High tone spread in Saramaccan serial verb constructions

MARVIN KRAMER

Abstract

Saramaccan is an Atlantic English creole with substratal tonal features, including high tone spread. While high tone spread is generally leftward, an analysis of rightward spread accounts for the data in serial verb constructions where there are high tones that cannot be explained by leftward spread. However, there are other serial verb constructions with high tones that can be explained by leftward spread. There are two sets of high tone spread rules, then, but rightward spread is basically limited to constructions that are unequivocally of substrate origin, namely serial verb constructions. Significantly, while the origin of leftward spread is unknown, the primary substrate language Fongbe has rightward high tone spread, and is the apparent source of Saramaccan serial verb constructions. This uniquely substrate construction, then, may have transferred with its own rightward tone spread rules, which adapted to leftward tone spread rules resulting in rightward tone spread rules in Saramaccan that are more complex than the source.

Introduction

Saramaccan has been described (Voorhoeve 1961; Rountree 1972; Devonish 1989) as a tone language. But Good (2004) finds it difficult to adequately describe it as either a tone or a pitch-accent language, mainly because of the split in the lexicon between words with specified ('unchangeable' in Rountree 1972) tones on all tone bearing units (*TBUs*), and those with 'changeable' or unspecified tones on some TBUs and a single specified high tone. He finds that the words containing specified tones are characteristic of a tone language, but those with unspecified TBUs, which make up the majority of the lexicon, resemble words in a pitch-accent language by reason of the fact that they can be lexically represented with a single high tone on certain syllables in a word.

***J*ournal of *P*ortuguese *L*inguistics, 3 (2004), 31-53** ISSN 1645-4537

But regardless of the type of language, the high tones that surface on unspecified TBUs are considered to be the result of leftward spread (Ham 1999; Good 2003, 2004). Rountree (1972) describes this tone spread as conditioned by high tones at either edge of a domain that includes unspecified TBUs and a word boundary. Good (2003) finds that, with the exception of SVCs, the spread is head-leftward, and a plateauing, or 'filling in' of high tone more typical of accent languages (Good 2004:598). By this analysis as well high tone raising on unspecified TBUs can be seen as resulting from spread that is generally head-leftward, although there are exceptions, such as non-universal quantifiers like *óto* 'other' (Rountree 1972:319) or *báka* 'last' (Kramer 2002:105), or for serial verb constructions (*SVCs*), particularly those that are left-headed, as described by Déchaine (1997:55).

There are, then, surface high tones in SVCs on unspecified TBUs that can't be seen as leftward spread. This is because in these cases there is no high tone TBU to spread from; the TBUs to the right of the word boundary are specified low. Good (2003) accounts for these surface high tones by positing the insertion of floating high tone morphemes as affixes, allowing leftward spread to or from these morphemes. This analysis can be modified to account for all the data on SVCs (Kramer 2002:239-267). However, the conditions for the insertion of floating tones are complex and the insertion itself is not particularly insightful as far as transfer, since there is no parallel analysis for the substrate Fongbe (*Fon*) (Brousseau 1991; Wiesemann 1991; Lefebvre & Brousseau 2002:15-33).

In this paper I'd like to present an alternative analysis for the data (Kramer 2002) on SVCs in Saramaccan (*SM)*. The analysis involves a rightward spread of high tone to unspecified TBUs in SVCs, while leftward spread applies elsewhere in the language. A rightward high tone spread in SM would resemble high tone spread in Fon, which is also rightward (Brousseau 1991; Wiesemann 1991; Lefebvre & Brousseau 2002:22). SVCs in SM resemble Fon as well in that the surface realization of unspecified TBUs is considered to be the result of tone spread, even if elsewhere in SM it might be intonational tonal plateauing (Good 2004:610). Thus there is a further resemblance; as in Fon, the rightward spread in SM only requires a left trigger, so unlike plateauing, no high tone is required at the right edge of the domain, and in addition the domain of the spread does not need to include a word boundary. In SM, again as in Fon, this rightward high tone spreads to the left edge of an 'unchangeable' low tone TBU, where it is blocked; in SM this 'unchangeable' TBU is specified for low tone, and in Fon it's a voiced obstruent, which also functions as a low tone for subsequent TBUs (Lefebvre & Brousseau 2002:21).

Rightward high tone spread

The SM rightward spread regardless of word boundaries could be seen as an interpretation of Fon rightward spread over syllable boundaries, since the

majority of Fon words are monosyllabic (Lefebvre & Brousseau 2002:19) and word boundaries are not a condition affecting tone spread. In other words, the rightward high tone spread in SM makes SM look more like a tone language, where word boundaries generally have no bearing on the number or position of high tones in a word. The leftward high tone spread in SM, on the other hand, allows for an explanation in terms of a pitch-accent system, where word boundaries are important in determining the number and position of high tones.

The significance of rightward high tone spread on SVCs is that this substrate-like spread occurs in a construction in SM that is unequivocally of substrate origin. Leftward spread occurs elsewhere in SM, in constructions that could be of either substrate or English origin, or are unequivocally of English origin. Rightward high tone spread more closely approximates the substrate tonal phonology of Fon, while leftward spread allows a more pitch-accent phonology. So as there is a split in the lexicon between tonal and pitch-accent words, there is also a split in the high tone spread rules between the more tonal rightward and the more pitch-accent leftward rules.

Tonal characteristics of Saramaccan

Saramaccan has features of a tone language, such as minimal tonal pairs. But there are only about 14 such pairs, and the contrasts are mainly between two types of words, items with all specified tones and items with unspecified tones, such as *bɔ̀sɔ̀* 'to loosen' and *bɔ́sɔ* 'brush', or *jàà* 'to splash' and *jáa* 'year', but also *mǐ* 'I' in (1a) and *mí* 'my' in (1b):

(1) a. mǐ woóko > mǐ wòókò
I work
'I worked'

b. mí woóko > mí wóókò
my work
'my work'

The use of tone in SM has little morphological or lexical function. But the contrasting tones for pronouns in (1a) and (1b), described in Voorhoeve (1961:161), are examples of both inflectional and the grammatical use of tone, both unexpected features in a prototypical creole (McWhorter 1998). The tonal contrast for pronouns may have transferred, as in Fon there is a tonal contrast for 3rd sg. clitic forms for the feature [nominative] (Lefebvre & Brousseau 2002:63); interestingly, the 3rd sg. *é* [+nom] and *è* [−nom] is the only such contrast in Fon, and the parallel 3rd sg. is the only pronoun in SM where tone is not the only contrast, and the tones, in (1a) and (1 b), are the reverse of Fon. SM, then, has a tonal contrast alone for all pronouns except 3rd sg., for the equivalent features [weak] and [strong] (Voorhoeve 1961); more complex tonal contrasts than in Fon. If the tonal contrast feature for the pronominal paradigm in SM did transfer from Fon, it resembles a transfer of rightward high tone spread, where the SM is more complex than the source.

