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TONE IN IBIBIO VERBAL REDUPLICATION

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INTRODUCTION

In this paper, our primary goal is to describe the tonal patterns observed in prefixing reduplication in Ibibio verbs, specifically prefixing reduplication in three constructions: (i) the imperative contrastive, (ii) the declarative contrastive and (iii) the perfective. We shall also provide a formal analysis of the system within Optimality theory (Prince and Smolensky (1993)). In doing this we provide evidence for (i) the full model of reduplicative identity (McCarthy and Prince 1995), and (ii) apparent "fixed segmentism" which results from the realization of a tonal morpheme.

1. BACKGROUND INFORMATION

We begin with a few introductory notes which will be of relevance to our discussion. Ibibio is a "two tones plus downstep" language (Umoh 1985; Urua 1990, 1995; Essien 1990; and others). That is, on the surface there are three contrastive tones, but the third tone, the downstepped high tone, is restricted in distribution. In monosyllabic items and in disyllabic items after a low tone only two tones contrast, the High (H) tone and the Low (L) tone. However in disyllabic items after a High tone, three tones contrast: the High tone, the downstepped High tone and the Low tone. The downstepped High tone is thus restricted in that it contrasts with the other tones only after a High tone.

(1) Ibibio contrastive tones

má	H	'like'	óbóŋ	HH	'mosquito'
mà	L	'complete'	óbòŋ	HL	'cane'
			óbòóŋ	H!H	'king'

Verb roots may be monosyllabic or disyllabic. Longer verb roots occur, but these are rare. Monosyllabic verbs may be L(ow) or H(igh), and disyllabic verbs may be HH or LH. Therefore, if we assume that the HH pattern represents a multiply linked single H tone, verbs may have one of three tone patterns: L, H or LH.

(2) Tonal patterns of verb roots

H verbs	L verbs	LH verbs
sé 'look'	nò 'give'	kpémé 'watch over'
dép 'buy'	kòp 'lock'	féré 'run'
kéré 'think'		sàṅá 'walk'
		kèré 'be called'

As we shall see, the fundamental tonal division in Ibibio verbs is between verbs whose initial tone is Low as opposed to those whose initial tone is High. Thus all Ibibio verbs will ideally be split into Low tone initial and High tone initial for the purposes of tonal alternations.

Finally, disyllabic verbs are of two types: they may be bimoraic or trimoraic, and these behave differently in tonal reduplication. Trimoraic verbs are again of two types, some having a geminate consonant¹, others a long vowel in the first syllable.

Bimoraic	Trimoraic
sàṅá 'walk'	kàppá 'interpret'
kèré 'be called'	tòdró 'praise'

2. ASSUMPTIONS

Certain theoretical assumptions are crucial to the analysis of Ibibio tonal reduplication proposed in this paper. In this section we spell out these assumptions. First, following Myers and Carleton (1996) and Akinlabi (1997), we take the position that *tones reduplicate with segments*, i.e. there is tonal "transfer" (Clements 1985). This follows from the larger assumption that reduplication is always complete (i.e. replicates the base completely; see Steriade 1988, McCarthy and Prince 1988, 1995, and others). Where tones are observed not to have reduplicated or to have reduplicated partially, other things are responsible, just as is the case in segmental reduplication. In essence, the claim here is that tone is no different from other aspects of the signal when it comes to reduplicative transfer. We will demonstrate that apparent non-reduplication of tone can be handled by various proposals of Correspondence theory (McCarthy and Prince 1995). In spite of the assumption that tone reduplicates with segments, we hold the position that faithful transfer of tone must be independent of faithful transfer of segments (Akinlabi 1997).

In Correspondence theory, faithfulness between two structures S_1 , S_2 is monitored by three families of constraints: MAX, DEP and IDENT. McCarthy and Prince (1995) define these families of faithfulness constraints as follows.

¹ There is some disagreement as to whether the consonants are actually geminated (see Connell 1992). The crucial thing for us is that these verbs pattern with the verbs with long vowels, which are undoubtedly trimoraic. Therefore we analyze them as trimoraic as well.

(4) Faithfulness constraints (McCarthy and Prince 1995):

MAX

If $\alpha \in S_1$, then there exists some $\beta \in S_2$ such that $\alpha \mathfrak{X} \beta$. That is, every segment of S_1 has a correspondent in S_2 .

