

The Tonology of Asante Verbs

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THE TONOLOGY OF ASANTE VERBS  
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1. INTRODUCTION

The purpose of this paper is to present an autosegmental analysis of the tonal behavior in the Asante disyllabic verbs. Asante is a dialect of Akan, a Kwa language spoken in Ghana. The data I will be presenting comes primarily from Berry (1975), and is supplemented by data taken from Schachter and Fromkin (1968), and Dolphyne (1988).

Disyllabic verbs in Asante fall into two major classes with respect to tonal behavior. These classes are completely predictable based on segmental information. Class I is marked by a medial sonorant, and Class II is marked by a medial obstruent. My central claim is that tonal alternations *between* the two classes of verbs can be explained entirely by segmental interference on tonal behavior, and that tonal alternations *within* the classes of verbs can be attributed to basic phenomena of tonal assimilation and tonal shift.

1.1 BACKGROUND

Let's begin by looking at some of the basic properties of the Asante tone system. Underlyingly, there are two basic tones in Akan — high and low. These tones contrast in all environments, as is illustrated in (1).

(1)	HH	pápá	"good(ness)"		LL	bòà'	"to help"
	LH	pàpá	"father"		LH	bòá	"to tell a lie"
	LL	pàpà	"fan"		L	bò	"chest"
	HL	pá:pà:	"to slap"		H	bó	"stone"

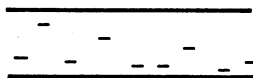
Contour tones in Asante are not common. In fact, contour tones never surface in the verb system in lexical phonology<sup>1</sup>. They do, however, surface occasionally in other grammatical categories, such as nominals and adverbials (2). These contour tones are derived from the simple high and low tones in the underlying system.

- (2) a. me fié "my house"  
b. á "when"

When contour tones are derived in the verbal system lexically, they always undergo simplification.

The phenomenon of downdrift plays a crucial role in the formulation of this analysis. The basic principle governing downdrift is that a H tone is lowered just in case it is preceded by a HL sequence. Conceivably, a long enough HLH sequence will render a H tone at the end of the sequence which is phonetically as low as a L tone at the beginning of a sequence. Consider the following example (Dolphyne, 1988, p.57).

(3)



pápá Kòfí rèfrè nè bé.  
Papa Kofi is calling his child"

As we can see, the H tone in /papa/ is considerably higher than the H tone in /be/. The H tone in /be/ is actually level with, if not lower than the first L tone in /papa/. This phenomenon is often referred to as "automatic" downdrift since a L tone will automatically and always trigger the lowering of a following H tone.

Keeping this in mind, there is a third tonal contrast in Asante, namely the drop tone. The drop tone is higher than a L tone and lower than a H tone. The drop tone is derived from a H tone and surfaces only after another drop tone or after a H tone. It never surfaces phrase initially or after a low tone. The drop tone is a product of downstep. Downstep is often referred to in the literature as "non-automatic" downdrift. Like downdrift, downstep has the effect of lowering the pitch of a H tone relative to a preceding H tone. Unlike downdrift, however, there are no surface indications as to how this "down step" effect was triggered. This analysis assumes a H tone is lowered just in case it is preceded by a HL tonal sequence. However, the L in this sequence is not a surface L, it is floating. This follows Clements' and Ford's assertions on the drop tone with respect to Kikuyu (1979), namely that drop tones are always and only triggered by floating L tones. Drop tones in Asante are always derived and will be represented in this paper by "!" followed by a high tone. This analysis of the the drop tone is illustrated by the following contrasting pair.

- (4) a. mé!bó " my chest"
- b. òbó "the chest"

Notice that in both cases the nominal [bó] is H toned. The H of [bó] is dropped after [mé] in (4a.). This correlates with the loss of [ɔ]. [ɔ] is a third person singular nominal marker which deletes *segmentally* before a possessive marker (which in this case is the first person singular [mé], leaving the L tone floating). The drop tone in (4a.) is triggered by a floating L tone preceding [bó] "chest". Consider the following derivation.

- (5) /mé ɔ-bó/
- mé ˘ bó Segmental deletion
- [mé!bó]

The floating L tone from the third person singular nominal marker is the trigger needed to instantiate "non-automatic" downdrift resulting in a drop tone. The bulk of this paper will focus on the distribution of drop tones in two classes of disyllabic verbs.