Also characteristic of tone languages are words with no high tones, in that in languages with stress or pitch-accent systems all non-function words must have a stressed or prominent syllable. The SM lexicon is perhaps unique, however, in having both tone and stress characteristics (Good 2004), including items where some or all syllables are specified with low tones, such as *lògòsò* 'turtle'. Lexical items with specified low tones are usually, but not always, of substrate origin, as with the English origin *sàtà* 'Saturday'.

Tone sandhi in Saramaccan

Another characteristic of tone languages is tone sandhi. Voorhoeve (1961) and Rountree (1972) describe the patterns of tone sandhi in SM. Tone sandhi applies across word boundaries within domains having TBUs with specified high tones at either edge that bracket TBUs unspecified for tone. Within these domains tone sandhi is the leftward spread of high tone, or plateauing (Good 2003), onto TBUs with unspecified tone, TBUs that would surface with low tone in isolation. In (2) and elsewhere TBUs with changed tones are underlined, and the domains are indicated where needed for clarity with {. . .} brackets:

(2) a. dí pampú lépi kàà > {dí pámpú} lépì kàà
the pumpkin ripe already
'the pumpkin is ripe already'

b. déé wómi kabá u woóko > déé {wómí kábá} ù wòókò
the(pl) man finish for work
'the men finished working'

The lack of sandhi for *u*, 'for', in (2b) demonstrates that sandhi does not apply across the board. By Rountree (1972), certain lexical categories, prepositions and adverbs for example, do not participate in tone sandhi and block it at their left edge. Verbs categorically (Rountree 1972:314 ftnt 9; Ham 1999) undergo tone sandhi with their subject NPs. Adjectives, however, with the exception of adjectives that do not occur as intransitive stative verbs like determiners of nationality, only display tone sandhi effects as predicates, where they function as intransitive stative verbs, (3a). As attributives they block tone sandhi at their left edge, (3b). Because of this functional difference SM adjectives are perhaps best described as *property items* (Thompson 1988). In the head-leftward analysis (Good 2003), for example, verbs and nouns are heads from which high tone spreads leftward in domains determined by maximal projections of NPs or VPs, which accounts for the sandhi differences in (3) for the single property item *donú*. A final high syllable is lowered (Rountree 1972:325), so in the following data many elicitations have been designed with a final element to avoid affecting the examined tone, represented as . . ., as in (3):

(3) a. dí foló donú . . . > dí fóló dónú . . .
the flower yellow
'the flower is yellow'

b. dí donú foló . . . > dí dònú fóló . . .
the yellow flower
'the yellow flower'

For SM property items, there is a functional difference between attributive and predicative occurrences, and there is a functional difference between subjects and objects, and there are sandhi differences. As predicted by the head-leftward tone spread rule, a subject adheres to the sandhi rules with the following verb, with high tone spread in (4a) and without in (4b), but there is a sandhi break between the verb and the following object, (4b). This sandhi break between verb and following non-pronominal object is most likely a transferred feature from Fon, a *disjunctive border* (Wiesemann 1991:75), where tone spread is blocked, probably the result of a word order change from SOV to SVO:

(4) a. dí tígi kulé gó a lío > dí tígí kúlé gó à líò
the tiger run go to river
'the tiger ran to the river'

b. mi pɛ́é tutú a dí tɔ́ɔ́u > mǐ pɛ̀é̀ tùtú à dí tɔ́ɔ́ù
I play horn at the wedding
'I played horn at the wedding'

Exceptional tone sandhi

Items functioning as verbs exhibit sandhi in expected local contexts, but also appear to exhibit sandhi with adjacent verbs in SVCs, in (5a), an apparent exception to the sandhi block at the right edge of verbs. It also appears to occur in SVCs with intervening items with TBUs specified for low tones, in (5b), as in Rountree (1972:325). Examples in (5) and elsewhere are from my fieldwork (Kramer 2002:187-317) unless otherwise credited:

(5) a. a hópo kulé gó a dɔ́ɔ > à hópó kúlé gó a dɔ́ɔ̀
he get up run go at door
'he got and ran outside'

b. a hópo dí lògòsò butá a téla >
à hópó dí lògòsò bútá à télà
he lift the turtle put on shore

Unexpected, then, are the unspecified TBUs in SVCs that surface as high rather than low, and that appear not to be in sandhi domains, or are in environments that do not allow a leftward spread of high tone. The basic insight of Rountree (1972:324) regarding SVCs where the verbs are not adjacent is that there is sandhi among the verbs anyway, which in a sense is true since the tone raising marks the verb as being in a SVC.

Tone sandhi in serial verb constructions

Elsewhere in normal sandhi, tone sandhi does not occur at the left edge of words with initial low tone TBUs so that in the preceding TBU the default low tone surfaces, as on *wómǐ* in (6a). But for SVCs there is also unexpected tone raising on unspecified TBUs. As observed in Good (2004:609), there is a sandhi domain preceding a verb in a serial with an initial TBU with a specified low tone, in (6b). In addition, the tone lowering in sentence final position (Rountree 1972:325) that would remove a sandhi domain, as in (6c), does not do so for verbs in SVCs in this position, in (6d):

(6) a. dǐ wómi lègèdè > dǐ wómǐ lègèdè
the man tell a lie
'the man told a lie'

b. a wáka bà wáta > à wáká bà wátà (Good 2004:609)
he walk carry water
'he walked and carried water'

c. dǐ wómi kulé]$_S$ > dǐ wómǐ kùlè]$_S$
the man run
'the man ran.'

d. a hópo kulé]$_S$ > à hópó kùlè]$_S$
3sg rise run
'he got up and ran.'

Sandhi does not occur in (6a) because of the initial specified low tone of the verb *lègèdè*, so there is no tonal domain and the unspecified tone of the noun *wómi* surfaces with the default low tone. Such variations are tolerated, perhaps as a transferred characteristic; in Fon there is a *neutral border* between subject and verb (Wiesemann 1991:81), which means tone spread is variable.