DEP

If $\beta \in S_2$, then there exists some $\alpha \in S_1$ such that $\alpha \mathfrak{X} \beta$. That is, every segment of S_2 has a correspondent in S_1 .

IDENT (Feature)

If $\alpha \in S_1$, $\beta \in S_2$, $\alpha \mathfrak{X} \beta$, and α is $[\gamma F]$, then β is $[\gamma F]$. That is, correspondent segments have identical values for the feature F.

These constraints hold over different domains like Input-Output (I-O), Base-Reduplicant (B-R), Input-Reduplicant (I-R), or Output-Output (O-O) (Benua 1995, 1997). The crucial domains for us here are those involving reduplication.

For the sake of clarity, we illustrate the different aspects of reduplicative identity (or faithfulness) with the example in (5).

(5)	yòmmó 'boo at'	yòó-yòmmó 'boo at rather than ...'
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In (5), yòmmó 'boo at' is the STEM. In Correspondence theory, the input to reduplication consists of a morpheme RED (= reduplicant) plus the STEM. In this case the morpheme RED is prefixed to the stem. The input is reduplicated as yòó-yòmmó 'boo at rather than ...'. This is the output of the reduplication process in this case. This output consists of the BASE of reduplication yòmmó and its partial copy RED which is yòó. Notice that the STEM and the BASE are identical in this case; this need not be so, hence the distinction between the STEM and the BASE.

Reduplicative identity is monitored from three perspectives in Optimality theory: Input - Output (I-O), Base - Reduplicant (B-R), and Input - Reduplicant (I-R).

(6) Reduplicative Identity in Correspondence Theory (McCarthy and Prince 1995)

(a) Input - Base (output)	Faithfulness	(I-B or I-O Correspondence)
(b) Base - Reduplicant	Identity	(B-R Correspondence)
(c) Input - Reduplicant	Faithfulness	(I-R Correspondence)

Input - Base (output) faithfulness calls for complete identity between the STEM and its output, the BASE. Base - Reduplicant identity calls for complete identity between the BASE and its copy, the RED. Finally, Input - Reduplicant faithfulness calls for complete identity between the STEM and the output copy RED. The various identities monitored can be diagrammed as in (7).

(7) Full Model of Reduplicative Identity (McCarthy and Prince 1995)

Input:	/RED	+	STEM
			yómmó/
		↗↘	↑↓
Output	<u>yóó</u>	→	yómmó
	RED	←	BASE

Each of the three identity relations discussed in (6) and (7) is monitored in terms of the three families of constraints in (4), namely MAX, DEP, and IDENT. For example, in the Base-Reduplicant (B-R) relation which monitors identity between the base and the reduplicant, there are independent MAX - R, DEP - BR, and IDENT - BR. The same goes for Input - Output (I-O) and the Input-Reduplicant (I-R) relations. The focus of this paper is on tone; therefore these relations will be discussed for tonal reduplication. As we shall see, the overall structure presents a picture in which the reduplicant wants to copy the reduplicative input rather than the reduplicative base. We motivate the overall structure with the imperative, and then deal with the other reduplication types within this motivated structure.

3. IMPERATIVE CONTRASTIVE REDUPLICATION

The Ibibio imperative contrastive reduplication expresses the notion 'do X rather than ...'. Regardless of the number of syllables in the base, the reduplicant is always one syllable, the first CV of the base,² and it is prefixed to the base. If the reduplicant has a rising contour tone then it surfaces as a heavy syllable (CVV). This follows from an independent constraint on the occurrence of rising tones in Ibibio, the details of which we will not explore here. In the following examples (and in all others in this section) we separate examples involving stems (or inputs) with a High tone (initial) from stems that are Low tone (initial), as seen in (8) and (9) respectively. For visual clarity we underline the reduplicants in all examples, except when otherwise stated.

(8) H tone verbs

tá	'chew'	<u>tá-tá</u>	'chew rather than ...!'
dép	'buy'	<u>dé-dép</u>	etc.
kéré	'think'	<u>ké-kéré</u>	
yómmó	'be pregnant'	<u>yó-yómmó</u>	
dáará	'rejoice'	<u>dá-dáará</u>	

² If the base has a high vowel, the reduplicant does not copy its height. We will abstract away from this slight complication and use examples with nonhigh vowels.

