáta* 'water'); and words with the *-mà* agentive suffix attached to bases which do follow the normal patterns, like *lúkumà* 'spectator' (cf. *lúku* 'look') and *hátimà* 'brave person' (cf. *háti* 'heart').

There are some monomorphemic words which seem to be true exceptions to the general high-tone marking patterns, though only a few have been identified. The known exceptions are *hékísee* 'sneeze', *fóótóo* 'photograph' (also the only known monomorphemic word with three high-tone TBU's), *akúsuwe* 'small rodent type', and *adjáansi* 'spider'. Doubtless, there are other exceptional words, however, the close examination of Rountree and Glock's (1971) word list mentioned above, revealed hundreds of words which did follow the pattern and only these few which did not. Thus, it seems reasonable to assume that the restriction that high tones be on the final or the penultimate TBU, or both the antepenultimate and penultimate TBU's, is phonologically active in the language.

The restrictions on high-tone placement have been characterized in terms of TBU's and not syllables because the same basic set of generalizations holds for words containing short syllables, long syllables, or some combination of the two. Since, for reasons of clarity, much of the discussion will focus on words with only short syllables, here, I give some examples of the tone types seen on words with long syllables. Long (i.e. two-TBU) syllables with high tones in class (iv) words fall into three logical patterns HH, HØ, and ØH. The HH pattern is common, but restricted to penultimate long syllables. Some examples include: *áíti* 'eight', *fɔ́útu* 'mistake', *sitááfu* 'punishment', and *púúma* 'hair, fur'. The ØH pattern is also fairly common—e.g., *baáka* 'black', *koósu* 'clothes', *kiíki* 'creek', and *haún* 'jealousy'. This pattern is restricted to a final or penultimate long vowel. The HØ pattern is the most restricted—it occurs almost exclusively when the VV sequence is in the last syllable of the word as in, *máun* 'shoulder' and *kapɛ́ɛ* 'woods, brush'. The only

monomorphemic words consisting of more than four TBU's have been identified to make any significant generalizations.

known monomorphemic counterexample is *adjáansi* ‘spider’.

The restrictions on the placement of tone in long syllables are consistent with the generalizations stated above since they enforce the basic pattern of final or penultimate TBU high-tone marking for words with one high-tone TBU and antepenultimate and penultimate TBU high-tone marking for words with two high-tone TBU’s.

To summarize the above discussion, the generalizations in (4) hold for the vast majority of class (iv) words in Saramaccan.

(4) a. Each word has one or two high-tone TBU’s.
    b. Multiple high-tone TBU’s in a word must be adjacent.
    c. A high tone appears on either the final or penultimate TBU.

Importantly, the generalization in (4b) combined with the generalization in (4c) allows us to analyze that there is only one “mark” on any class (iv) word which indicates where the high tones in those words will surface. If the antepenultimate TBU is marked as having a high tone, the penultimate TBU will also have to be realized with a high tone. Otherwise, only the TBU marked as having a high tone surfaces with one.

The generalizations in (4), therefore, indicate that class (iv) words in Saramaccan meet some of the minimal requirements for being marked for pitch accent. One abstract “mark” in the lexicon placed on a given TBU can suffice to indicate where a high tone, or high tones, will surface. This abstract mark could, then, be taken to specify which TBU is accented.

Under an accentual analysis, the Saramaccan system would be somewhat atypical insofar as the reflex of prominence would have to be taken to be a high tone even though some words contain multiple high tones spread across two syllables. This fact, in principle, causes Saramaccan to deviate from a protypical accent system wherein there is an expectation that the accented syllable will be marked with “greater salience than surrounding syllables (Hyman, 1978: 4).” If TBU’s in two adjacent syllables are marked with a high tone, barring other mechanisms to indicate salience, they would both be, presumably, equally salient.

However, despite this, two important facts support the analysis of words with multiple high-tone TBU’s as being marked for accent. The first is simply that, no matter what the precise details are of the realization of the pitch accent high tone, the realization is predictable via one abstract lexical mark. Therefore, it is not the case that the individual tones on words with multiple high-tone TBU’s are contrasting with other tones. Rather, it is simply the position of the tones which is contrastive—this is a hallmark of an accentual system, even if this particular one differs from prototypical cases.

Perhaps more important is the fact that, as we will see in section 2.4, in words with multiple high-tone TBU's, when there is a high-tone on two syllables, only the first of the two will be stressed. So, even if the two syllables are equally salient on the basis of tone, the first syllable is more salient on the basis of stress. This is the syllable taken to be marked for accent. In this sense, though Saramaccan may still be atypical, when the combination of stress and tone is considered, the accented syllable does indeed have greater salience than the other syllables in words with two high-tone TBU's, bringing it more in line with a prototypical accent system.

Though there are some ways in which Saramaccan class (iv) words do not resemble those of a prototypical pitch accent language, importantly, their behavior is certainly less consistent with their being part of a tonal system than being part of an accent system. In an "ideal" tone system (Hyman, 1978: 8), tone marking would not be expected to be limited to one or two TBU's in a word (contrary to generalization (4a)) or have the one-mark-per-word bias implied by the combination of generalizations (4b) and (4c). Furthermore, tones would be expected to occur with equal probability on any TBU in a word, which is also in opposition to generalization (4c). However, these restrictions alone are not necessarily inconsistent with a restricted tone system, and languages which have comparable strong restrictions on the placement of their tones are known to exist (e.g., Fasu allows only one tone per word either high or low) (Hyman, 1978: 9).

Nevertheless, the restrictions in (4) can be taken as an important piece in an argument that class (iv) words belong to an accentual system instead of a tonal one. There are two other issues which have bearing on such an analysis. The first is to discuss the existence of stress in Saramaccan in Saramaccan class (iv) words, since stress, like pitch can also be considered a manifestation of accent. The second is a more explicit treatment of those words, like *íngísi* 'English', which, as just dicussed above, show pitch accent markings which deviate from what would be expected of a protoypical pitch accent system. We will see that both these issues are related to each other.

2.4 Stress in Saramaccan

Stress has been reported to exist independently of tone in Saramaccan. Rountree (1972a) describes some phonetic correlates of stress: "Stressed syllables are louder, slightly longer, and their tones are slightly exaggerated i.e. high tones are slightly higher and low tones are slightly lower (309, footnote)." Since stress is often taken to be a manifestation of accent, this could complicate the claim that the surface high tone seen on class (iv) words is a type of accent marking. Therefore, a detailed description of the nature of stress in Saramaccan is important for the general argument. It will turn out that the independent existence of stress in Saramaccan, in fact, lends strong support to the idea that class (iv) words are marked for accent

instead of tone. [8]

Rountree (1972b) described the stress rule in Saramaccan as follows:

> The stress pattern of stems can be predicted according to the following rules. (1) The first long syllable in each foot of the stem is stressed. (2) If there is no long syllable, the next to the last syllable in the phonological foot is stressed. In simple stems that correspond to more than one phonological foot, the first stress is the heaviest... Two-syllable stems with a LH [here ØH] tone pattern have no set pattern, the stress varies freely between the syllables... (26–7)

It is not made explicit, but "long syllable" seems to refer to both long vowels (represented orthographically as the same vowel written twice) or diphthongs.

There is a major problem with following Rountree's definition—it is not exactly clear how she defines a foot. However, from some of the parsings she gives, it is clear that she viewed the foot as disyllabic and, at least as a default, trochaic. [9]

Another potential problem with following Rountree's stress rule is that her criteria for stress, which were mentioned above, are purely perceptual and not phonological. This creates some conflicts when trying to ensure that a syllable is truly phonologically stressed and not merely perceptually prominent. For example, Rountree (1972b) states that long vowels receive stress, but from Rountree (1972a), we are given that length is one of the phonetic correlates of stress. This potentially circular method for determining stress highlights the inadequacy of relying only on Rountree's criteria.

In order to decrease the reliance on Rountree's description of the phonetic correlates of stressed syllables, it is valuable to make use of two phonological rules affecting the articulation of vowels which are sensitive to word stress. One rule is a reduction rule and the other is a lengthening rule. The reduction rule has been used as an indicator that a syllable is unstressed and the lengthening rule as an indicator that a syllable is stressed. These indicators match the predictions of Rountree's stress rule and have not been observed to contradict it in any way—thus, all the data presented here can be taken simply as verification of her basic criteria and formulation. Only three and four syllables words with short syllables will be discussed, since only those words have been observed to be subject to the lengthening and reduction processes. (Importantly, many of the potentially problematic class of words with

[8] As the argument in this section progresses, Rountree's definition will be seen to contradict an important aspect of the analysis to be developed. This is because she admits the possibility of stressed low tones. This issue will be taken up in section 2.6.

[9] Rountree (1972b) gives two examples of parsed monomorphemic words: *síkísi* 'six' is parsed as *síkí/si* where '/' is a foot boundary, and *kaluwá* 'lizard' is parsed as *kalu/wá*. It is not clear how defective one-syllable "feet" should factor into her stress rule as it is stated. However, see section 2.5 for one approach.

high-tone TBU's across two syllabless are of this type.)

The reduction rule reduces, or in some cases deletes, vowels in medial syllables of class (iv) words. Reduction or deletion of an unstressed vowel is a common phenomenon in unstressed syllables (Kenstowicz, 1994: 48). An example of a vowel showing reduction is the middle *a* of the word *sákása* 'living room'. It is significantly shorter than the initial and final *a*'s of the word. This process is particularly salient for words like *mɔkisá* 'squash', *bɔ́kúsu* 'box', and *minísíti* 'minister', since words with *sVT* and *TVs* strings (where *T* is a voiceless stop) have been observed to allow complete deletion of an intervening *i* or *u*. [10]

Just as there is unstressed vowel reduction in class (iv) words, there is an opposite process of stressed vowel lengthening which has been observed in non-final syllables. In particular, a way of marking emphasis on class (iv) words is to lengthen stressed vowels. For example, an emphatic form of *sákása* 'living room' is *sá:kása* and an emphatic form of *minísíti* 'minister' is *miní:síti*. Lengthening of unstressed/reduceable syllables is not allowed in this kind of emphasis.

In words which show both lengthening and reduction and which, thus, have one syllable which can be clearly shown to be phonologically stressed and another one which can be shown to be unstressed, the stressed/lengthenable vowel always proceeds the unstressed/reduceable one. Two examples of such words are *síkísi* 'six' and *minísíti*. Words like these offer good support for Rountree's parsing of Saramaccan words into trochaic feet.