In (6b) there is also tone raising on V1 to override the normal absence in sandhi seen in (6a). This could also be a transferred characteristic, as in Fon there is a *conjunctive border* between serial verbs (Wiesemann 1991:78), which means tone spread is obligatory. This high tone spread in Fon, as noted above, doesn't require a high tone at the target edge of the domain. In (6d),

the tone raising occurs on V1 even though the sentence final lowering on V2 removes the conditions for sandhi.

There are SVCs in SM, as in (5b), and Fon where a constituent intervenes between the verbs. Since verbs do not sandhi with the following non--pronominal object NP (Rountree 1972:323), such an intervening NP would block high tone spread between the verbs. The high tones on *bútá* and the preceding items, in (7a) and (7b), result from normal head-leftward tone spread:

(7) a. a hópo bà wáta butá a wósu > à hópó bà wátá bútá à wósù
he rise carry water put at house
'he got up and carried water'

b. a féni wáta bà à bukéti butá à wósu > fénì wátà bà à bùkétí bútá
he find water carry in bucket put at house
'he found water, carried it home in a bucket'

And intervening items or verbs with low TBUs, by normal sandhi, do not induce the head-leftward tone spread:

(8) a. a bà pɔ̀tɔ̀pɔ̀tɔ̀ butá a wɑ̃̀ sɛ̀ > à bà pɔ̀tɔ̀pɔ̀tɔ̀ bùtá . . .
he gather mud put on one side
'he scooped up mud and put it aside'

b. a féni pɔ̀tɔ̀pɔ̀tɔ̀ bà butá a wɑ̃̀ sɛ̀ > à fénì pɔ̀tɔ̀pɔ̀tɔ̀ bà bùtá
he find mud gather put on one side
'he found mud and scooped it up and put it aside'

c. a féni wáta bà butá a wɑ̃̀ sɛ̀ > à fénì wátà bà bùtá . . .
he find water gather put on one side
'he found water and drew it and put it aside'

d. de féni gàdjà sɛ̀mbɛ̀ butá a fési > dɛ̀ fénì gàdjà sɛ̀mbɛ̀ bùtá
they find husky person put at face
'they found husky people and put them in front'

In (8a-c) there is a verb with a specified low tone adjacent to one edge of the intervening constituent. In (8a) V2 has a surface low tone on the unspecified TBU, which would be expected if the two verbs were adjacent, in (9a), suggested by the phrase *whether they are adjacent or not* in Rountree (1972:324). But from examples (8b) and (8c) it would seem that the separated V1s do not have the surface high tones they would have without the intervening item, in (9b), and in (8d) both verbs are unspecified for tone on the adja-

cent TBUs, yet do not have the expected high tones were the verbs adjacent, in (9c):

(9) a. . . . bà butá . . . > . . . bà bùtá . . .

b. . . . féni bà . . . > . . . fénḯ bà . . .

c. . . . féni butá . . . > . . . fénḯ bṵ́tá . . .

Rightward high tone spread

There are, however, SVCs with constituents between the verbs where the relevant unspecified TBUs of the verbs surface with high tones as if they were adjacent, as in (10b) with *fénḯ . . .bṵ́tá*. In these cases, there are word boundary junctures within the intervening constituent where normal leftward high tone spread would occur; for example, there is normal tone sandhi between an attributive property item, referred to as *adjective* for convenience, and the following noun (Rountree 1972:318). If such a juncture allows this sandhi, and if high tone spread can then occur, the relevant unspecified TBUs of the verbs will surface with high tones, as with *fénḯ* in (10a). But in (10b) there is tone raising on V1, but sandhi between the adjective and noun is blocked by the low TBU of *sèmbè*. The rightward spread analysis, however, would allow high tone to spread to the second TBU of *lángá* without a high tone at the right edge of the domain. Rightward high tone spread accounts for the surface high tone on *lángá sèmbè*, which would be *lángà sèmbè* elsewhere with leftward spread. But in (10c), rightward high tone spread can't occur, since *gàdjà* has no high tones, so there is no sandhi at that juncture, and no tone raising on the verbs, only the normal leftward high tone spread between NP2 and V2:

(10) a. de féni donú foló butá a dí táfa > dè fénḯ dònú fóló bṵ́tá . . .
they find yellow flower put on the table
'they found yellow flowers and put them on the table'

b. de féni lánga sèmbè butá a fési > dè fénḯ lángá sèmbè bṵ́tá . . .
they find tall person put at face
'they found tall people and put them in front' (for soccer)

c. de féni gàdjà wómi butá a fési > dè fénḯ gàdjà wómḯ bṵ́tá . . .
they find husky man put at face
'they found husky men and put them in front' (for soccer)

For the surface high tones on the relevant unspecified TBUs of the separated verbs, referred to as *sandhi* for convenience, all the junctures within the intervening constituent have specified high tone TBUs on either side, or must

allow tone sandhi, as detailed in Rountree, and high tone must spread rightward to each juncture. Such junctures are *sandhi junctures*, and are somewhat like a bridge that allows rightward high tone spread between V1 and V2. A bridge of sandhi junctures would result in surface high tones throughout the intervening constituent, except at the edges, as in (10a) for the left edge, and (10b) for the right edge. The lack of rightward high tone spread in the intervening constituent in (10c) represents a break in the bridge between the verbs, since high tone cannot spread rightward on *gàdjà*. So (10c) contrasts with (10b) where every juncture has a high tone to its left. But high tone of the intervening constituent itself does not allow sandhi on the verbs; if there is no internal juncture in the constituent separating the verbs, there is no sandhi on the verbs, even if the intervening item has no specified low tones. There is no sandhi on the verbs with a single low tone intervening item, as pointed out by Jeff Good (personal communication), or in fact any single item. The lack of an internal juncture fails to provide the bridge:

(11) a. de féni lògòsò butá a téla > dè fénɨ̀ lògòsò bùtá . . .
they find person put at face
'they found turtles and put them on the shore' (Good 2004:610)

b. de féni káĭmà butá a téla > dè fénɨ̀ káĭmà bùtá . . .
they find cayman put at shore
'they found alligators and put them on the shore'

c. de wási koósu gĭlì > dè wásɨ̀ kòósù gĭlì
they wash clothes scrub
'they washed and scrubbed clothes'

d. de wási koósu butá a wósu > dè wásɨ̀ kòósṵ́ bṵ́tá . . .
they wash clothes put in house
'they washed and put clothes in the house'

For SVCs with single intervening items, surface low tones on the verbs are not as low as with the verbs in other SVCs. They are also sometimes inconsistent, as noted for (11b) in Good (2004:611). It would be possible to interpret these mid tones as high tones, as in *dè fénṵ́ káĭmà bṵ́tá . . .* (Good 2004:610) for (11b), and for (8c) in *à fénṵ́ wátà bà bṵ́tá . . .* (Good 2004:613), and for (11d) in *à wásṵ́ kòósṵ́ bṵ́tá . . .* (Rountree 1972:325). Surface mid tones, however, can be interpreted as low tones (Rountree 1972:317). But a high tone interpretation for verbs in SVCs with single intervening items would involve only a minor change in the rightward spread analysis; a single intervening item with a specified high tone TBU functions as a sandhi juncture.