1.2 DISYLLABIC VERB CLASSES I AND II

The two classes of verbs that this analysis concerns itself with are shown below in (6). What class a verb belongs to is entirely predictable based on segmental information. Class I verbs are characterized by either word medial sonorants, or no medial consonant whatsoever. Class II disyllabic verbs are characterized by a word medial obstruent. The distribution of drop tones in the inflected forms of these verbs is predictable with respect to their medial consonants.

(6)	<b>Class I</b>	<b>Class II</b>
	sane "to untie or loosen"	pata "to passify"
	sore "to get up"	kasa "to speak"
	gyae "to stop"	posa "to rub hands"
	kae "to remember"	didi "to eat"

ware	"to marry"	hwete	"to scrape"
hini	"to shut the door"	tasa	"to gather"
dane	"to turn"	bisa	"to ask"

The inflected form of the verbs we will be looking at is characterized by the following template.

(7) Subject Concord Clitic + Aspect Prefix-Verb Root

In this analysis, the verbal word refers to only the aspect affix and the verb root. To most efficiently illustrate tonal behavior in Asante, we will only be considering verbs which are inflected for the 3rd person singular subject — namely, [wɔ́]

## 2. DATA AND ANALYSIS

In addressing the data, let us consider the tonal melodies of verbs inflected with L toned aspect markers. These forms are cited for you in (8) below.

(8)	<u>L-TONE ASPECT</u>	<u>CLASS I</u>	<u>CLASS II</u>
		/sane/ (to loosen)	/bisa/ (to ask)
	a. Present Indicative	wɔ́- <u>sàné</u>	wɔ́- <u>bisá</u>
	b. Progressive	wɔ́- <u>rè - sàné</u>	wɔ́- <u>rè-bisá</u>
	c. Consecutive	wɔ́ - <u>à - sàné</u>	wɔ́- <u>à-bisá</u>

Directing our attention first to the tonal melody associated with the verb roots in the above forms, notice that all six forms carry the same LH melody when preceded by a low tones aspect marker ( the present indicative aspect morpheme is a floating L tone). In fact, it is the case that *any* disyllabic verb root inflected with low toned aspect prefixes will surface with a LH tonal melody. This generalization can be expanded further to include polysyllabic verbs, in general, as is shown in (9) below.

	<u>Verbs inflected for Aspect</u>	<u>Verbs Uninflected for Aspect</u>
(9)	i. wɔ́bisá "we ask"	i. bisá "ask"
	ii. wɔ́bisábìsà "we ask (repeatedly)"	ii. bisábìsà "ask (repeatedly)"
	iii. wɔ́bisábìsàbìsà "we ask (repeatedly)"	iii. bisábìsàbìsà "ask (repeatedly)"
	iv. wɔ́pàtfrì(w) "we slip"	iv. pàtfrì(w) "to slip"

Each form has the LH melody associated with the first two syllables of the verb root. In (ii) and (iii) the verb roots are reduplicative forms, and in (iv) the verb root is trisyllabic. All syllables following the LH melody have L tones associated with them. The predictability of the tonal melody in polysyllabic verbs leads us to the preliminary analysis that these verbs are underspecified for tone in the underlying representation. This analysis asserts that a LH verbal morpheme associated to the verb root early on in the derivation, before aspect and subject affixes are introduced (for a more in depth discussion of the motivation behind this assertion, see Carleton, 1991).

The following set of data illustrating verb roots inflected with High toned aspect markers lends additional support to the proposal of a LH verbal melody associating to the verb root.

(10)	HIGH TONED ASPECT MARKER	CLASS I	CLASS II
		/sane/	/bisa/
a. Future I	wó - bé -	l <sup>h</sup> sáné	wó-bé-bí <sup>h</sup> sá
b. Perfect	wó - á-	l <sup>h</sup> sáné	wó-á-l <sup>h</sup> bí <sup>h</sup> sá
c. Future II	wó - rèbè -	sáné	wó-rèbè-bí <sup>h</sup> sá

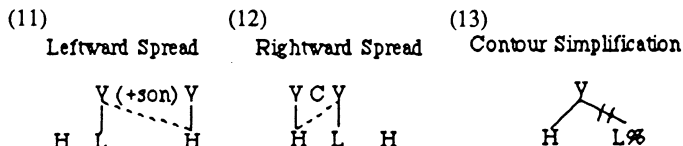
Notice that in every form except [wó - rèbè - sáné] the verb root has a drop tone associated with it. The drop tone, by assumption, is derived from a High tone preceded by a floating L tone. The proposed LH verbal melody is, hence, present in verbs inflected with H toned aspect markers, as well as those inflected with L toned aspect prefixes. In the case of L toned inflection, the L surfaces. With H toned inflections the L is floating.