(9) L tone (initial) verbs

(a)	nò	'give'	<u>nòó-nò</u>	'give rather than ...!'
	wèt	'write'	<u>wèé-wèt</u>	etc.
	sàṅá	'walk'	<u>sàá-sàṅá</u>	
	kpémé	'watch over'	<u>kpèé-kpémé</u>	
	féré	'run'	<u>fèé-féré</u>	
(b)	yómmó	'boo at'	<u>yóó-yómmó</u>	
	tòòró	'praise'	<u>tóó-tòòró</u>	

The generalization from the examples in (8) is that the reduplicant is H toned if the input (and base) is H toned. It is not clear from these H toned verb stems if the reduplicant is faithful to the input (that is, the stem) or to the base (that is, the output of the stem, the part to which the reduplicant is prefixed). But the examples in (9) provide a clearer picture. The reduplicant is LH if the input is L initial. The base becomes HL, except if it is trimoraic (Heavy-Light), in which case the tone of the base does not change.

If we begin with the base, there are at least two ways in which the output tone can be derived:

- (i) We can assume that the Falling tone on the base arises from spreading the H tone of the reduplicant, or
- (ii) The Falling tone on the base occurs as a result of dissimilation of the input tone.

The first option must be wrong because of examples like yóó-yómmó in (9b), where there is no spreading from the prefixed reduplicant. More importantly, the tone of the base is in general predictable *independently* of the type of prefixal reduplication. An input High tone always remains unchanged as High in the base, as we have in (8). But Low tone initial inputs (L monosyllabic verbs and LH disyllabic verbs) become HL in the base, as in (9) above and in (10)-(12) below, regardless of the type of prefixal reduplication. For visual clarity we underline the base in the following examples.

(10) Imperative Contrastive

kpémé	'watch over'	<u>kpèé-kpémé</u>	'watch over rather than ...!'
féré	'run'	<u>fèé-féré</u>	etc.
sàṅá	'walk'	<u>sàá-sàṅá</u>	
kéré	'be called'	<u>kèé-kéré</u>	

(11) Declarative Contrastive

kpémé	'watch over'	á <u>kpè-kpémé</u>	he is watching over, rather than...
féré	'run'	á <u>fè-féré</u>	etc.
sàṅá	'walk'	á <u>sà-sàṅá</u>	
kéré	'be called'	á <u>kè-kéré</u>	

(12) Perfective Relative Aspect

kpèmé	'watch over'	á!á kpé-kpémè	'he has already watched over'
feré	'run'	á!á fé-féré	etc.
sàṅá	'walk'	á!á sá-sàṅà	
kèré	'be called'	á!á ké-kéré	

It is rather the tone of the *reduplicant* that is subject to variation depending on the type of reduplication in (10)-(12). We propose a structural constraint called L(H) Dissimilation to handle the tonal change in the base.

(13) L(H) Dissimilation (LH-D)

Final L(H) dissimilates to HL.

Returning now to the reduplicants in (8) and (9), we find that they retain the input tone, rather than the tone of the base. Two of the examples are repeated below.

(14) kpémé	'watch over'	kpéé-kpémé
feré	'run'	féé-féré

Let us recapitulate the two important observations made so far. First, the tone of the base changes from what it was in the input (LH → HL). Second, the tone of the reduplicant is the same as that of the input.³

For both of the above to take place two things must happen. First, there must be a constraint, (call it C), that forces the base of the reduplication not to be faithful to the input. That is, such a C forces the base to change. In Optimality theoretic terms, C is said to dominate Input – Base faithfulness. In our present case, C is the constraint LH-D proposed above. Secondly, it must be more important for the reduplicant to retain the tone of the input rather than copy the changed tone of the base. Again in Optimality theoretic terms, Input – Reduplicant faithfulness is said to dominate Base – Reduplicant Identity. These two relations are summarised in (15).

(15) Crucial relations in Ibibio I-R Identity:

LH-D	>> I-B Faithfulness	<i>There is C - driven phonology</i>
I-R Faithfulness	>> B-R Identity	<i>Copy stem rather than base.</i>

In order for such a pattern to emerge, McCarthy and Prince (1995:113) give the necessary ranking of the four constraints as in (16), and we adopt this ranking here:

³ See below for our proposal on the monosyllabic L tone verbs in (9).

(16) Overall ranking for I-R Identity:

C >> I-B Faithfulness >> I-R Faithfulness >> B-R Identity.