There is sandhi, and therefore a sandhi juncture between a determiner and the following noun (Rountree 1972:318), since determiners in SM are specified for high tone, not low tone. Therefore there is sandhi on the verbs in (12):

(12) a. dɛ́ fɛ́ni dí sɛ̀mbɛ̀ butá a fɛ́si > dɛ̀ fɛ́nī dí sɛ̀mbɛ̀ bū́tá . . .
they find the person put at face
'they found the person and put him in front' (for soccer)

b. a wási dí koósu butá a wósu > à wásī dí kṓósū́ bū́tá . . .
she wash the cloth put at house
'she washed the cloth and put it in the house'

c. a gɪ̀lɪ̀ dí àkàtà jabí a sitónu > à gɪ̀lɪ̀ dí àkàtà já̄bí . . .
she scrub the head pad open on stone
'she scrubbed the head pad and opened it out on a stone'

Sandhi junctures will be represented by +. A bridge of sandhi junctures, represented by [...+...**]**, will result in sandhi on the verbs, even if this differs from the surface forms of the verbs when adjacent, as in (13b) for (12c):

(13) a. . . . gɪ̀lɪ̀ jabí . . . > . . . gɪ̀lɪ̀ jàbí . . .

b. . . . gɪ̀lɪ̀ [. . . + . . .] jabí . . . > . . . gɪ̀lɪ̀ [. . . + . . .] jábí . . .

Such an intervening constituent, represented by [. . .] brackets, itself doesn't induce the sandhi on the verbs, rather for this sandhi it is necessary for all its internal junctures to be sandhi junctures. Thus there is sandhi in (12a) with *sèmbè* and (12c) with *àkàtà* even though the TBU to the left of V2 is specified with a low tone, which could not spread high tone rightward. Sandhi on V2 is conditioned by an intervening constituent with sandhi junctures, but (12a) and (12c) show that this constituent cannot spread the high tone to V2.

Constraints on rightward and leftward high tone spread

The sandhi phenomena with V2 can be accounted for by expanding the high tone spread rules for SVCs to include a leftward high tone spread on V2. This would mean a rightward spread for V1 and a leftward spread for V2. For adjacent verbs in a SVC, a specified high tone or a rightward high tone spread on the final TBU of V1 is followed by a sandhi juncture. The rightward high tone does not spread beyond V1, and so the blocking of sandhi at the right edge of verbs, in (4b) (Rountree 1972:323), is in effect maintained, in (5a). The rightward spread on V1 allows the required high tone at the left edge of the leftward spread domain for V2. A surface high tone remains to the left of a sandhi juncture even when leftward spread does not occur, as with the final lowering of *kulé* > *kùlɛ̄* in (6d). But in (13a), there is no rightward high tone

spread from *gĭlĭ* and no sandhi juncture, and also no high tone left trigger and so no leftward high tone spread for *jàbí*.

Now the continuous sandhi junctures in an intervening constituent also allow leftward high tone spread on V2, so these continuous sandhi junctures have the same effect as a surface high tone to the left of a sandhi juncture between adjacent serial verbs, even when there is no high tone on V1, as in (13b). An intervening constituent where all junctures are sandhi junctures, then, substitutes for the required high tone at the left edge of the leftward spread domain. This can be seen in the sandhi on *já́bí* in (12c).

The data in (10), (11) and (12) show that for the sandhi on non-adjacent serial verbs the intervening item needs to include a minimum of one sandhi juncture, and all junctures must be sandhi junctures. In other words, it must consist of two words that would fulfill the sandhi conditions of Rountree (1972), namely items at the left edge of maximal projections (Good 2003) such as [determiner + noun] or [adjective + noun]. In addition, the TBU to the left of the juncture must sandhi, it cannot have a final specified low tone, as in *gàdjà wómi* (10.c). Failure of sandhi to apply in other junctures also causes failure of the sandhi on the verbs, such as lack of sandhi at the juncture at the left edge of attributive adjectives with other adjectives, [adjective − adjective], or determiners, [determiner − adjective], described in Rountree (1972:319). In (14) there is no sandhi even though there is a sandhi juncture with *donú àkàtà*, because there is no sandhi juncture with *dí donú*.

(14) a. a wási dí donú àkàtà jabí a sitónu > à wásì dí dònú àkàtà jàbí . .
she wash the yellow head pad open on stone
'she washed the yellow head pad and opened it out on a stone'

b. a gĭlì dí donú àkàtà jabí a sitónu > à gĭlì dí dònú àkàtà jàbí . .
she scrub the yellow head pad open on stone
'she scrubbed the yellow head pad and opened it out on a stone'

c. a féni dí donú àkàtà gĭlì > à fénì dí dònú àkàtà gìlì
she find the yellow head pad scrub
'she found the yellow head pad and scrubbed it'

In (14) the absence of a sandhi juncture and rightward high tone spread with *dí donú* results in the failure of sandhi on the verbs. But there is a different result if the tones of TBUs on either side of such a juncture are specified high, that is, if the high tones on either side of a juncture that doesn't allow sandhi mimic the rightward high tone spread across a juncture that does. In that case, such a juncture functions as a default sandhi juncture and can allow sandhi on the verbs, in (15a), contrasting with the non-serial in (15b). In (15a), the rightward spread of high tone results in the surface high tone on *lángá*:

(15) a. de súti dí lánga sèmbè kíi > dè sútí dí lángá sèmbè kíì
they shoot the tall person kill
'they shot and killed the tall person'

b. de súti dí lánga sèmbè > dè sútì dí lángà sèmbè
they shoot the tall person
'they shot the tall person'

Where they apply, as in (15a), the default sandhi junctures make the rightward high tone spread in SM look even more like that in Fon. For example, Fon adjectives do not block tone spread. The junctures at word boundaries in SM can be seen as a reinterpretation of the syllable boundary effect in largely monosyllabic Fon, so the rightward high tone spread in SM resulting in continuous sandhi junctures resembles the rightward high tone spread in Fon that results in continuous surface high tones on adjacent syllables, except where rightward spread in both SM and Fon is blocked by 'unchangeable' low TBUs.