Having addressed the background assumptions needed for this analysis, now let us consider the alternations, namely those associated verbs inflected with H toned aspect affixes, that this analysis will account for. In (10a) a drop tone is associated with the first syllable of the verb root in class I, and with the second syllable of the verb root in class II. This means there are different operations involved in the placement of the floating L. In (10b), again we have a drop tone on the first syllable of the verb root in Class I, but instead of a drop tone on the second syllable of the verb root in class II, like we saw in (10a), the drop tone shows up on the first syllable of the verb root. This is peculiar considering that surface environments look identical, namely, a H tone prefix precedes the verb root in both (10a) and (10b). Therefore, whatever operations determined the tonal patterns in (10a), are not at work in (10b). Finally, considering (10c) we find a third alternation. There is a simple LH melody associated with the class I verb root, and the prefix preceding is L toned. This may lead us to conclude that Future II belongs up in the L-toned aspect paradigm. However, we must abandon this premature conclusion when we look at the Future II in Class II verbs. Notice in (10c) that there is a drop tone on the second syllable of the Class II verb root, even though the prefix remains L toned. We know that drop tones are always derived in Asante, and we know that we can only derive drop tones in a *non-neutral* environment, namely, when we have high toned prefixes preceding the verb root. Hence, we must conclude that Future II belongs grouped with the H toned prefixes and, therefore, we must come up with a story to account for the surface L on the aspect affix.

Before accounting for the alternations in the data set above, let's consider some of the generalizations that can be made about this data. 1. HLH melodies never surface in the verbal word. When a H prefix adjoins the LH verb root, the HLH sequence never makes it to the surface representation. 2) Class I verbs only have drop tones on the first syllable of the verb root or not at all. Class II verbs allow drop tones on both the second and first syllable of the verb root. With this in mind, let us first consider the Future I case in (10a) [wó - bé - l<sup>h</sup>sáné] vs. [wó-bé-bí<sup>h</sup>sá] .

When the H aspect marker gloms onto the verb root, which is already assigned a LH melody, we get a HLH melody in the verbal word. We know that HLH never makes it to the surface representation. This, in addition to the fact that we have posited floating L tones in two different locations, depending upon the class of verbs, leads us to further posit two rules of H tone spread, one leftward, and one rightward. In doing so, the H spread will play a crucial role in eliminating the HLH sequence on the surface by creating either a LH or a HL contour tone. Since we already know that contour tones never surface in the verbal system, we posit a mirror image contour simplification rule which will delink

the L tone from from any contour tone (e.g., HL or LH). Motivation for delinking the L tone comes from the fact that we previously posited a floating L in all of the forms (save Future II, Class I). We can control the location of the floating L tone with respect to the two different verb Classes by imposing constraints on the spread rules which prohibit leftward spread in class II verbs and condition leftward H tone spread in Class I. Rules 11-13 both eliminate the HLH sequence in the verbal word, as well as distinguish Class I from Class II by putting the floating L tones in the correct positions. These three rules, as well as the rest of the rules in this analysis are morphologically conditioned to apply only with in the verbal system, and more specifically are restricted to lexical phonology.



Leftward Spread correctly predicts that given a HLH sequence, a H will spread leftward just in case if there is a medial consonant, it is a sonorant. If it is an obstruent, leftward spread will be blocked. In the event that leftward spread is blocked, rightward spread will kick in, spreading the H from the Aspect prefix onto the first syllable of the verb root. A mirror image contour simplification rule will delink the L from the derived contour. Consider the following examples.