The phonological lengthening and reduction rules have been the primary determiner in the location of the stress markings given in the next section. Rountree's perceptual criteria have been used as a secondary device in determining proper stress marking. Since expanding the criteria for stressed and unstressed syllables to include phonological reduction and lengthening effects simply verified Rountree's basic formulation of the stress rule for Saramaccan, it is taken to be essentially valid here. [11] The issue of how exactly to parse a word into feet will be discussed below.

[10] For some of these words, vowel deletion is sociolinguistically marked—one consultant reporting that the deletions, in some instances, were more likely to be spoken by particular social groups than others (city speakers, living in Paramaribo, were often singled out). However, even if deletions were marked, my consultants spontaneously exhibited reduction of medial vowels in all these words, as well as spontaneous deletion in others. Though not directly relevant to the discussion at hand, it is also worth noting that many of these deletable vowels are historically epenthetic as can be straightforwardly seen from the gloss of a word like *minísíti* which is clearly a borrowing of the word *minister* (probably from Dutch).

[11] Somewhat important for the full analysis given here is that I do not take the last part of her rule to be completely accurate. I requote it here: "Two-syllable stems with a LH [here: ØH] tone pattern have no set pattern, the stress varies freely between the syllables…' (1972a: 26). The analysis to be given below will imply that these words are accented on

2.5 The interaction of high tone and stress in class (iv) words

Having gone over the known criteria for stress in Saramaccan, we are in a position to discuss the relationship between the placement of high tones and stress in class (iv) Saramaccan words. The focus will be on three and four syllable words with short vowels since stress can be most reliably determined on those words and since the potentially problematic words with high-tone TBU's across two syllables fall into this class. However, words of less than three syllables and with long vowels offer no problems for the general argument and will be discussed briefly at the end of this section.

The data in (5) shows the location of the most prominent stress (using a "ˈ" mark before the stressed syllable) in all the example words given in this section as well as two others, *alukutú* 'soursap fruit' and *sukuáti* 'chocolate drink'. This data exemplifies the common three and four-syllable tone/stress patterns seen in Saramaccan for words with short vowels.

(5)	*ˈsákása*	'living room'	*siˈkífi*	'write'
	ˈbɔ́kúsu	'box'	*maˈníni*	'courtesy'
	ˈsíkísi	'six'	*mɔˈfína*	'destitute'
	afoˈkáti	'lawyer'	*miˈnísíti*	'minister'
	ˈmɔkisá	'squash'	*aˈlukutú*	'soursap fruit'

As was indicated in table 1, there are three possible tone combinations of three-TBU words: ØHØ, ØØH, and HHØ. If stress and tone were completely independent, we would expect there to be nine possible combinations of tone and stress for words with three short syllables. Similarly, there are three possible combinations of high tones for words with four short syllables ØØHØ, ØØØH, and ØHHØ. If stress and tone were completely independent, we would expect to find twelve different combinations of stress and tone for these words. This would be a total of twenty-one combinations. However, we don't see nearly that many combinations.

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their final syllable and do not have truly variable stress. She specifically cites the word *bɛbɛ́* 'drink' as an example of a word with varying stress. Having elicited this word on numerous occasions, I share her intuition that either syllable can sound more "emphatic" than the other in a particular utterance. However, insofar as there are phonological effects of stress, they have not been observed in words with two short syllables. Therefore, it is hard to decide which syllable, if any, of words in this class is stressed on the basis of the strictest criteria. Since, we will see elsewhere that there is a striking correlation between high tones and stress in Saramaccan, it seems that two-syllable words with an ØH pattern should be treated as having final accent and that "stress", if defined solely in terms of phonetic prominence may vary in these words, but this is a much weaker statement than saying that phonological stress is truly varying, something which I do not believe to be true.

Instead, we see only six—this is the exact number of tonal combinations seen in these words (i.e. three combinations of three-TBU words and three of four-TBU words). These six patterns are given in (6).

(6) CVˈCV́CV CVCVˈCV́CV
ˈCVCVCV́ CVˈCVCVCV́
ˈCV́CV́CV CVˈCV́CV́CV

These six cases do not, at first, show complete correlation between stress and high tone. The set of cases with two high-tone syllables will be discussed below. The other set of cases, those with antepenultimate stress and final high tone (i.e. ˈCVCVCV́ and CVˈCVCVCV́ words) can be easily understood once we recall two things. The first is that by the strictest criteria for determining the position stress—vowel lengthening—final vowels can never be stressed since they are not subject to emphatic lengthening. [12] The second is that we know from Rountree's definition of stress that she considers multiple stresses per word to be a possibility in words of more than one foot. My observations confirm this. Since stress is assigned on the basis of feet, if the patterns given in (6) are assigned the foot structures given in (7) and all stresses following Rountree's formulation of the Saramaccan stress rule are marked, then we quickly see that it is possible for there to be a complete correlation between a high tone and a stressed syllable. It is simply the case that not all stressed syllables have a high tone. In (7), parsed feet are marked off with parentheses and extrametrical feet (see Liberman and Prince, 1977) are marked with angle brackets.

(7) ⟨CV⟩(ˈCV́CV) (ˈCVCV)(ˈCV́CV)
(ˈCVCV)(ˈCV́) ⟨CV⟩(ˈCVCV)(ˈCV́)
(ˈCV́CV́)(ˈCV) ⟨CV⟩(ˈCV́CV́)(ˈCV)

The algorithm to obtain the foot parsings in (7) can easily be characterized with respect to the surface high-tone TBU as in (8).

(8) a. Treat the syllable containing the leftmost high-tone TBU as the first syllable of a trochaic foot.
b. Parse the rest of the word into trochaic feet where possible given the location of the first foot.
c. Defective feet at the right edge of the word are permitted, but defective feet at the left edge are not.

[12] There is a final-vowel lengthening rule. However, this rule only applies to words ending in long vowels. So, for example, the words *mujέɛ* 'woman' can be pronounced as *mujέɛː*. Thus, the lengthening rule cannot be used to determine whether a final short vowel is stressed.

Clearly there are other ways to characterize the foot parsings, or the relationship between stress and high tone, and I, by no means, intend the algorithm in (7) to be taken as an explanatory analysis. The critical fact to be obtained from this algorithm is simply that word stress can be predicted from the location of the leftmost high-tone TBU.

An obvious descriptive claim that needs to be justified about the metrical structures given above is that defective feet at the beginnings of words are not parsed, and therefore cannot receive stress. One piece of evidence for this is that it allows for a parsing of Saramaccan words which results in alternating stressed and unstressed syllables—thereby avoiding stress clashes, which have not been observed in the language.

However, there are more concrete phonological criteria for these parsings. Word-initial syllables followed by a stressed syllable can be observed to reduce/delete—indicating that they are unstressed. Thus, a word like *sikífi* 'write', can be pronounced *skífi*. I know of no examples of four-syllable words beginning with an *sVT* cluster. However, the first syllables of *minísíti* 'minister' and *alukutú* 'soursap fruit' are unstressed based on Rountree's perceptual criteria.

So, it is possible to construct a reasonable algorithm as exemplified by (8) which can predict the realization of tone and stress on the basis of a single accent mark. This means that, although they cannot lend strong confirmation to the proposal that the high tones of class (iv) words in Saramaccan are a manifestation of pitch accent, words of the form CVCVCV́ and CVCVCVCV́ can easily be shown to be consistent with it.

There is an important, positive consequence of accepting the idea that CVCVCV́ and CVCVCVCV́ words are stressed on the last syllable and, by consequence, have two stressed syllables. Such an analysis gives us a straightforward explanation for the otherwise surprising fact that the exact number of possible tone patterns in three and four short syllable words is exactly the same as the number of tone and stress combinations in those words. This is because stress and tone are not treated as independent phonological features but are, instead, understood to be different realizations of a single, word-final accent mark.

An important aspect of this analysis is that it implies that Saramaccan has an alternating stress system with a primary stress towards the left-edge of the word and secondary stress on every other syllable following primary stress. Such alternating stress systems are not uncommon (see Halle and Idsardi (1995: 418–22) for some discussion).

Within this description, although stress and tone are completely correlated in class (iv) words—and, therefore, not in a contrastive relationship to each other—there is a mismatch between them insofar as the syllable specified with accent is realized with high tone and stress but does not necessarily receive primary stress. As a

default assumption, one would expect the syllable lexically marked for accent to receive primary stress since that is how a lexical stress system typically operates.

Saramaccan, clearly, does not have a typical accent system, which seems to have resulted in the fact that the interaction between stress and pitch accent marking in the language is also not typical. A comparable case to Saramaccan is Papiamentu which has been reported to have both contrastive pitch-accent and stress (Kouwenberg and Murray 1994, Rivera-Castillo 1998, Remijsen 2001:43). Papiamentu is also an Atlantic creole, and there may be a historical connection between it and Saramaccan (Kouwenberg and Muysken, 1995: 205). So, although Saramaccan's system is atypical, there is at least one attested comparable system. The Papiamentu case is, in fact, more extreme than the Saramaccan case. While there is a mismatch between primary stress and pitch accent in Saramaccan, the two features are not in a contrastive relationship with each other—in Papiamentu they are.

Now that words with final high-tone have been integrated into the larger picture, we can turn to the other potentially problematic class of words with three or four short syllables: those with two adjacent high-tone syllables. Such words only occur in two forms—one for three-syllable and another for four-syllable words: CV́CV́CV and CVCV́CV́CV. In (9), more of these words, with their stress marked, are given. The phonological conditioning emerges quickly.

(9)	*ˈhákísi*	'ask'	*ˈlásíti*	'last one'
	ˈíngísi	'English'	*ˈsɛ́kɛ́ti*	'dance'
	ˈfélánti	'animosity'	*ˈsɔ́lúgu*	'to provide care for'
	ˈwɔ́lúku	'cloud'	*tuˈwálúfu*	'twelve'

All of the words with two high-tone TBU's across two syllables are also words with antepenultimate stress. Importantly, these words do not also show penultimate stress. Thus, only the first high-tone coincides with a stressed syllable. The second coincides with an unstressed syllable. These words can, then, be unproblematically analyzed with accent on the antepenultimate syllable. This accent is manifested as primary stress and a high tone which spreads across the first two syllables of the word. Importantly, such an analysis automatically gives us an account for the fact that there is not a large class of words with the form (CV)CV́CVCV in Saramaccan. Words of that form would most readily be identified as words with antepenultimate accent. However, under this analysis, the productive surface reflex of antepenultimate accent is a high tone spread across both the antepenultimate and penultimate syllable, implying words of the form (CV)CV́CVCV should be rare, which they are. [13]

[13] Recall, from section 2.3 that one word of this form *akúsuwe* 'small rodent type' has been identified, and another word with, *adjáansi* 'spider, with comparable form has also been found.