There are exceptions to the blocking of sandhi at the left edge of certain prenominal modifiers, such as between numbers and determiners of nationality (Rountree 1972:319), namely modifiers that do not function elsewhere as stative intransitive verbs. When there is a sandhi juncture with these modifiers, then, there can be sandhi on the verbs:

(16) de féni síkísi ólánsi sèmbè butá a fési>fénί síkísί ólánsί sèmbè bútá
they find six Dutch person put at face
'they found six Dutch people and put them in front' (for soccer)

The motivation for sandhi on verbs in SVCs could be seen as expectation (Kramer 2002:246; Good 2004:612-3). My view is that there is the expectation that verbs in SVCs will sandhi, a transfer of the Fon conjunctive border between serial verbs (Wiesemann 1991:78), and also perhaps iconically reflecting the fact that SVCs depict single events. The failure of sandhi, however, cannot be taken as these SVCs depicting anything other than single events. The failure of sandhi simply means that by random coincidence there aren't enough pieces in place to fulfill the expectation. If all the junctures in the intervening constituent are sandhi junctures, there is the expectation that the verbs on either edge will also be affected; the Fon conjunctive border on verbs is associated with the Fon rightward spread on the intervening constituent. Where the conditions for sandhi fail, the SVC falls under the default leftward spread rules.

An analysis of rightward spread

Sandhi juncture will be represented by +, as mentioned in (13), indicating rightward high tone spread is possible from the left of that juncture. Sandhi juncture occurs between adjacent verbs in a SVC, and between items in con-

stituents intervening between verbs in a SVC. In these environments there are two conditions where sandhi juncture does not occur:

(*1*) where the TBU to the left is specified with low tone, so that rightward spread is not possible, and

(*2*) where the TBU to the right is unspecified with default low tone, and rightward spread is not possible.

For two adjacent verbs in a SVC, then, V1 would have rightward spread while V2 would have leftward spread, but only if rightward high tone spread can reach the sandhi juncture to create a high tone left trigger for leftward spread from V2. This condition is met in (17a), and without leftward spread of V2 in (17b), but not in (17c):

(17) a.

a hopo + kule > à hópó kúlé hésíhésì
he get up run quickly
'he got up and ran quickly'

b.

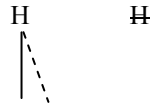
a hopo + ba wata > à hópó bà wátà
he get up carry water
'he got up and carried water'

c.

a lɛgɛdɛ buta > à lègèdè bùtá dí tákí dá mí
he lie put the talk give me
'he lied, put the talk to me'

The rightward spread on V1 can be seen in final lowering (Rountree 1972:325) with adjacent verbs, in (18a), where the final high tone, *H*, of V2 is delinked, ~~*H*~~, yet the unspecified second TBU of V1 surfaces as high:

(18) a.



a hopo + kule]$_S$ > à hópó kùlè
he get up run
'he got up and ran'

The sandhi juncture + between *hópo* and *kulé* does not violate condition *(2)* above, because the default low tone following + is a result of the delinking.

Sandhi on verbs also occurs with an intervening constituent, but only if all the junctures of the constituent are sandhi junctures. Such a constituent has the effect of a sandhi juncture for V1, as in (19a). An intervening constituent that fails to meet the sandhi juncture condition is like any other constituent following a verb, with no exceptional sandhi, as in (19b) and (19c).

An intervening [...+...] constituent, meeting the sandhi juncture condition, also functions as a sandhi juncture for V2, which for adjacent verbs creates a high tone left trigger for leftward spread from V2. But the intervening constituent does not necessarily create a high tone left trigger. This high tone left trigger could be created with the insertion of a high tone morpheme, ***H***, to the left of V2, based on the analysis of Good (2003). The **H** would be inserted only where all the junctures of an intervening constituent are sandhi junctures. The insertion of **H** would allow normal leftward spread from V2, but because it only applies to V2 in SVCs this solution would be somewhat *ad hoc*.

Another analysis, however, would allow a sandhi juncture + or its equivalent [...+...] to serve as a left trigger for leftward spread on V2. Leftward spread in SVCs, then, would essentially be like rightward spread in being tied to sandhi juncture rather than to a high tone trigger; where there is a sandhi juncture + or [...+...] there is rightward spread on V1 and leftward spread on V2. The difference, of course, is that [...+...] is licensed by the items within the constituent, regardless of V1 and V2, whereas + is licensed by V1 and V2.

A juncture where sandhi is permitted, by Rountree (1972), but where rightward spread is not possible is represented by ±, as in (19b) and (19c). This is the first of the two conditions where the + sandhi juncture does not occur. The leftward spread on *wómí̲ bú̲tá* in (19c) is independent of rightward spread:

(19) a. H H L H

de feni [langa + sɛmbɛ] buta > dè fénı́ lángá sèmbè bú̲tá à fési
they find tall person put at face
'they found tall people, put them in front'

b. H L L H

de feni [gadja ± sɛmbɛ] buta > dè fénì̀ gàdjà sèmbè bùtá à fésì̀
they find husky person put at face
'they found husky people and put them in front'

c. H L H H

de feni [gadja ± womi] buta > dè fénì̀ gàdjà wómí̲ bú̲tá a fesi
they find husky man put at face
'they found husky men and put them in front'

An intervening [...+...] constituent allows sandhi on V1 even if V2 cannot have leftward spread, in (20a), as with the + sandhi juncture in (17b) and (18b):

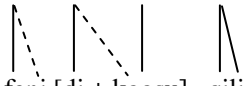
(20) a. H H L L

a feni [di + akata] gili > à fénī dí àkàtà gǐlì
she find the headcloth scrub
'she found the headcloth and scrubbed it'

b. L H L H

a gili [di + akata] jabi > à gǐlì dí àkàtà jábī à sǐtónù
she scrub the headcloth open on stone
'she scrubbed the headcloth, opened it out on a stone'

c. H H H L



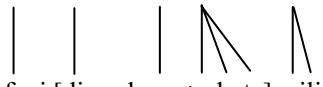
a feni [di + koosu] gili > à fénī dí kóósù gǐlì
she find the skirt scrub
'she found the skirt and scrubbed it'