(14) Class I		Class II	
[bɛ-sane]   N H L H	Leftward Spread	N.A.  [bɛ-bisa] H L H	Leftward Spread
[bɛ-sane]   V H ⊙ H	Contour	[bɛ-bisa]  H ⊙ H	Contour Simplification
[bɛ-!sáne]   H ⊙ H	Simplification	[bɛ-bí!sá] H ⊙ H	

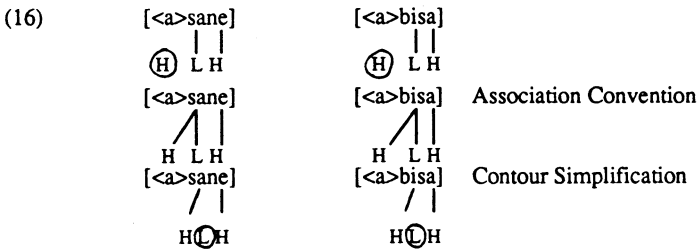
Leftward Spread insures a drop tone on the first syllable of the verb root, and rightward spread insures a drop tone on the second syllable of the verb root. Leftward Spread must be ordered before rightward spread, so that both forms don't get a drop tone on the second syllable of the verb root. Contour Simplification applies whenever the structural description is met so as to bleed rule (12). Therefore, it is a persistent rule with morphological conditions (for discussion of persistent rules, see Myers, 1991).

Turning now to the Perfect forms in (10b) [wó-á-!sáne] and [wó-á-!bísá], we must account for the fact that we have a drop tone on the first syllable of the verb root in class II [wó-á-!bísá]. The Spread rules above prohibit leftward spread across an obstruent, hence, there is a different process altogether which is taking place with these forms. In order to account for the Perfect, we begin by considering the aspect prefix. We posit that the H

tone of the Aspect marker is realized on the first syllable of the verb root. If, in fact, it were realized on the aspect marker itself, then leftward spread would not be blocked and we would expect the same drop distribution in the perfect forms that we found in the Future I forms. Therefore, we must insure that the H tone does not associate to the aspect marker itself. In order to do this, we posit the following underlying representation for the perfect aspect affix.

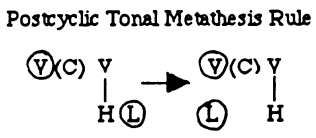
(15) Perfect Aspect Affix  $\langle a \rangle$   
 $\textcircled{H}$

The perfect aspect marker consists of an extraprosodic segmental /a/ and an unassociated H. Extraprosodicity forces the H to associate to the right, in this case, onto the first syllable of the verb root in both classes. This rightward tonal shift has the same effect on the first syllable as a rightward spread. A contour tone is created on the first syllable. Contour simplification delinks the L leaving us with a drop on the second syllable of both verb roots. This is illustrated below.

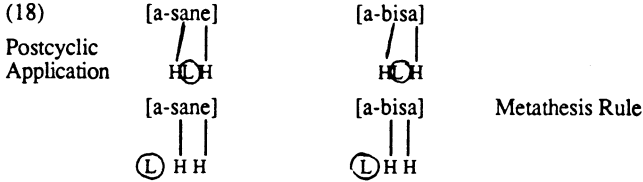


According to the surface representation of these forms, the floating L is missing from the stem, and unexpectedly appears on the prefix. By positing a Postcyclic rule of tonal metathesis, we can remove the floating L from between the two H tones, thus eliminating the drop tone on the second syllable, and place it before the verb root, resulting in a drop tone on the first syllable of both classes of verb roots. The rule and operation are cited below in (17) and (18).

(17)

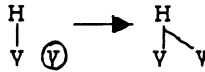


The rule tells us that if we have an unassociated vowel and a floating low tone separated by a linked H tone, the floating low tone will metathesize to the left. In the postcyclic stage of rule application in Asante, extraprosodicity is "turned off". The extraprosodic segmental portion of the perfect aspect affix is subject to rule application in the postcyclic stage. As we see in (18) (below) the structural description for metathesis is met. Metathesis allows us to address in one operation what would require two operations, namely a floating L tone deletion rule and a floating L tone insertion rule, in strict non-linear terms.

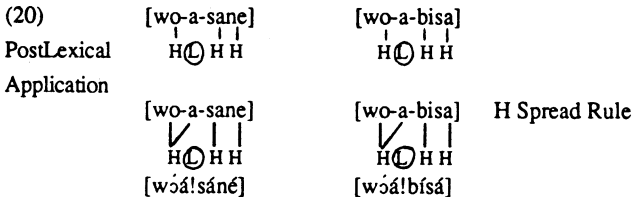


It is assumed that OCP fusion will eliminate any OCP violations at the end of the derivation.