Words with two high tones, then, can be straightforwardly considered to be marked for accent. It is simply the case that they do not show a trivial correlation between their accent mark and the surface manifestation of accent. In terms of the metrical analysis outlined in (8), the relevant phonological generalization that can be made is that, if a non-final foot has a high tone, then both of its syllables have a high tone. This generalization about the occurrence of multiple high tones is perhaps the best piece of evidence for trochaic foot structure in Saramaccan words. [14]

The consequence of the facts presented in this section is that stress and tone, far from being independent phenomena in Saramaccan class (iv) words, are actually incredibly closely correlated. This is something which would not be expected if the words were marked separately for tone and stress but which follows naturally if we take these words to be marked for accent. The high tone on these words can be taken as one phonological reflex of accent and stress can be taken as another reflex of the same phenomenon.

Before moving on, it is necessary to see how the arguments in this section can be applied to words with less than three syllables and words with long vowels. The simplest case to be covered is class (iv) words with two short syllables. These can straightforwardly be taken to have their accented syllable correspond to the syllable surfacing with a high tone without any complications.

Words with long vowels are slightly problematic since a high tone can surface in three different ways on long vowels as can be seen in examples like, *bakáa* 'white person', *kiíki* 'creek', and *fɔ́útu* 'mistake', where the high tone on a given syllable is seen either on the first TBU, the second, or both. These facts could offer a complication to the analysis since the stressed unit in these words is the whole *syllable* containing the high tone—the nature of stress in Saramaccan makes it impossible to localize it on either half of a long vowel. So, a word like 'creek' would receive the stress marking *ˈkiíki*, and a word like 'white person' would be marked *baˈkáa*, implying that a non-high TBU in these words receives stress. However, such words do not really pose counterexamples to the analysis. Rather, they simply illustrate that the phonological realization of stress is different from that of tone—tone can be localized to one of two adjacent TBU's whereas stress cannot. So, if a TBU receives phonological stress, stress will necessarily become a property of the whole syllable containing that TBU, even if that syllable contains a TBU unspecified for tone. Once we establish this discrepancy between the realization of stress and tone, words with long vowels turn behave precisely in the way predicted by the algorithm in (8).

[14] As implied by (7) words with two high tones must be considered to have a second stress on the final syllable in this analysis. These syllables are perceptually stressed. So, such an analysis seems valid.

2.6 The (lack of) accentual characteristics of non-class (iv) words.

Having argued that class (iv) words are lexically marked for accent, we should re-examine the properties of non-class (iv) words in Saramaccan—these words are taken to be marked for true tone instead of accent. The primary argument for this classification comes from the fact that, unlike class (iv) words, words in classes (i–iii) have invariant tone on each of their TBU's, and these tones can take on various patterns—all high (class (i)), all low (class (ii)), or mixed high and low (class (iii)). Accordingly, these words do not meet the first requirements of a pitch accent system—they cannot be analyzed as being lexically specified with one abstract "mark" which is consistently realized as the same tonal contour.

In light of the argument that the close relationship between stress and high tone in class (iv) words is indicative of their being part of an accentual system, if there were observable stress effects on non-class (iv) words, this would pose a problem for the analysis presented here. However, consistent with the basic claims of this section, there is no indication that non-class (iv) words are marked for stress at all.

For example, no syllable of the class (ii) words *lògòsò* 'turtle' or *lègèdè* 'lie' seems particularly more prominent than any of the others. Furthermore, no syllable in a class (ii) word can be emphatically lengthened to be made proportionally longer to any other syllable in the word and no syllable in these words has been observed to allow reduction. Therefore, neither of the phonological cues for stressed versus unstressed syllables has been observed for class (ii) words. This is very striking in the case of the word *pùkùsù* 'bat' which contains a medial *TVs* sequence, which we saw was an environment for vowel deletion in class (iv) words like *bɔ́kúsu* 'box'. The shortened variant of *pùkùsù*, **pùksù*, is simply not possible.

Class (i) words, with all high tones, are mostly ideophones. Like class (ii) words, their syllables do not show any stressed/unstressed distinction. The same can be said for class (iii) words. (However, there are fewer known members of this class than the others. So, they cannot be thoroughly tested.)

As mentioned above, Rountree (1972a) described the phonetic correlates of stress in Saramaccan as follows: "Stressed syllables are louder, slightly longer, and their tones are slightly exaggerated i.e. high tones are slightly higher and low tones are slightly lower (309, footnote)." A potential complication for the argument here is her description of stressed low tones being pronounced "slightly lower", since, under the present analysis, low-tone TBU's should not be stressed at all.

I suspect this potential contradiction is terminological rather than real. Under the strictest criteria for stress, as laid out in section 2.4, I have identified no stressed syllable containing a low-tone TBU. However, it is certainly the case that words containing low-tone TBU's can be emphasized (or "stressed" in a non-technical sense). When words containing low-tone TBU's are emphasized, the whole word sounds

louder, longer, and, perceptually, has exaggerated low tones. Critically, however, no single TBU sounds more prominent than the others. So, while these words can be "stressed", they do not show the characteristics of being marked for phonological stress. The same can be said for class (iii) words. Class (i) words, being mostly ideophones, are almost always emphatic or "stressed"—but, crucially, like words in the other two tonal classes, no one syllable perceptually stands out from the others in them.

Because of this, I believe that the potential contradiction between my analysis and Rountree's analysis simply lies in different uses of the term "stress". Rountree used the term to encompass both phonological stress and emphatic stress, while I am using it with only a phonological sense. Under the first of these senses, where "stress" includes emphatic stress, I agree with her description that "low tones are slightly lower" when stressed. However, I do not take low-tone TBU's to ever be phonologically stressed, and, therefore, despite the apparent disagreement, I believe Rountree's analysis and the one presented here are consistent with each other.

All told, these facts presented in this section offer important support to the argument that class (iv) words are in an accent system whereas the words in classes (i–iii) are truly tonal, since they mean that the latter group of words shows no noticeable behavior which could be associated with accent—that is, they do not appear to be marked for stress or pitch accent. This is predicted by analyzing the Saramaccan as split along accentual/tonal lines. The accentual words are, in some sense, robustly accented, surfacing with pitch accent and stress. The tonal words, on the other hand, appear not to be marked for accent at all.

2.7 A formal analysis of the split lexicon in Saramaccan

If we accept the above arguments, then the Saramaccan lexicon is split between a part which is tonal and a part which is accentual. At the underlying level, the split between the two halves of the lexicon can be understood as there being a class of words, each of whose TBU's is specified for tone, and a class of words which have a particular TBU marked simply for accentual prominence. Since only one tone melody, namely a single high tone, is observed on class (iv) words, it is possible then to simply say that the surface manifestation of this accentual prominence is a high tone and also manifestations of properties associated with stress.

The basic notational convention to describe the lexical representation of class (iv) words could be something like what is seen in (10) for the words: *wómi* 'man', *sukuáti* 'chocolate drink', *kulé* 'run', *hákísi* 'ask', *minísíti* 'minister', and *mɔkisá* 'squash'—an asterisk is simply placed over the TBU which is lexically marked for accent. (For use of a similar notational device see van der Hulst and Smith (1988b).)

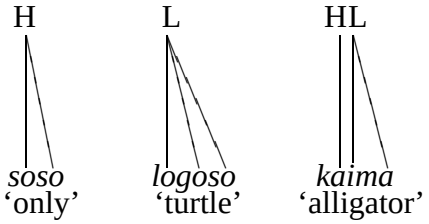
(10) *w$\overset{*}{o}$mi* *sukuu$\overset{*}{a}$ti* *kul$\overset{*}{e}$* *h$\overset{*}{a}$kisi* *min$\overset{*}{i}$siti* *mɔkis$\overset{*}{a}$*

From the one mark seen over the words in (10), the realization of high tone marking and stress is predictable. Since the existence of the second surface high-tone TBU on words like *hákísi* ‘ask’ and *minísíti* ‘minister’ is completely predictable from the antepenultimate position of the prominence mark, it does not need to represented lexically. [15]

It would be possible to instead lexically mark class (iv) words with one high-tone TBU and then derive the stress in these words and the secondary high-tone TBU’s on the basis of the position of the TBU marked with that tone. However, if this were done, class (iv) words would still have to be lexically marked as being subject to all the phonological conditions associated with stress seen in section 2.5. (Or, alternatively, words in classes (i–iii) would have to be marked as not being subject to those conditions.) So, marking these words with a lexical high tone would not reduce their lexical representation in any way. Furthermore, it would obscure the fact that these words do not seem to be a special subset of tonal words in Saramaccan at all. Rather, they seem to be lexically specified in a different way entirely.

In contrast to class (iv) words, words in classes (i–iii) need to be given full tonal specification in the lexicon. A possible system for their lexical specification is given in figure 1. Other representations are, of course, possible. What is critical is that each TBU is somehow specified as having a tone in the lexicon.

Fig. 1. Tonal structure for words in classes (i)–(iii)

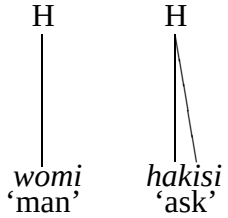


We will see in section 3.2 that phonosyntactic phenomena in Saramaccan do not distinguish between lexical high tones and high tones which are taken here to be the realization of pitch accent. Therefore, whatever phonological analysis one might adopt, within the phrasal phonology, the phonological structure of class (iv) words needs to be something like that seen in figure 2.

Like with the formalization of words in classes (i–iii), some of the details seen for class (iv) words could be different. What is most important is that class (iv) words can leave the lexicon without each of their TBU’s marked as being specified for tone. These TBU’s are the ones Rountree refers to as “changeable lows”

[15] Though I do not formalize it specifically, since it is in a class of its own, it would be possible to straightforwardly subsume the exceptional word *fóótóo* ‘photograph’ within this analysis. This would could be taken to be the only word in Saramaccan with accent on its preantepenultimate TBU. The reflex of pitch accent on this word would, then, be a high-tone spreading to all but the last TBU.

Fig. 2. Tonal structure for words in class (iv)



(1972a:316) and which, as will be described in sections 3.2 and 3.3, surface as either high or low depending on their phonosyntactic environment.

As a result of being marked for accent, class (iv) words would also be assigned metrical structure in addition to the tonal structure seen in figure (2). Words in classes (i–iii), the tonal classes, not being lexically marked for accent, would never be assigned metrical structure and, therefore, never be marked for phonological stress.