Where there is a break in the continuity of + sandhi junctures of the intervening items, as in (21a) and (21b) between a determiner and an adjective (Rountree 1972:319), there is also no sandhi on the bracketing verbs. Such a juncture where sandhi does not occur is represented by −. This is the second of the two conditions were the + sandhi juncture does not occur:

(21) a. L H H L H

a gili [di − donu + akata] jabi > à gǐlì dí dònú àkàtà jàbí à sǐtónù
she scrub the yellow headcloth open on stone
'she scrubbed the yellow headcloth and opened it out on a stone'

b. H H H L L



a feni [di − donu + akata] gili > à fénì dí dònú àkàtà gǐlì
she find the yellow headcloth scrub
'she found the yellow headcloth and scrubbed it'

It would appear, in (21), that in the [...+...] constituent the − junctures are determined by the head-leftward rule, even though there is rightward tone

spread. But in general this rule does not account for the sandhi of determiners of nationality (Rountree 1972:319) or non-universal quantifiers like *óto* 'other' or *báka* 'last' (Kramer 2002:105) in a straightforward way, since these modifiers sandhi with adjectives. For SVCs there would be exceptions to the head-leftward rule, since the left verb is not always the head in SVCs (Déchaine 1997:55). In [...+...] constituents a juncture with high tones on either side can override the head-leftward rule, as in (22), where the juncture has the appearance of rightward spread:

(22) H H H L H

de suti [di + langa + sɛmbɛ] kii > dè sútí dí lángá sɛ̀mbɛ̀ kíì
they shoot the tall person kill
'they shot and killed the tall person'

And where there is no + sandhi juncture, as in (23) with a single intervening item, there is no sandhi effect on the bracketing verbs:

(23) a. H L H

de feni [logoso] buta > dè fénì lògòsò bùtá à télà
they find turtle put on shore
'they found turtles and put them ashore'

b. H HL H

de feni [kaima] buta > dè fénì káìmà bùtá à télà
they find alligator put on shore
'they found alligators and put them ashore'

c. H H H

a wasi [koosu] buta > à wásì kòósú bútá à wósù
she wash skirt put at house
'she washed skirts and put them away'

Rightward spread in Saramaccan and in Fongbe

The rules for rightward high tone spread account for a simple fact regarding sandhi in SVCs; there is sandhi on verbs if there is a continuum of sandhi junctures between the verbs. The surface tones, however, are not all necessarily high. Sandhi can occur with low tone verbs, and the intervening con-

stituent can have surface low tones. But such an intervening constituent can only have surface low tones at its periphery. In a figurative sense, then, the continuum of sandhi junctures in an intervening constituent creates a bridge of adjacent TBUs with surface high tones, but where both the edges and the verbs can have surface low tones.

Since no spread raises the unspecified TBUs at the left edge of the constituent, and only leftward spread from V2 can raise the unspecified TBUs at the right edge, it must be assumed that spread occurs at junctures, suggesting a reinterpretation of Fon spread which occurs between syllables, but also mostly at junctures because the Fon lexicon consists primarily of monosyllabic words.

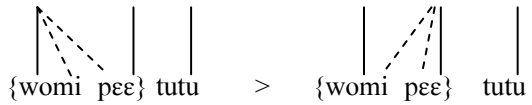
In a Fon tonal domain, then, high tone would spread from the leftmost high TBU, not necessarily the first TBU. And it would spread rightward across the final juncture to the domain final TBU, leaving a high tone on a final high tone TBU, or changing a final low tone TBU to a high-low contour, discussed below in (28). In SVCs in SM, the rightward spread in a sandhi affecting intervening constituent similarly begins with the leftmost high TBU and spreads rightward across sandhi junctures leaving a high tone on a TBU after the final juncture. But in SM, where spread is by sandhi juncture rather than by syllable, a domain final unspecified TBU in a polysyllabic word would surface as low. There is a resemblance, then, between sandhi affecting intervening constituents in SM and tonal domains in Fon, where contiguous high tone TBUs can have low tones at their periphery.

There is also a resemblance with lexical items in tonal domains of leftward spread in SM, although the resemblance, like the leftward spread domain, is limited to two words. Surface high tones bracket a juncture while surface low tones may occur at the periphery; *boóki boóko* > *bòókí bóókò* 'bridge is broken'. In environments where leftward spread occurs, in fact, it can only be distinguished from rightward spread in final lowering, as in (6c); *wómi kuléʃ*$_S$ > *wómi̍ kùlèʃ*$_S$ 'man ran'.

The resemblance to rightward spread rules allows the possibility that the leftward spread rules of SM could be derived from Fon, due to reinterpretation during creolization by speakers of substrate languages other than Fon, namely Kikongo. The blocking of sandhi after verbs in Fon, the disjunctive border (Wiesemann 1991:75), blocks rightward spread from the verb but has no effect on rightward spread to the verb from the preceding subject NP. The Fon disjunctive border at the right edge of verbs transferred into SM. But sandhi at the left edge and the Fon disjunctive border at the right edge of the verb could be interpreted as leftward spread by speakers of substrate languages other than Fon. And because it would spread from the verb it could also have been interpreted as head-leftward. Now rightward spread would require a high tone to the left of the verb, so the reinterpretation as leftward spread would see this high tone as a left trigger at the left edge of the domain in exactly those environments where leftward spread now occurs. The reinterpretation would

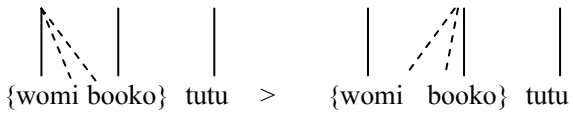
then involve a left trigger as a condition for leftward spread. A hypothetical rightward spread in (24a), *wómi pɛ́ɛ́ tutú* 'man played horn', is reinterpreted as leftward spread with a left high tone trigger, in (24b):