In the postcyclic stage, the perfect aspect is left unassociated for tone. Left as is, the principle of well-formedness will dictate that the floating L tone link to the unassociated vowel in the perfect aspect affix. In order to both prevent this from happening, and assure that vowel surfaces with a H tone, we posit that the affix receives its tone from the subject concord clitic during the postlexical stage of the derivation. A postlexical rule of H spread will insure that the toneless affix gets the H it needs. The rule responsible for this is cited in (19) below.



Simply stated, this rule conditions H spread onto an unassociated adjacent vowel. Crucial to the application of this rule is that the unassociated vowel be directly adjacent to the vowel from which the spread will take place. That is to say, the structural description of this rule is not met if there is an intervening consonant. Note the following example.



As we can see, when the Subject concord clitic adjoins postlexically, the structural description for the H spread is met, so we get H spread onto the aspect affix, rendering the correct surface representation for the forms in both classes of verbs.

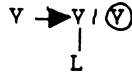
Finally, we turn to the Future II in (10c), [wó-rèbè-sàné] vs. [wó-rèbè-bí!sá]. In order to account for the fact that the aspect marker surfaces L and that Class I verb roots surface with a LH melody, while Class II verb roots surface with a drop tone on the second syllable, we'll begin by directing our attention to the aspect marker and the Class II inflected form [wó-rèbè-bí!sá]. Since we have a H on the first syllable of the verb root, and a L on the aspect prefix, we posit that the H tone of the aspect prefix, like the perfect prefix, is realized on the first syllable of the verb root, thus suggesting a rightward tonal shift resulting from extraprosodicity. If the entire aspect melody shifts rightward, then we assert that the tonal melody associated with the disyllabic aspect prefix is LH, and that the



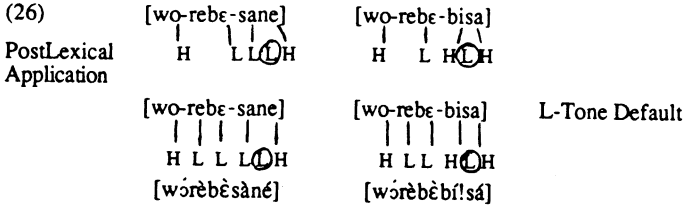
applicable, because H tone spread can only occur within a syllable at the post lexical stage. Hence, for purposes of well-formedness, we introduce a L tone default rule, which will assign a L tone to any unassociated tonebearers at the end of a derivation. This rule is cited below in (25)

(25)

## Postlexical L-Tone Default



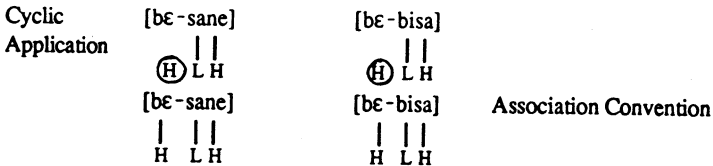
(26) illustrates how this rule is applied.



We have now accounted for all of the stem melody alternations in disyllabic verb classes I and II, as well as the postlexical influence of the Subject Concord morpheme on the verb complex. We have done this by positing that the lexical phonology of Asante verbs needs both cyclic and postcyclic rules. In the cyclic component, we have posited two rules of H tone spread, which needed to be ordered, and one contour simplification rule. We need to posit cycles so that we can take advantage of extraprosodicity. This allows us to explain quite simply the propensity for tone shift. In the postcyclic component we have posited a metathesis rule, and a H tone replacement rule. We have also conditioned extraprosodicity not to hold status at the postcyclic level. In addition, we have shown how postlexical rule of spread can explain the second person subject concord behavior. Finally, remember that the lexical phonology involved in this analysis is morphologically governed and pertains specifically to the verbal system. Of particular interest in this data is the apparent sensitivity the tonal system shows with respect to segmental information. The sonorant/obstruent influence on the tonal behavior in this system merits further investigation.