Since the focus of the rest of this paper is on the post-lexical phonology of Saramaccan, in the sections that follow, I will simply mark all words with acute or grave tone marks as appropriate. In the phonosyntactic and morphosyntactic derivations which will be given, a class (iv) word will always be distinguishable within the text from words in classes (i–iii) by the fact that not all of its TBU's will be underlyingly marked for tone whereas words in classes (i–iii) will always be fully specified for tone. Surfacing words and phrases will always be fully tone marked to reflect their actual pronunciation.

2.8 The notion of two phonological lexicons

Whether or not all of the details of the analysis here are correct, it seems fairly clear that the Saramaccan lexicon is "split" into two parts. There is one set of words, those in classes (i–iii), which are very "tonal" insofar as each of their TBU's always surfaces with invariant tones and whose tones do not seem to be tied to stress in any way. And, there is another set of words, those in class (iv), which comprise the majority of words in the language, which are subject to phenomena typical of stress and whose restrictions on tone are consistent with their being part of of a pitch-accent system. As far as I am aware, no other language has been described as having a split lexicon along these lines.

It is not uncommon for languages to impose different phonological restrictions on different lexical classes (this is part of the motivation behind the so-called morpheme structure constraints (Kenstowicz, 1994: 351)) or to have different phonological rules applying to words affixed with one set of affixes versus those affixed with another set (this being the basic principle behind level-ordered morphology

(Kiparsky, 1982)). However, the sort of lexical split that exists in Saramaccan is different from these for two reasons. The first is that the parameter of the split—between tone and accent—is rather extreme. Whole languages are generally described as being tonal or accentual, not particular words as would seem to be the case in Saramaccan.

The second is that this split does not appear to be specifically morphologically conditioned in any straightforward way. It is not the case that verbs tend behave one way and nouns another (a major split in segmental phonology along these lines has been reported for Métchif (Rhodes, 1985; Thomason and Kaufman, 1988)). Furthermore, it is also not the case that the different behavior of these word is related to morphological affixation, along the lines of split behavior of English "level 1" and "level 2" affixes with respect to stress (Kiparsky, 1982).

Rather, the Saramaccan split seems to be mostly arbitrarily from a morphosyntactic viewpoint. [16] The only pattern in tone marking which seems robustly related to the notion of the lexical class is that ideophones, like *kúlúlúú* 'ideophone for straight' and *pètèpètè* 'having consistency of salve', are either all high or all low tone. However, this fact does not seem particularly relevant to the general split of the language because ideophones are phonologically restricted on other parameters as well (for example, they tend to exhibit total vowel harmony). And, except for ideophones, it seems impossible to synchronically predict whether or not a word will be in classes (i–iii) or class (iv). [17]

The claim here about Saramaccan needs to be clearly distinguished from the claims made for languages like English or Japanese (see Itô and Mester, 1995), which are taken to have *stratified* lexicons as the result of borrowing. The Saramaccan lexicon is taken to be *split* across an important set of parameters: accentual and non-tonal versus non-accentual and tonal, not simply stratified. We can usefully contrast Saramaccan with the Japanese case since Japanese is a pitch-accent language which has a lexical stratum corresponding to words borrowed from Chinese, a tone language. While it is true that borrowed Chinese words do have different phonological behavior from native words in Japanese, it is manifestly not the case that Chinese borrowings into Japanese are tonal. In other words, the Chinese lexical stratum in Japanese was nativized in a way which avoided the sort of split seen in Saramaccan. The extreme nature of the division of Saramaccan's lexicon presumably reflects its origins as a contact language and some aspects of this idea will be explored in section 4.

[16] See Thomason (1997: 456-7) a discussion of Mednyj Aleut which seems to have a similar synchronically arbitrary split to that seen in Saramaccan except within its segmental phonology.

[17] From a diachronic perspective, class (i–iii) words seem more likely to be of African origin and class (iv) words seem to be of mixed African or European origin. Saramaccan seems to be an example, then, of a logical type of lexical split resulting from contact which, until now, has not been attested.

The next section of this paper will explore the phrasal "tonal" phonology of Saramaccan. Two particular areas of the phrasal phonology will be covered. The first is a tonal plateauing process found within phonological phrases, and the second is the tonal/intonational status of serial verb phrases found in the language. It will be seen that the split lexicon of Saramaccan has effects which go far beyond the marking of lexical entries. In fact, the basic lexical split has implications throughout the phrasal phonology giving phrasal processes both an intonational and tonal character.

3 The phrasal phonology of Saramaccan

3.1 Introduction

In the following discussion, I will be focusing on the phrasal phonology of Saramaccan. The language lacks extensive morphology, making it difficult to come to any worthwhile conclusions based on a study of morphological phenomena. Saramaccan's phrasal phonology, on the other hand, is complex enough to be useful in understanding how the split lexicon has affected that area of the language's grammar.

Following ideas which can be traced to Pierrehumbert (1987) and discussed in a more typologically oriented way in Ladd (1996:155–9), as a working hypothesis, I take there to be no fundamental difference in the phonological content of lexical and post-lexical tones. The difference between the two will be taken to lie only at which point in the derivation such tones are associated to segments in an utterance. The formal analysis in section 2.7 already made use of this assumption—the tone resulting from pitch accent, schematized in figure 2, was represented the exact same way as the lexically specified high tones schematized in figure 1. This conflation of both high tones is justified by the facts of Saramaccan phonology—neither type of high tone has been seen to behave differently on the surface with respect to phonological processes which refer to high tones.

As illustrated by data like that in (2), some TBU's in Saramaccan receive their surface tones as the result of phrase-level processes. It will be seen that the best analysis of this sort of tone assignment requires us to appeal to both tonal and intonational features of the phrase. Since the phrase-level processes of the sort to be described here are of a "tone-filling" type, rather than a "tone-changing" type, they have characteristics we expect for an accent language where tone is not lexically specified and must be filled in at the phrasal level. However, the lexically-specified tones of words in classes (i–iii) both condition and interfere with these seemingly intonational processes—preventing us from considering them to be purely intonational.

In section 3.2, I will examine a process of high-tone plateauing in Saramaccan. Though it would be possible to analyze this process purely via tonal mechanisms, it will be seen that such an analysis would fail to capture the limited environment and output of the process. I will then discuss, in section 3.3, the curious tonal/intonational properties of serial verb phrases. It is difficult to give a unified analysis to the tones found in such phrases—it will be argued that this is because they most clearly show the tension between tonal phonology and intonational phonology at the phrasal level and, therefore, also require a "mixed" tonal and intonational analysis.

3.2 Tonal plateauing

3.2.1 The descriptive facts

There are a number of phonological environments in Saramaccan where a process of tonal plateauing can be observed. As a first approximation, we can say that tonal plateauing occurs when, within a phonological phrase, two high-tone TBU's flank TBU's unspecified for tone. In this environment, the unspecified TBU's are realized with a high tone. A basic example is given in (11). (What formally constitutes a phonological phrase in Saramaccan will be taken up in section 3.2.2.)

(11) Dí foló bè. → Dí f**ó**ló bè.
the flower red
"The flower is red."

In (11) the first TBU of the class (iv) word *foló* is realized with a high tone when preceded by the definite article *dí*. Since the citation form of this word is *fòló* we know it has undergone the tonal plateauing process. The phonological triggers for this case of plateauing are the high tone in *dí* and the high tone in the second TBU of *foló*. The critical syntactic environment for the plateauing seen in (11) is a noun and the word immediately preceding it within its noun phrase.

The focus of this section will be on phrasal plateauing of the sort exemplified by (11). However, plateauing is also observed in compounds, as illustrated in (12), and within clitic groups, as illustrated in (13).

(12) a. béési gaási → bée**í** g**á**ásì
eyeglass shield
"eyeglass lens"

b. hédi uwíi → hédí úwîi
head hair
“hair”

(13) a. Dí sitónu tá=náki=mí à mí fútu. →
Dí sítónú tá=náki=mí à mí fútù.
the stone PROG=hit=me on my foot
“The stone hits me on my foot.” (Rountree, 1972a: 323)

b. Dí wajamáka=dé á óbo. → Dí wájámáká=dé á óbò.
the iguana=there have egg
“That iguana has eggs.”

I take compound and clitic-group plateauing to take place at a domain lower than that of the phonological phrase (Nespor and Vogel, 1986: 165–186). Because of this, they cannot effectively be used to illustrate the tonal/intonational status of plateauing in Saramaccan. However, all the basic facts and the analysis presented in this section apply to compound and clitic-group plateauing unproblematically since those two processes show the same phonological behavior as plateauing at the level of the phonological phrase.

In table 4, I schematize, for some important syntactic environments, whether or not plateauing is observed to occur between two constituents. A “|” indicates that plateauing does not occur and a “ ⌢ ” that plateauing does occur. Basic word order in Saramaccan noun phrases is Det-Adj-Noun, and basic sentence word order is SVO. The delineation of these environments will help us to formally specify the division of the Saramaccan sentence into phonological phrases in section 3.2.2.

Table 4
Phonosyntactic raising for some important environments

	RAISING	NO RAISING
Noun phrases	Det ⌢ Noun	Det | Adj
	Adj ⌢ Noun	Adj | Adj
Verb phrases		Verb | NP
Prep. phrases		Prep | NP
Sentences	NP ⌢ VP	

The examples in (14)–(16) illustrate the three syntactic environments where plateauing is found. In (14) it is shown that nouns and a preceding determiner form a

plateauing environment (other examples of this were seen in (2) and (11)). In (15) we see that nouns and a preceding adjective also form a plateauing environment. Finally, in (16) we see that a verb and the last word of its subject noun phrase form a plateauing environment.

(14) dí mujɛ́ɛ → dí m**ú**jɛ́ɛ̀
the woman
"the woman" (Rountree, 1972a: 318)

(15) a. dí hánso wómi → dí háns**ó** wómì
the handsome man
"the handsome man"
b. dí lánga hánso mujɛ́ɛ → dí lángà háns**ó** m**ú**jɛ́ɛ̀
the tall handsome woman
"the tall handsome woman" (Rountree, 1972a: 321)

(16) a. Dí mujɛ́ɛ tá=wáka. → Dí mújɛ́**ɛ́** tá=wákà.
the woman PROG=walk
"The woman walks." (Rountree, 1972a: 324)
b. Dí wómi hɛ́n kulé=dɛ́. → Dí wómì hɛ́n k**ú**lé=dɛ̀.
the man he.EMPH run=there
"The man, he runs there." (Rountree, 1972a: 324)
c. Dí goón à Saamáka héi. → Dí góón à Sààmák**á** héì.
the ground in Saramacca high
"The ground in Saramacca is high."