(24) a. H H H b. H H H



In Fon, rightward high tone spread onto a domain final L forms a contour HL tone with the L tone on this domain final TBU; *{é sà}* '3sg sell' *{àsón wè}* 'crab two' > *{é sâ} {àsón wê}* 'she sold two crabs' (Lefebvre & Brousseau 2002:22). A hypothetical rightward spread in (25a), *wómi boóko tutú* 'man broke horn', would then maintain the surface L on the domain final TBU. As there are no words in SM with two final unspecified TBUs (Good 2004:585), the hypothetical rightward spread to a domain final unspecified TBU would always maintain a HL contour at the right edge of the domain. Speakers of substrate languages other than Fon could reinterpret the HL contour as leftward spread, in (25b), accounting for the absence of spread on the domain final TBU:

(25) a. H H H b. H H H



This reinterpretation could have occurred early in creolization, at a time when speakers of Gbe languages were not the numerically predominant substrate group, between 1652 and 1699 (Arends 1995:243), and so before the transfer of SVCs from Fon, and also possibly before the tone spread complications due to the development of the split lexicon by the incorporation of unchangeable low tones. The reinterpretation of tone spread as head-leftward for verbs, where the basic SVO word order of Fon was maintained in SM making it relatively stable, could have been generalized to NPs, which were perhaps less stable because the word order was changing from a postnominal to a prenominal directionality.

There are further similarities between SM and Fon rightward tone spread regarding SM specified low TBUs. In Fon, voiced obstruents function as 'unchangeable' low tones; the low tone of a consonant, unlike a vowel, cannot change because these consonants have the feature [+ slack vocal cords] (Lefebvre & Brousseau 2002:32). These 'unchangeable' low TBUs can be seen as parallel to the 'unchangeable' TBUs in SM. As in Fon, rightward spread in SM is blocked by these 'unchangeable' low TBUs. In Fon a voiced obstruent causes a following high tone TBU to become LH, as in *gbǎ* 'build'. Now there

is a low tone delinking rule in Fon where LH after H delinks the L: HLH > HH. In (26), the 'unchangeable' low is (L), and is not visible to the L delinking rule. In (26b) L delinking is alternatively represented as H tone spread:

(26) a. H (L)LH > H (L)~~L~~H b. H(L)~~L~~H

e gba xwe > é gbá xwé (Brousseau 1991:103) é gbá xwé
he build house
'he built a house'

Now consider a parallel in SM, with (L) as the 'unchangeable' low, in (27):

(27) H (L) H > H (L) H

de feni di logoso buta a tela > dè fénì dí lògòsò bútá à télà
they find the turtle put at shore
'they found the turtle and put it ashore'

In SM, rightward spread allows the surface H to 'delink' the default low of the unspecified TBU of *butá* 'put', in (27); 'delinked' in that this unspecified TBU following a specified L would otherwise surface as low. The leftward spread on V2 after the (L) where rightward spread occurs before the (L) in SM is parallel to the Fon low tone delinking rule. Both the SM and the Fon rules apply only where rightward high tone spread is blocked by (L). Both rules raise the tone on a TBU that without the preceding (L) would be raised anyway. So the output of both rules is H(L)H. And, as a further parallel, it would be possible to analyze the Fon low tone delinking as exceptional leftward high tone spread, in (26b), as the leftward spread on V2 in SVCs in SM is exceptional.

The parallel between the SM V2 leftward spread rule and the Fon L delinking rule suggests transfer. If it were transfer, it would most likely have transferred with SVCs and the rightward spread rule.

My view of rightward high tone spread for SVCs is that SM attempts to use the basic direction of spread in Fon and the Fon L delinking rule. Where this succeeds, the rightward spread rules apply. But where it doesn't succeed, the rightward spread rules don't apply, and the SVC falls under the normal leftward spread rules.

Conclusion

In serial verb constructions in SM the occurrence of surface high tones on unspecified TBUs cannot always be accounted for by the normal leftward high tone spread rules, so in these cases special rightward rules are necessary.

Which rules apply is determined by the chance occurrence in the constructions of tonal domains and of words with TBUs specified for low tone. Such differences in high tone spread are not semantically distinctive. The fact, then, that there are two sets of high tone spread rules would seem to be an unnecessary complication of a creole grammar.

But there is a parallel in SM with the two sets of tone spread rules and the split in the lexicon between items that are fully specified for tone and items that are not. In each case there is a clear substrate identity for one set. The lexical items fully specified for tone are characteristic of lexical items in the substrate tone languages, and are mostly of substrate origin, while items not fully specified mimic the stress of the lexifier languages. For high tone spread rules, the rightward spread rules closely match the rightward spread found in Fon, and apply to constructions that are unequivocally substrate, namely SVCs.

While the leftward spread rules are not of lexifier origin, they incorporate features reminiscent of stress systems, namely the important role of word boundaries, since the domain for normal leftward spread must include a word boundary. Leftward spread rules could also be seen as an adjustment to prenominal determiners and modifiers, which are postnominal in Fon; the head--leftward rule in SM would mirror the rightward spread from nouns to modifiers or determiners in Fon.

The leftward spread rules are also apparently not of substrate origin, but could be seen as having derived from rightward spread rules in Fon, in (24) and (25), due to reinterpretation. These leftward spread rules would precede the transfer of SVCs and rightward spread rules. By this analysis, then, both the SM leftward and the rightward spread rules have their origin in Fon rightward spread rules.

In SM both leftward and rightward spread rules, however, depart from characteristic tone spread rules in that they do not delink TBUs with specified tone. They only determine the surface tones of unspecified TBUs. And by incorporating apparently innovative constraints on tone spread, like blocking sandhi at the left edge of adjectives, each set of rules is more complex than the source. This adjective constraint on sandhi, as argued above, can be seen as falling out from the head-leftward spread rule, and so developing during creolization.

There are features of rightward high tone spread, though, which distinguish it from leftward spread as being more like the substrate. The use of rightward spread in unequivocally substrate constructions is significant as far as transfer is concerned. It implies that the transfer of these constructions included the rightward spread rules. It would also imply that these constructions with the rightward spread rules have lost ground to the leftward spread rules, since the leftward rules are the default when the rightward rules fail to apply.

A likely scenario is that the leftward spread rules were already in place when the rightward rules transferred with SVCs, to serve as a default when sandhi failed, and to supply the essential leftward spread on V2 that allows sandhi to occur at all. If, on the other hand, leftward spread rules were to have replaced rightward spread rules, there is no explanation as to why certain SVCs were not affected. The intervening constituents in these SVCs in SM that have rightward spread, of course, match Fon tone sandhi exactly, since there are no head-leftward constraints in Fon to block sandhi. It would appear that the rightward spread rules transferred during creolization with SVCs, since there is no argument against the transfer of SVCs during creolization.