## APPENDIX 1

## Future I Full Derivation:

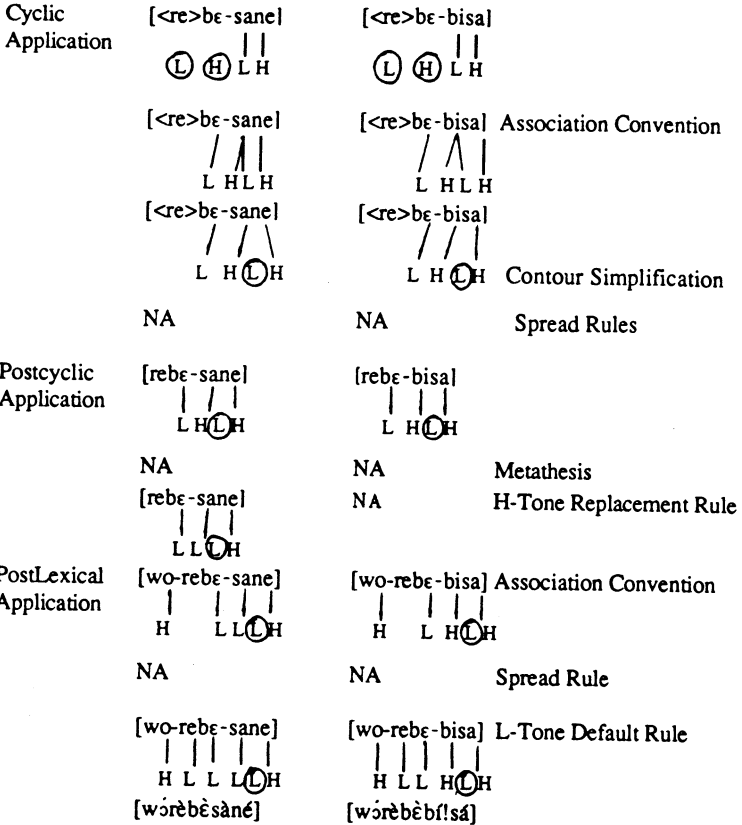


	[bɛ - sane]		Leftward Spread
	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	NA	
	NA	[bɛ - bisa]	Rightward Spread
		$\begin{array}{c} \diagup \quad   \\ \text{H} \quad \text{LH} \end{array}$	
	[bɛ - sane]	[bɛ - bisa]	Contour Simplification
	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	$\begin{array}{c} \diagup \quad   \\ \text{H} \quad \text{LH} \end{array}$	
PostLexical Application	[wo - bɛ - sane]	[wo - bɛ - bisa]	Nothing applies
	$\begin{array}{c}   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{LH} \end{array}$	$\begin{array}{c}   \quad   \quad   \\ \text{H} \quad \text{H} \quad \text{LH} \end{array}$	
	[wɔ - bɛ - tsánɛ]	[wɔ - bɛ - bí'sá]	

Perfect Full Derivation:

	/sane/	/bisa/	
Cyclic Application	[<a>sane]	[<a>bisa]	
	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	Association Convention
	[<a>sane]	[<a>bisa]	
	$\begin{array}{c} \diagup \quad   \\ \text{H} \quad \text{LH} \end{array}$	$\begin{array}{c} \diagup \quad   \\ \text{H} \quad \text{LH} \end{array}$	Contour Simplification
	[<a>sane]	[<a>bisa]	
	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	Spread Rules
Postcyclic Application	NA	NA	
	[a - sane]	[a - bisa]	
	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	$\begin{array}{c}   \quad   \\ \text{H} \quad \text{LH} \end{array}$	Metathesis Rule
	[a - sane]	[a - bisa]	
	$\begin{array}{c}   \quad   \\ \text{L} \quad \text{H} \end{array}$	$\begin{array}{c}   \quad   \\ \text{L} \quad \text{H} \end{array}$	
PostLexical Application	[wo - a - sane]	[wo - a - bisa]	
	$\begin{array}{c}   \quad   \quad   \\ \text{H} \quad \text{LH} \quad \text{H} \end{array}$	$\begin{array}{c}   \quad   \quad   \\ \text{H} \quad \text{LH} \quad \text{H} \end{array}$	H Spread Rule
	[wo - a - sane]	[wo - a - bisa]	
	$\begin{array}{c} \diagup \quad   \quad   \\ \text{H} \quad \text{L} \quad \text{H} \end{array}$	$\begin{array}{c} \diagup \quad   \quad   \\ \text{H} \quad \text{L} \quad \text{H} \end{array}$	
	[wɔ́!sánɛ]	[wɔ́!bísá]	

## Future II Full Derivation:



## ENDNOTES

1. While verbs in Asante do not generally have surface contour tones, verbs may allow contour tones to surface on the final vowel of the verb in certain syntactic and tonal environments postlexically. For example, if the verb is directly followed by an object of the right structural description a contour tone on the verb may surface. It is not within the scope of this paper to discuss this. For the purposes of this paper, it is sufficient to say that contour tones do not surface in the verb system *lexically*.

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