The example in (15b) further illustrates that adjacent adjectives do not form a plateauing environment—the final TBU of *lánga* 'tall' surfaces with a low tone despite being flanked by two high tones. The example seen earlier in (2) shows that a determiner and a following adjective do not form a plateauing environment since the first TBU of *taánga* 'strong' surfaces with a low tone.

The examples in (17) show that a verb and a following object noun phrase do not form a plateauing environment—this is the most notable environment where plateauing is blocked since it shows a basic asymmetry between noun phrases before verbs (seen in (16)) and noun phrases after verbs.

(17) a. Mi lápu koósu. → Mì láp**ù** k**ò**ósù.
I mend clothes
“I mend clothes.”

b. A náki dí tatái. → À nák**ì** dí tátáì.
he hit the rope
“He hit the rope.”

Saramaccan has very few prepositions marked with high tones which could participate in plateauing. Furthermore, since no phrasal tonal process has been observed to affect the surface tones of a preposition, it is impossible to conclusively determine if a given polysyllabic preposition is marked tonally or accentually. In any case, prepositions are never observed to raise with a following noun phrase. An example is given in (18).

(18) boíti koósu → bòít**ì** k**ò**ósù
except clothes
“except clothes” (Rountree, 1972a: 321)

The data seen so far has only involved interactions between accent-marked words (i.e. class (iv) words) in the language. The examples in (19) show that words with specified low tones do not allow high-tone plateauing, as would be expected. In (19a) the use of low-tone verb *lègèdè* ‘lie’ prevents any plateauing from occurring with the preceding subject. In (19b) the lexically specified low tones on the adjective *bɔ́djèè* block plateauing between it and the following noun.

(19) a. Páúlu lègèdè. → Páúl**ù** lègèdè.
Paul lie
“Paul lies.”

b. dí bɔ́djèè wómi → dí bɔ́dj**èè** wómì
the sly man
“the sly man”

The example in (20) show that a tonal word specified with high tones participates in plateauing as expected—even though its high tones arise from a different lexical source than the high tone in accentual words.

(20) dí sósó mujɛ́ɛ → dí sósó m**ú**jɛ́ɛ̀
the only woman
“the only woman”

A final important point about the plateauing process is how it interacts with an intonational rule lowering the final tone of an utterance. When this rule lowers one of the high-tone triggers for plateauing, the plateauing is not observed to take place. Examples are given in (21) and (22).

(21) a. Dí bóto kó. → Dí bót**ò** kò.
the boat come * dí bót**ó** kò
“The boat came.” (Rountree, 1972a: 325)

b. Dí bóto kó ɛ́sìdè. → Dí bót**ó** kó ɛ́sìdè.
the boat come yesterday
“The boat came yesterday.”

(22) a. Dí wómi kulé. → Dí wóm**ì** k**ù**lè.
the man run
“The man runs.”

b. Dí wómi kulé àlá. → Dí wóm**í** k**ú**lé àlá.
the man run there
“The man runs there.”

The interaction between plateauing and intonational lowering can be clearly seen in the opposition between the sentences in (21a) and (22a) and those in (21b) and (22b). In the first pair, intonational lowering targets a potential high-tone trigger and plateauing is not observed. In the second pair, when an extra word is added to the end of the sentence, protecting the high-tone trigger from being lowered, plateauing is observed, as expected.

In the next section, I will pursue a formal analysis of high-tone plateauing in Saramaccan. The basic idea behind the analysis to be given is that this phenomenon is best viewed as a mix between an intonational and a tonal process. [18]

[18] Another formal analysis of Saramaccan tonal plateauing can be found in Ham (1999). The analysis given here and Ham’s share a range of insights, and both also make use of an end-based mapping approach to the syntax-phonology interface. However, on a formal level there are some differences, and Ham makes at least one wrong prediction with respect

3.2.2 Towards a formal analysis

There are undeniably tonal features of plateauing. Its conditioning environment must refer to high tones, and not simply the position of accent, since examples like (20) show that it takes place regardless of the lexical source of the high tone. Furthermore, plateauing is blocked when specified low tones are part of the potential plateauing environment, as seen in the examples in (19)—so, the process must be crucially sensitive to low tones.

However, as will be seen, an analysis of the environments where plateauing is found quickly reveals that it also has intonational properties. Even before such an analysis is done, plateauing already has been seen to have the apparently intonational property of producing a consistent tonal contour on the phrases where it is found (ignoring, for the moment, the complications caused by the words fully marked for tone). Specifically, the plateauing process results in phrases with the tonal melody (L)H(L). That is, there will be one central high-tone "plateau" in the phrase with lexically conditioned high tones forming the boundaries of the plateau and any unspecified TBU's to the left or right of the plateau being assigned a default low tone.

This consistent (L)H(L) pattern makes the system look very intonational insofar as a single pitch contour can generally be assigned to every phrase in the language (Ladd, 1996: 42–73). A prototypical tonal language would not allow for such a consistent characterization of its phrasal tone contours since that would require that the lexical tonal specification of its words be neutralized at the phrasal level. Saramaccan, in fact, shows very similar behavior to Papago which Hale and Selkirk (1987:151) describe as receiving an (L)HL *intonation* contour at the phrasal level. [19]

In fact, the case of Papago is particularly instructive in examining Saramaccan since the basic formal apparatus Hale and Selkirk use for analyzing Papago can be straightforwardly applied to Saramaccan in order to account for the syntactic environments where tonal plateauing does and does not occur. [20] Chen (1987), Hale

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to tone raising between articles and adjectives, which he predicts should occur (1999: 83). Ham only modelled the syntax of plateauing, and not the phonology, which makes his analysis, on its own, inadequate for evaluating the general arguments being made in this paper.

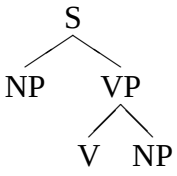
[19] Papago, now generally known as Tohono O'odham, is a North American language spoken mostly in southern Arizona but also in Mexico. Papago generally assigns primary stress to its words, although there are certain lexical items which are typically unstressed, and prefixes and suffixes do not receive stress (Hale and Selkirk, 1987: 153). It is not made explicit, but the description of Hale et al. (1977: 386–7) seems to portray Papago as having a typical stress accent system with a tonal contour being a feature of the phrase which is sensitive to the position of stress.

[20] Hale and Selkirk (1987) propose a more powerful version of the phonology-syntax interface than the one which will be used here which allowed for the positioning of phrase

and Selkirk (1987), and Selkirk and Shen (1990), among others, propose that the necessary level of syntactic sensitivity needed to describe the interaction between phonology and syntax can be achieved via an "end-based mapping" approach. Under this approach, "mapping algorithms impose phonological phrase junctures at the designated edge (either left or right) of syntactic constituents of a selected rank (Inkelas and Zec, 1995:540)." [21]

If we take the left edge of any "maximal projection" (i.e., noun phrase, adjective phrase, prepositional phrase, or sentence) to be the position where a phrasal juncture is added in Saramaccan, we can quickly account for the syntactic environments where plateauing is found. Using a simple Saramaccan sentence as an example, it will have the phrasing junctures indicated with brackets in (23).

(23)



[[[

Under this end-based analysis, the only major sentence-level phrasal juncture is between the verb and a following noun phrase. As a phrasal process, plateauing should then be predicted to occur whenever it is not blocked by a juncture. As can be seen in the sentence schematized in (23), this approach readily accounts for the fact that subject noun phrases do plateau with a following verb while object noun phrases do not. The left-edge juncture of the subject noun phrase corresponds with the juncture at the left edge of the sentence, having no effect on its internal phonological structure, while the left-edge juncture of the object noun phrase effectively divides the sentence into two phonological phrases. The point at which this juncture divides the sentence in two is the exact same point where plateauing is not observed

boundaries to be sensitive to the syntactic notion of government in addition to levels of phrase structure. This strengthened version of the end-based mapping approach is not required for Saramaccan.

[21] The fact that I develop an end-based analysis for Saramaccan is not intended to be an endorsement of that general approach to the syntax-phonology interface. Rather, it is being used to show how, even on a fairly formal level, the phrasal phonology of Saramaccan bears strong resemblance to that of a language taken to be intonational, namely Papago. Fortuitously, adopting an end-based analysis for Saramaccan plateauing will permit a straightforward account of where plateauing does and does not occur. More important to the main argument of the paper, however, is the fact that it allows us to directly compare the phrasal phonology of Saramaccan to that of Papago.

to occur. [22]

Assuming that adjectives each form their own adjective phrase, the end-based mapping approach also accounts for why adjectives do not plateau with each other. Given two adjacent adjectives, a phrasing juncture will be placed at the left edge of the second adjective. The existence of such a juncture would similarly account for why a determiner and a following adjective do not form a plateauing environment. Thus, this end-based approach straightforwardly accounts for the asymmetric behavior of determiners when they precede adjectives versus when they precede nouns.

So, ignoring, for the moment, words which are lexically tonally specified, we can say that phonological phrases in Saramaccan all have an (L)H(L) tonal contour and that what constitutes a phonological phrase can be straightforwardly determined using a simple algorithm mapping syntactic structure to phrasal boundaries. The determination of which TBU's receive the high-tone part of the contour is sensitive to the position of lexically conditioned high tones on the words constituting the phrase. Specifically, all TBU's between high-tone TBU's surface with a high tone.

To show the extent to which this description of Saramaccan resembles what we would expect to find in a language which assigns tone intonationally, in (24) I give the algorithm Hale and Selkirk use to describe how Papago "intonation" is assigned to a "tonal phrase" (1987:152–3). This algorithm is based on a phrasal tonal melody consisting of (L)HL.

(24) a. Associate H to each stressed vowel and to all vowels in between.
b. Associate the lefthand L to each unstressed vowel preceding the first stress in the tonal phrase, otherwise delete it.
c. Associate L to each unstressed vowel following the last stress in the tonal phrase.
d. Associate L to the last stressed vowel in the tonal phrase, if that is also the last vowel.

What's striking about the algorithm for Papago seen in (24) is that, if we were to eliminate step (24d) and replace the term *stress* with the term *accent*, it could almost completely describe the situation for the phrasal tonal realization of accentual words in Saramaccan. Recall that, under the present analysis, a high tone is assigned to each accented syllable in Saramaccan. Then, in plateauing environments, all the TBU's between the high-tone (i.e. lexically accented) TBU's also receive a high tone.