Any difference in the time the different high tone spread rules may have entered SM, then, does not mean that the incorporation of these rules did not take place during the creolization process. The fact that the resulting rules are different from the source would not rule out creolization (Thomason 2003). The loss of inflectional morphology in creolization, from source languages that have it for example, constrains the syntax of the creole and so creates rules that are different from the source; these syntactic rules then would be more complicated than the source, because they would require the syntax to assume the function of the lost inflectional morphology. The fact that SM has incorporated two types of lexical items represents a complication of both substrate and superstrate lexical phonology, and since tone spread rules can accommodate both types there seems to be no reason to assume this incorporation did not occur during creolization. The high tone spread rules in SM are more complex than those in the primary substrate language Fon, but Fon of course is not the only source; creolization would involve other input as well. Both substrate languages, Fon and Kikongo, are tonal. And, of course, there may also have been input from English, as the English stress system input added to the complexity of the lexicon relative to Fon, apparently resulting in the tonally unspecified TBUs.

If the complex tone spread rules in SM developed during creolization, these rules would then represent a counterexample to the premise, as argued by McWhorter (2004:92), that, in essence, creolization necessarily results in simplification. Interestingly, a complication in SM, and so an exception (McWhorter 2004:94), is the temporal subordinator *té* < 'time', which is used only in present and future, while the Fon equivalent *hwènu* < 'time' is used only in the past, parallel to the person and tone reversals in the transfer of the feature [nominative] for pronouns, discussed with examples (1a) and (1b). This reversal is considered part of transfer (McWhorter 2004:ftnt. 4) and therefore part of creolization, rather than a subsequent development. The reversal of Fon tone spread direction to leftward in SM could similarly be a part of creolization, and, along with the resulting head-leftward rule, a complication.

In SM the exceptional tone raising on verbs in SVCs could be considered an inflectional marker of SVCs, as is the insertion of a high tone morpheme **H**

for SVCs in the Good (2003) analysis, and as such the tone raising, or **H,** would represent both inflectional and tonal morphology, argued by McWhorter (1998) to be lacking in a prototypical creole. Good (2003) argues that the complex tone spread rules in SM with **H** insertion are the result of reanalysis that occurred subsequent to creolization, since they cannot be identified with any substrate source, and so do not constitute a counter-example to the creole prototype. But another interpretation would be that this reanalysis was part of creolization, part of the process of compromise. As with the temporal subordinator *té*, transfer does not always result in an exact match with the substrate source. Thomason (2003:118) comments that distinguishing between changes made during and changes made after creolization is difficult or impossible, and argues that the strategies involved with creolization are the same as with shift-induced interference, in each case due to lack of fluency in the receiving language (Thomason 2003:112). Now if SM leftward spread can be identified as a reinterpretation of Fon rightward spread due to lack of fluency, as argued above in (27), and SM rightward spread for SVCs identified as an adaptation of Fon rightward spread to the existing SM leftward rules during the transfer of SVCs, and SVCs transferred during creolization, then both sets of rules could be seen as having developed during creolization. In which case, the innovation of SVC tone raising, or **H** insertion, would also have occurred during creolization. A tonal inflectional marker in SM having developed during creolization, of course, would again remove SM somewhat from the creole prototype.

To my knowledge there is no argument against the incorporation of SVCs in SM as part of creolization. And it would seem that if speakers of Fon, familiar with SVCs, could negotiate SVCs into the creole, it would not be left to future speakers of Fon to add the tones. The association of rightward tone spread with the unequivocally substrate SVCs would suggest that SVCs transferred during creolization with the somewhat simplified Fon tone, and with rightward spread. My own view, then, is that SVCs entered the creole during creolization with the Fon rightward tone spread rules, which were then re-analyzed and combined with leftward tone spread rules as part of a normal process of creolization.

References

Arends, J. (1995) Demographic factors in the formation of Sranan, In *The early stages of creolization* (J. Arends, editor) pp. 233-285. Amsterdam: Benjamins.

Brousseau, A. M. (1991) Domaines et relations gouvernement dans le processus tonals du Fongbe, In *Recherches linguistiques de Vincennes* **20**, 23-112.

_____ (1993) Représentations sémantique et projections syntaxiques des verbes en Fɔngbè, *Travaux de recherche sur la créole haïtien* 18-19. Université du Quèbec à Montréal.

Déchaine, R. (1997) Verb serialization and event composition. In *Object positions in Benue-Kwa* (R. Déchaine & V. Manfredi, editors) pp. 47-66. The Hague: Holland Academic Graphics.

Devonish, H. (1989) *Talking in Tones*. Karia: London.

Good, J. (2003) Morphosyntactic tone raising in Saramaccan: the reanalysis of substrate phonology as tonal morphology. In *Yearbook of Morphology 2002* (G. Booij & J. Marle, editors) pp. 105-134. Kluwer, Dordrecht.

_____ (2004) Tone and accent in Saramaccan: charting a deep split in the phonology of a language, *Lingua*, **114**, 575-619.

Ham, W. (1999) Tone sandhi in Saramaccan: a case of substrate transfer? *Journal of Pidgin and Creole Languages*, **14**, 45-92.

Kramer, M. (2002) *Substrate transfer in Saramaccan creole*. Ph.D. dissertation, University of California, Berkeley.

Lefebvre, C. & A. Brousseau (2002) *A Grammar of Fongbe*. Mouton: Berlin.

McWhorter, J. (1998) Identifying the creole prototype, *Language* **74**, 788-818.

_____ (2004) Saramaccan and Haitian as young grammars: The pitfalls of syntactocentrism in Creole genesis research, *Journal of Pidgin and Creole Languages* **19**, 77-137.

Rountree, S. C. (1972) Saramaccan tone in relation to intonation and grammar, *Lingua* **29**, 308-325.

Thomason, S. (2003) What motivates changes that occur in emerging pidgins and creoles? *Journal of Pidgin and Creole Languages* **18:1**, 107-120.

Thompson, S. (1988) A discourse approach to the cross-linguistic category 'adjective'. In *Explaining language universals* (J. Hawkins, editor) Oxford: Blackwell.

Voorhoeve, J. (1961) Le ton et la grammaire dans le Saramaccan, *Word* **17**, 146-163.

Wiesemann, U. (1991) Tone and intonational features in Fon, *Linguistique Africaine* **7**, 65-90.

Dharma Realm Buddhist University
Talmadge, CA, U.S.A.
kramer@saber.net