[22] The fact that there is a boundary at the left edge of a noun phrase can also be used to account for the fact that a preposition and a following noun phrase are not observed to form a plateauing environment, although, as mentioned in the section 3.2.1, there might be other explanations for this.

There are two important differences between Saramaccan and Papago. The first is that Hale and Selkirk (1987:16) analyze Papago as placing phrasal boundaries at the right end of a maximal projection—while Saramaccan is taken to place phrasal boundaries at the left end. This is unproblematic, however, because end-based mapping approaches specifically predict this typological difference between languages.

The more important difference between Saramaccan and Papago—and indeed between Saramaccan and other prototypically intonational languages—is that while many TBU's in Saramaccan can be understood to receive their tone purely through an algorithm like the one described in (24), we've seen that some words have all their TBU's lexically specified for tone and that these words, importantly, don't seem to be marked for phonological stress (or accent).

So, while the Papago algorithm (excepting step (24d)) comes very close to describing the facts seen in section 3.2, the fact that it makes crucial reference to stressed/accented vowels means that it will not work for Saramaccan. Any Saramaccan algorithm must refer directly to tones themselves, or we could not account for the facts involving lexically specified tones illustrated above in examples (19) and (20).

As a first approximation, then, I give the algorithm in (25) to describe the tonal contours found in phonological phrases in Saramaccan.

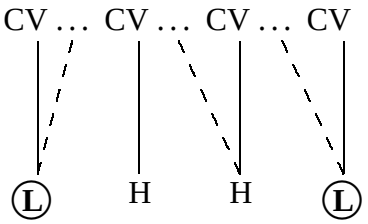
(25) SARAMACCAN PHRASING ALGORITHM (FIRST VERSION)
   a. Spread H leftward across open TBU's to any other H in the phrase.
   b. Associate L to an open TBU at the left edge of the phrase and spread it rightward to any open TBU's.
   c. Associate L to an open TBU at the right edge of the phrase and spread it leftward to any open TBU's.

The reason for assuming that the high tone contour results from leftward spreading in (25a) is to offer a simple account of the data involving intonational lowering seen in (21) and (22). In particular, if we assume that the intonational lowering rule replaces the final high tone of an utterance with a low tone, then positing that plateauing is the result of leftward spreading implies that the deletion of a final high tone will result in all the TBU's in the plateau being lowered since they all would have been raised as the result of their links to that tone. This would thus account for the fact that utterance final lowering "bleeds" plateauing. (The same logic is also used by Devonish (1989: 52) to justify a leftward spreading rule for Saramaccan.) However, for the central arguments of this paper, the exact tonological structure of high-tone plateauing is not of critical importance. The only truly central aspect of the phonology of high-tone plateauing is that it must make direct reference to high tones.

The algorithm in (25) can be schematized along the lines of the figure in figure 3. This figure is taken to represent the tone association within a phonological phrase.

The circled tones in the rule represent tones that are inserted as a result of forming the intonation contour.

Fig. 3. Tone assignment in phonological phrases



What is striking about this default system of tone association for Saramaccan how it is almost, but not quite, intonational. It could be an intonational rule completely, just like the one for Papago, except for one fact—rather than describing how a tonal tier is imposed on a phonological phrase, it describes how, given the position of two high tones, the tonal tier is "filled out".

The rule for high-tone plateauing can, thus, be understood as a hybrid rule, partially tonal and partially intonational. It is intonational insofar as it serves to impose the same tone contour on phonological phrases when they are not fully specified for tone—that is, it is concerned with the phonological assignment of a pitch contour at the phrasal level and, therefore, has an intonational form. However, the rule is tonal insofar as it must make direct reference to existing tones instead of referring to abstract categories, like accent (or stress, in the case of Papago). Thus, it has a tonal environment of application.

The algorithm given in (25) does not handle all the tone realizations in phonological phrases on its own. For example, the final tone of the word *Páúlu* 'Paul' in the sentence in (19a) surfaces with a low tone since *Páúlu* is followed by the low-tone verb *lɛ̀gɛ̀dɛ̀* 'lie'. The algorithm in (25) has nothing to say about the appearance of such a low tone. Similarly, it does not account for the low tone surfacing on the first TBU of *kulé* 'run' in (26).

(26) Dí lògòsò kulé àlá. → Dí lògòsò k**ù**lé àlá.

the turtle run there

"The turtle runs there." (Rountree, 1972a: 315)

In (26) *kulé* surfaces with a low tone as a result of being preceded by the low tone noun *lògòsò* 'turtle'. The algorithm given in (25) cannot account for either of these low tones for the simple reason that they cannot be taken to result from spreading of the edge low tones which make up the (L)H(L) contour. (These are the circled tones in figure 3.)

The algorithm in (25) did, however, involve the spreading of low tones both leftward and rightward within a phonological phrase. Similarly, the example in (19a)

can be understood as a low tone spreading leftward, and the example in (26) can be understood as a low tone spreading rightward. The only difference between the low-tone spreading described by (25) and that seen in (19a) and (26) would be that the former is triggered by inserted tones and the latter is triggered by lexically specified tones. If we consider low tone spreading to a high tone to be a general phenomenon, we can describe both the spreading of intonationally inserted low tones and the spreading of lexical low tones as manifestations of the same process.

Given these observations, I offer the phrasing algorithm in (27), which is a revision of the one in (25).

(27) SARAMACCAN PHRASING ALGORITHM (REVISED VERSION)
   a. Attach a low tone to any open TBU at the edge of a phrase.
   b. Spread a high tone leftward across unspecified TBU's to any other high tone in the phrase.
   c. Spread a low tone left or right across any unspecified TBU's.

Under this description of phrasal tone realization in Saramaccan, the low tones potentially added to the edges of a phrase in the first step of the algorithm can be simply considered to be boundary tones—boundary tones have long been considered to be typical features of intonational systems (Pierrehumbert, 1987; Ladd, 1996:80). Thus, this revised version of the algorithm, taking into account the behavior of lexical low tones, still retains important aspects of what would be expected in an intonational system.

The analysis to this point has omitted a problematic class of sentences with respect to tone assignment—these are sentences containing serial verb phrases, which will be the focus of the next section. We will see that the intonational character of the Saramaccan phonological system comes through most strikingly with respect to these constructions.

3.3 Tone in serial verb phrases

Serial verb constructions in Saramaccan make use of multiple verbs which are all expressed within the same verb phrase to create one complex predicate. A basic example is given in (28).

(28) Mì hópo kumútu à dí wósu. → Mì hóp**ó** k**ú**mútù à dí wósù.
   I go_up go_out of the house
   "I get up and go out of the house." (Rountree, 1972a: 324)

In the example in (28) the two verbs in the serial verb phrase, *hópo* 'go up' and *kumútu* 'go out', are adjacent. An important subset of serial verb phrases, exempli-

fied in (29), allows an object to intervene between the verbs in the phrase. [23]

(29) A bà wáta bɛbɛ́ ɛ́side. → À bà wát**á** b**ɛ́**bɛ́ ɛ́sìdè.
he carry water drink yesterday
"He carried water and drank it yesterday."

The tonal properties of serial verb phrases are complex, not in the least because speakers show some inconsistency in their use of tone when producing them. It will be argued here that serial verb phrases constitute what is probably the most intonational part of Saramaccan phrasal phonology. In general, I will try to show that the serial verb phrase seems to be one intonational unit and that, in some cases, this property takes precedence over the expected realization of tones.

Consistent with the data seen above, nothing ever alters the realization of lexically specified tones in Saramaccan. The intonational properties of serial verb phrases can only affect TBU's unspecified for tone. Furthermore, lexically accented syllables always surface with a high tone, consistent with earlier patterns.

The first fact to note about serial verb phrasal phonology is that adjacent serial verbs form a high-tone plateauing domain. The example in (28) demonstrates this—the last syllable of *hópo* 'go up' and the first syllable of *kumútu* 'go out' are both realized as high since they are flanked by high tones.

Another fact about serial verb phrases is a verb and preceding object noun phrase (which may not necessarily be an object of that verb) also form a plateauing environment. One example was seen above in (29) where the last syllable of *wáta* 'water' and the first syllable of *bɛbɛ́* 'drink' both surface with high tones. Another example, taken from Voorhoeve (1961:151) is given in (30). There the last syllable of *deési* 'medicine' surfaces with a high tone in a plateauing environment.

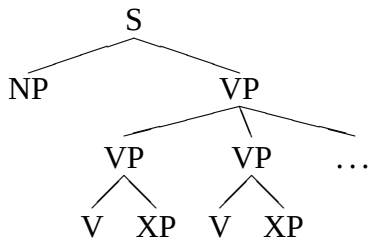
(30) Mí tá tjá deési dá dí wómi. → Mí tá tjá dèés**í** dá dí wómì.
I PROG carry medicine give the man
"I carried the medicine to the man." (Voorhoeve, 1961:151)

I assume for the sake of exposition, with some potential controversy, that sentences containing serial verb phrases have roughly the structure given in (31) (see Schiller (1990) for a survey of some common proposals regarding serial verb phrase structure—he eventually argues for a structure similar to the one seen here). Under the tree, I indicate where the analysis in section 3.2 predicts there would be a phrasal juncture (recall, this would be at the left edge of any maximal projection).

[23] Throughout the discussion the word *object* should be broadly construed to include both nominal objects and locative prepositional phrases which follow verbs of motion.

The verbal “XP” arguments in the tree are optional.

(31)



[[[[

Importantly, many other possible analyses of serial verb phrases (say, for example, involving verb phrases embedded under higher verbs) would still cause us to predict boundaries in the same positions. The only detail of this structure which is crucial for the following discussion is that there is nothing, other than a verbal object, within a serial verb phrase which would impose a phrasal juncture in the phonology (for example, we need to assume that serial verb phrases do not contain an embedded sentence).

The tree in (31), along with the end-based mapping approach to Saramaccan phrasal phonology discussed above in section 3.2, correctly predicts that adjacent serial verbs form a plateauing domain and that a serial verb and a preceding verbal argument also should form a plateauing domain. This matches the data seen in (28), (29), and (30). The tree in (31) also predicts that a serial verb and a following object should not form a plateauing domain, which has been true to this point, though is not always true as we will see below. However, first, I will discuss some unexpected properties of adjacent serial verbs.

The sentence in (32) illustrates an odd tonal property of serial verb phrases when the serial verbs are adjacent. In (32) the final TBU of *wáka* surfaces with a high tone even though it directly precedes the low-tone verb *bà*.

(32) A wáka bà wáta gó à wósu. → À wák**á** bà wátá gó à wósù.

he walk carry water go in house

“He carries water into the house.”

Odd tonal effects in serial verb phrases were first noted by Rountree (1972a) who used the sentence in (33) to justify an analysis where serial verbs could plateau with each other even if an object intervened between them.

(33) Mì ó=náki dí lògòsò kulé gó à mì wósu. →

Mì ó=nák**í** dí lògòsò k**ú**lé gó à mì wósù.

I FUT=hit the turtle run go to my house

"I will hit the turtle and run to my house." (Rountree, 1972a: 325)

In (33) the verb *náki* 'hit' unexpectedly surfaces with a high tone on its final TBU and the verb *kulé* unexpectedly surfaces with a high tone on its first TBU. Rountree claimed that these two verbs formed a plateauing environment with each other—and the object *dí lògòsò* 'the turtle' was "invisible" with respect to this plateauing. Rountree's claim was later used by Veenstra to justify an analysis wherein serial verbs are adjacent at one stage of derivation and the object "moves" to a position between them in a sentence's surface realization (1996: 108-111).

I have not always been able to reliably verify the tone markings in Rountree (1972a) for serial verb phrases with my own consultants. However, I have been able to collect some data which shows that Rountree's analysis of the plateauing facts in a sentence like (33) can not be taken to be fully accurate. In fact, the unexpected high tones on the verbs in (33) are best interpreted as general markers that a verb is part of a serial verb phrase rather than resulting from high-tone plateauing—because of this, I will henceforth refer to these tones as serial-verb high tones. The pair of sentences in (34) provides crucial evidence for this analysis.

(34) a. A náki dí tatái. → À nák**ì** dí tátâì.

he hit the rope

"He hit the rope."

b. A náki dí tatái bɔ̀sɔ̀. → À nák**í** dí tátâì bɔ̀sɔ̀.

he hit the rope loosen

"He hit the rope and loosened it."

The sentence in (34a) does not contain a serial verb phrase and the final TBU of the verb *náki* 'hit' surfaces with an expected low tone. On the other hand, the verb *náki* in the near minimal pair sentence in (34b), which contains a serial verb phrase, surfaces with a final high-tone TBU. Importantly, unlike the Rountree's sentence in (33), the final high tone of *náki* cannot be taken to have resulted from plateauing with a non-adjacent serial verb because the other serial verb in the sentence *bɔ̀sɔ̀* 'loosen' is fully specified with low tones. In some of the other sentences below, low-tone verbs will be used to ensure that the high tones seen in serial verb phrases are not the result of plateauing.

The serial-verb high tone on *náki* in (34b) is very similar to the one seen on the last syllable of *wáka* in (32). In both instances, the high tone appeared at the right edge of a non-final verb in a serial verb phrase. Good (to appear) analyzes these high tones as an instance of tonal morphology in Saramaccan. Though I do not necessarily want to adopt that analysis here, there is one aspect of the analysis which is relevant: These serial-verb high tones are not the result of tonal plateauing. They arise out of some other principle of Saramaccan grammar.

A further complication for any analysis of serial-verb high tones comes from pairs of sentences like those found in (35).

(35) a. Dè féni káìmà butá à téla. → Dè fén**í** káìmà b**ú**tá à télà.
they find alligator put at shore
"They found the alligator and put it on the shore."

b. Dè féni lògòsò butá à téla. → Dè fén**ì** lògòsò b**ù**tá à télà.
they find turtle put at shore
"They found the turtle and put it on the shore."

These two sentences are phonosyntactic minimal pairs—the only difference between them is the object intervening between the two verbs. In (35a) the intervening object is *káìmà* 'alligator', a noun fully specified for tone with a mixed HLL tone contour. In (35b) the intervening object is the low-tone noun *lògòsò* 'turtle'. This minimal change of the tonal structure of the object results in different tone markings on the verbs in the serial verb phrase. In (35a) two serial-verb high tones are found, one on the last TBU of *féni* 'find' and another on the first TBU of *butá* 'put', while in (35b) no serial-verb high tones are found.

Importantly, the serial-verb high tones in (35a) are not always consistently realized by my informants. However, in that sentence, and phonosyntactically similar sentences, the high tone at the right edge of the first verb (*féni* in (35a) is more consistently found than the high tone at the left edge of the second verb (*butá* in (35a)).

I hesitate to attempt a detailed formal analysis of these special serial-verb high tones in Saramaccan for several reasons. The first is quite simply that speakers are not consistent from utterance to utterance of even the same sentence with respect to when these high tones appear. The second is that the complex syntax of serial verb phrases necessarily hampers any analysis of the phonosyntax of such phrases. Finally, the formal tools developed for phrasal phonology have not been constructed with a split phonological system like Saramaccan's in mind. These three factors combined make the development of a formal analysis of serial-verb high tones a task beyond the scope of this paper.

However, even if a detailed formal account of serial-verb high tones is not possible, we can begin to understand the appearance of these serial-verb high tones by making one crucial observation: There is a tension in Saramaccan between treating a serial verb phrase as a single intonational unit and dividing it up into several units on the basis of the "small" verb phrases found within the larger serial predicate.

We can roughly sketch out the parameters of this opposition in parsing serial verb phrases by giving two phonological phrase parsings to the sentence in (35a), as seen in (36). The first represents the parsing predicted from the data and analysis in section 3.2. The second would be the parsing if a serial verb phrase were treated as one intonational unit (i.e. one phonological phrase).

(36) a. [dè féni] [káìmà butá] [à téla]
b. [dè féni káìmà butá] [à téla]

The difference between (36a) and (36b) is that a new phrase which is typically taken to start at the left edge of a noun phrase is not found before *káima* in (36b). Instead, the sentence in (36b) contains only one major phrasal juncture at the level of the sentence—before the final verbal object.

Non-serial verb phrases in Saramaccan contain one major phrasal juncture—before their object. The verb phrase parsing in (36b) also contains one major phrasal juncture before an object. We can, therefore, view a parsing like the one in (36b) as an imposition of the general sentential pattern on a sentence containing a serial verb phrase. Importantly, the idea that a property of serial verb phrases in Saramaccan should be that they form a single intonational unit is not unexpected. McWhorter (1997:22) cites as an uncontroversial property of serial verb phrases in general that "they fall under one intonational contour."

How, precisely, then, does the proposed special serial verb phrase parsing in (36b) help us analyze a sentence like the one in (35a)? If we assume that (35a) takes on that special parsing, then we quickly can account for the high tone occurring on the right edge of the verb *féni* 'find'. No phrase juncture intervenes between *féni* and *káìmà* 'alligator'. Therefore, high-tone plateauing, of the sort described in section 3.2, is free to occur between these two words. This analysis also explains why no high tone is found on the verb *féni* in (35b). Even if that sentence is parsed along the model of (36b), there would be no plateauing environment to trigger raising at the right edge of the serial verb since the object of *féni* in that sentence is the low-tone noun *lògòsò* 'turtle'.

Additional evidence for the fact that the high tone on a verb like *féni* in (35a) is an instance of plateauing comes from the pair of sentences in (37). The first is repeated from (35b). The second is almost exactly the same sentence except that the high-tone definite article *dí* is placed before *lògòsò* 'turtle'.

(37) a. Dè féni lògòsò butá à téla. → Dè fén**ì** lògòsò b**ù**tá à télà.
they find turtle put at shore
"They found the turtle and put it on the shore."

b. Dè féni dí lògòsò butá à téla. → Dè fén**í** dí lògòsò b**ú**tá à télà.
they find the turtle put at shore
"They found the turtle and put it on the shore."

The minimal change between (37a) and (37b) of inserting the definite article, resulted in the appearance of serial-verb high tones in (37b)—along the same lines as the tonal pattern seen on the serial verbs in the sentence (35a). The relevant property that (35a) and (37b) seem to have in common is that the argument which intervenes between the two serial verbs begins with a high tone—thus producing a plateauing environment.

However, while we can use high-tone plateauing to help us understand the appearance of the right-edge high tone on a verb like *féni* in (37b), this explanation won't work for the high tone at the left edge of *butá* 'put' in that same sentence (or in sentence (35a)), which I will return to below. First, however, I will discuss the serial-verb high tone at the right-edge of the verb *wáka* 'walk' in (32) where it immediately preceded the low-tone verb *bà* 'carry'. I repeat the sentence in (32) below in (38).

(38) A wáka bà wáta gó à wósu. → À wák**á** bà wátá gó à wósù.
he walk carry water go in house
"He carries water into the house."

The serial-verb high tone on *wáka*, which unambiguously has not been raised as the result of plateauing, is seemingly an example where the clash between following the phrasing properties of Saramaccan discussed in section 3.2 and treating serial verb phrases as one intonational unit clearly comes through. What I would like to claim, on a rough descriptive level, is that there is a tendency to insert high tones on verbs in serial verb phrases because of an expectation that they will follow the (L)H(L) intonational pattern which is prevalent in the language. This expectation would be a direct result of a tendency to treat serial verb phrases as one intonational unit.

What is noteworthy about (38), then, with respect to the present discussion, is that if it weren't for the appearance of the low-tone verb *bà* in the serial verb phrase, it would be marked with the normal (L)H(L) pattern. The high-tone on *wáka*, I claim, therefore, can be readily understood as the manifestation of an attempt to impose the normal intonational pattern on a deviant phonological phrase.

We have discussed the two sorts of serial-verb high tones at the right edge of serial verbs. However, we have still to address serial-verb high tones at the left edge of serial verbs. An example of such a high tone is the one found on the first TBU of *butá* in (37b). Since *butá* is immediately preceded by a low-tone noun in that sentence it is not possible to analyze the high tone on its first TBU as resulting from plateauing.

It is far from a universal fact of Saramaccan that the left edge of a serial verb with a TBU unspecified for tone will surface with a serial-verb high tone. Such high tones are never seen in the structure exemplified by (39) where a low-tone verb precedes a verb with an initial TBU unspecified for tone. Thus, the verb *butá* in (39) surfaces with the expected low tone.

(39) A féni wáta bà butá à wósu. → À fénί wátà bà b**ù**tá à wósù.
he find water carry put in house
"He finds water and brings it to the house."

Furthermore, as mentioned above, the first TBU of a verb like *butá* in (37b) is not consistently assigned a high tone. It does seem to be assigned a high tone more often than not, hence the given transcription, but variation is common. Finally, perhaps the most striking fact about serial-verb high tones at the left edge of a verb can be seen in the contrast between (37a) and (37b) (as well as in the contrast between the two sentences in (35)). Serial-verb high tones have only been observed to appear on the left edge of a serial verb when they are also found on the right edge of the preceding verb.

This fact, in some respects, follows Rountree's (1972a: 324–5) original intuition that serial verbs could somehow plateau with each other non-locally. However, given the problems with Rountree's general claim, as demonstrated by pairs of sentences like those in (34), it remains unclear to me why any correlation should exist between the appearance of a serial-verb high tone at the right edge of one verb and at the left edge of a non-adjacent following verb.[24] However, even without a clear

[24] One possible explanation for this surprising correlation may be that it is related to the restructuring proposed for serial verb phrases in (36b). In particular, whenever we do see a serial-verb high tone at the right edge of a verb, we have an overt manifestation of the special phrasing proposed for serial verbs. This may somehow weaken the expected phrasal relationship between a verbal argument and following serial verb. Since these two elements typically form a plateauing environment, the loss of a phrasal relationship between them would make determination of the proper tonal assignment of an unspecified TBU at the left edge of the verb obscure. The manifestation of this obscurity would then be that speakers sometimes assign such TBU's high tone and other times low tone. The more common assignment of high tone, given the present argument, would be taken to result from an attempted imposition of the (L)H(L) contour on the serial verb phrase. Specifically, the phrase medial position of such an unspecifed TBU means that it is structurally in a position

understanding of this correlation, we can still understand the appearance of high tones at the left edge of serial verbs as an attempt to impose the (L)H(L) intonation contour an a deviant phrase. The phrase-medial position of the first TBU of a verb like *butá* in (39) would be one typically associated with the high-tone plateau of the the intonational contour, thus making it susceptible to receiving a serial-verb high tone.

There is some further important evidence that these serial-verb high tones are the result of an imposition of the (L)H(L) contour on serial verb phrases. To this point, we have only seen serial-verb high tones on verbs. However, though it has not been previously reported, they can also be found on adjectives preceding low-tone nouns in noun phrases which are positioned between two serial verbs. The pair of sentences in (40) illustrates this.

(40) a. Dè súti dí lánga sɛ̀mbɛ̀. → Dè sútí dí láng**à** sɛ̀mbɛ̀.
they shoot the tall person kill
"They shot the man dead."

b. Dè súti dí lánga sɛ̀mbɛ̀ kíi. → Dè sútí dí láng**á** sɛ̀mbɛ̀ kíì.
they shoot the tall person kill
"They shot the man dead."

In (40a) the final TBU of *lánga* 'tall' surfaces with a low tone. This is the expected pattern since it precedes a low-tone noun *sɛ̀mbɛ̀* 'person'—thus, there is no environment for high-tone plateauing. However, when we minimally change the sentence in (40a) to produce the sentence with the serial verb phrase in (40b), a high-tone appears on the last TBU of *lánga*.

What this data clearly shows is that serial-verb high tones are not restricted to appearing on verbs themselves. Instead, they can appear on available TBU's in other words within serial verb phrases. The serial-verb high-tone TBU in *lánga*, like the other serial-verb high-tone TBU's, is found in the middle portion of a serial verb phrase. Thus, it, too, can be understood as resulting from an attempt to impose the (L)H(L) contour on a serial verb phrase.

The tonal facts for serial verb phrases in Saramaccan are clearly not yet well understood. However, given the larger picture of Saramaccan tonal phonology, I would like to suggest that serial-verb high tones are where the intonational features of Saramaccan phrases come through most clearly. Serial-verb high tones, in particular, arise from two intonational properties of Saramaccan grammar. The first is a tendency to treat serial verb phrases as one intonational unit even when their struc-

which would typically be part of the high-tone plateau of the (L)H(L) contour.

ture is “broken up” by the presence of verbal arguments intervening between the serial verbs. The second is a tendency to impose an (L)H(L) tonal contour, seen elsewhere throughout the phrasal phonology, on serial verb phrases even when lexically specified tones interfere with the imposition of this contour. The complex structure of serial verb phrases in Saramaccan, which deviates from the other kinds of phrase structures seen in the language, appears to be the critical trigger in letting the intonational features of the grammar come through so strongly.

Serial verb phrases, then, represent an area of Saramaccan grammar where intonation can take precedence over more properly tonal considerations, and they give us what seems to be the best evidence for the phonological reality of intonational contours in the language. However, importantly, even in serial verb phrases, lexical tone specification can never be overridden. Even at its most intonational, Saramaccan never completely stops being tonal.

4 Conclusion

4.1 Saramaccan and the study of tonal and intonational phonology

If nothing else, I hope to have shown here that there is something “odd” about the tonal phonology of Saramaccan. And, though some of the details of the analysis could be argued against, it is clear that the odd thing about its phonology is that it has both tonal and accentual properties. The claim here is, first, that these properties are the result of a lexical split in the language and, second, that this lexical split has important consequences in the phrasal phonology. Specifically, while its phrasal phonology, on a broad level, resembles what we might expect of an intonational language, tonal words in the language will always disrupt any intonationally defined contour. That is, lexical tones interefere with processes which “fill out” the tones of a phrase.

The basic typological interest of Saramaccan’s split phonology is obvious since such a split is apparently previously unattested in the world’s languages. Other than the fact that Saramaccan demonstrates that such a system can exist, there are deep potential implications that Saramaccan could have for the study of tone and intonation. This paper assumed as a working hypothesis, following Pierrehumbert (1987) and Ladd (1996:155–9), that there is no fundamental difference in the phonological content of lexical and post-lexical tones. The difference between them is taken to be how they are associated with segments—either lexically or phrasally.

However, rather than having to assume this fact based on comparing the phonology of tonal and accentual languages, Saramaccan could actually be used as the crucial test case for this proposal. If this claim is true, then phrasally assigned high tones

and low tones in Saramaccan should be indistinguishable from lexically assigned ones in terms of the basic pitch targets associated with each. Testing such a hypothesis would require instrumental studies of the language's tone, which have only been begun to be undertaken. The results of such studies could be of great potential interest in understanding the relationship between lexical tone and intonational tone and help determine if Pierrehumbert's and Ladd's hypothesis is correct.

4.2 Saramaccan phonology and creole genesis

At least since Bickerton (1984), Saramaccan has been viewed as an important language for studies of creole genesis. This is because Saramaccan is believed to be the creole language which has had the least contact with speakers of its superstrate languages (Bickerton, 1984: 179; McWhorter, 1997: 10–20). Proposing his now well-known Language Bioprogram Hypothesis, Bickerton suggested that Saramaccan's sociolinguistic history should have resulted in its grammar being typologically unmarked (i.e. closely reflecting the "language bioprogram" in his terms).

Bickerton only examined Saramaccan syntax with respect to his hypothesis, not phonology (1984: 179–180). What the study presented here shows is that whatever the validity of his theory as an explanation for the syntax of Saramaccan, it clearly is inadequate as an account for the language's phonology. The language's lexical split would not be taken to be a phonological "default" in any framework, if for no other reason than it is not attested in any language other than Saramaccan. [25]

How can we understand Saramaccan tone, then, in light of creole genesis? First, it should be completely uncontroversial that the basic origin of the split phonology of Saramaccan is the result of the fact that it was formed from contact between tonal West African languages and accent-based European languages. Given this, the primary question becomes why is Saramaccan apparently alone among Atlantic creoles in having such a marked lexicon?

The most likely explanation for any divergence between Saramaccan and other Atlantic creoles is the same one invoked by Bickerton in his study: Saramaccan was more isolated from superstrate influence than any other creole. Exploring the details as to how this would result in the present Saramaccan system is not a goal of this paper. However, at first glance, at least one reason stands out as an explanation for Saramaccan's retention of the lexical split: Its lack of contact with non-tonal superstrate languages would have made it less likely to lose any tonal features acquired during its initial formation.

[25] Ham (1999: 47) has also used tonal processes in Saramaccan to come to conclusions about the Language Bioprogram Hypothesis. His conclusions are in line with, but weaker than, the ones reached here. However, only the data in Rountree (1972a) and Voorhoeve (1961) was available to him, making any strong conclusion difficult.

None of the superstrate languages of the area where Atlantic creoles are spoken are tonal. Therefore, even if the other Atlantic creoles had started out with a phonology like that of Saramaccan, it would hardly be surprising if they were to have lost tonal features as the result of contact while Saramaccan, in its isolation, retained those features. Of all the Atlantic creoles, the sociolinguistic context of Saramaccan was certainly the most conducive to the retention of tone.

Given the above argument, what becomes interesting about the Saramaccan case is not so much that it is more tonal than other creoles but that, after more than three hundred years, its phonology has not simplified into either being tonal or accentual. And, even more striking, the phonological system of Saramaccan doesn't even, properly speaking, represent some sort of intermediate point on the cline between tonal and accentual languages. Rather, it contains simultaneously a tonal phonology and an accentual phonology, which are lexically distinct even if they do interact at the phrasal level.

While systems like Saramaccan's do not seem to be particularly common, there appear to be at least two comparable examples. One of these is Papiamentu, another Atlantic creole. As mentioned above, it has been reported to have contrastive pitch accent and contrastive stress (Kouwenberg and Murray, 1994; Rivera-Castillo, 1998; Remijsen, 2001:43). Another language, Ma'ya, an Austronesian language spoken on an island off the coast of New Guinea, has been reported as having both contrastive tone and contrastive stress. While neither of these languages show split lexicons like Saramaccan, they both represent languages which exhibit two different prosodic systems which can independently mark lexical items.

Interestingly, it seems as though contact might be the critical factor in the creation of these kinds of systems. How this could be the case for Saramaccan and Papiamentu, two creoles, is fairly straightforward. While Ma'ya is not a creole, contact has been proposed as the critical factor in the formation of its system (Remijsen, 2002: 102–4). Thus, it might be the case that such systems do not arise through internal historical change but rather only result from contact-induced change. [26]

Clearly, the facts presented here deserve more thorough treatment with respect to the existing models of creole genesis and contact phenomena. I'll conclude, then, by noting an interesting opposition between the conclusions that would seem to come out of this study of the phonology of a creole versus the one in Bickerton (1984) which focused on creole syntax. Both studies follow the idea that Saramaccan grammar is "special" because of its isolation from its superstrates. However, here, that isolation is taken to have contributed to Saramaccan phonology being extremely marked typologically whereas Bickerton claims that Saramaccan's isolation has led it to have the most typologically unmarked syntax of any language. Whether these divergent conclusions are indicative of some split between phonol-

[26] I am thankful to an anonymous reviewer for this observation.

ogy and syntax or of a flaw in my arguments or Bickerton's is an open question.

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