The tableau in (17) shows how the output **kpéé-kpémé** 'watch over rather than ...!' emerges from the input /RED-kpémé/, following this overall ranking. The constraint IDENT-IB calls for sameness of the (tonal) features of the input and the base. IDENT-IR calls for sameness of the features of the input and the reduplicant. Finally, IDENT-BR calls for sameness of the features of the base and the reduplicant. These constraints are all crucial in reduplication, but their importance is relative, and this is what determines the overall output.

(17) I-R Identity in Ibibio. Input **kpémé** from (9, 14)

/RED-kpémé/	LH-D	IDENT-IB	IDENT-IR	IDENT-BR
a. kpéé-kpémé		*		*
b. kpéé-kpémé	*!			
c. kpéé-kpémé		*	*!	
d. kpéé-kpémé	*!		*	*

It is impossible to satisfy LH-D and IDENT-IB at the same time, since LH-D calls for the base tone to be changed whereas IDENT-IB calls for the opposite. Since LH-D is dominant, this rules out candidates (17b) and (17d) which violate it. Among the two remaining candidates, candidate (17a) obeys the constraint IDENT-IR which calls for identity between the input and reduplicant, whereas (17c) violates it. Since it is more important for the reduplicant to retain the tone of the input than to change with the base, candidate (17a) is the optimal candidate, and hence the output. The satisfaction of LH-D and IDENT-IR determines the optimal candidate.

The trimoraic verb stems in (9b) involve an additional complication. The LH in the base does not change to HL. We see this as a classic case of "Do something except if" (Prince and Smolensky 1993); that is, an input L(H) is changed to HL in the base, except when the base is trimoraic (Heavy-Light). We repeat the relevant examples below.

(18) yòmmó	'boo at'	yóó-yòmmó
tòòró	'praise'	tóó-tòòró

The standard Optimality approach to this is to assume that there is another constraint, (call it C'); this C' crucially dominates a constraint C, and C dominates a faithfulness constraint (Prince and Smolensky 1993, Myers 1993, McCarthy and Prince 1995). What this means is that there are two constraints at play, one of them calling for a phonological change; this is C. In order for the effect of C to be felt it must dominate a

faithfulness constraint calling for the input not to change. We have seen this in the discussion of the examples in (9a) immediately above, where C was identified as LH-D, the constraint that calls for a structural change in the base. But the other, still more important constraint overrules it in certain circumstances; this is C'. The constraint C' that overrules LH-D is one that exempts trimoraic bases from changing. We call this IDENT- $\sigma\mu\mu$ (T), and we define it in (19).

(19) IDENT- $\sigma\mu\mu$ (T)

A tone associated with a bimoraic syllable is the same in both input and output.

IDENT- $\sigma\mu\mu$ (T) is a form of "positional faithfulness" constraint (Beckman 1997a,b). It demands tonal faithfulness to heavy syllables. The tableau in (20) shows how an output like *tòó-tòòró* 'praise rather than ...!' is derived from the input /RED-tòòró/.

(20) IDENT- $\sigma\mu\mu$ (T) >> LH-D >> IDENT-IB

/RED-tòòró/	IDENT- $\sigma\mu\mu$ (T)	LH-D	IDENT-IB
a. <i>tòó-tòòró</i>		*	
b. <i>tòó-tóórò</i>	*!		*

The optimal candidate (20a) satisfies IDENT- $\sigma\mu\mu$ (T) by retaining the input tone, violating LH-D in the process. Thus it is more important to retain the tone of a trimoraic input than to change it.

Before closing this section, we must address the issue of the monosyllabic L tone verbs in (9). One generalization that is obvious from the facts in (9) and throughout this paper is that monosyllabic L tone verbs pattern the same way as LH verbs. We observed this fact at the beginning of the paper. The resulting bases change the same way, and the reduplicants are the same. One could propose an unmotivated constraint spreading the H tone of the base to the reduplicant. This move will solve just this data but it will not explain the more fundamental question of why L toned stems behave like LH toned stems in constructions throughout the phonology of Ibibio. To account for this generalization we propose that all L toned stems are in fact L(H) in the input. The floating H does not get realized when the monosyllabic verb is realized in isolation.

In summary, the reduplicant wants to copy the reduplicative input rather than the reduplicative base. The reduplicative base itself undergoes a tonal process, but this process may be overruled under certain conditions.

4. DECLARATIVE CONTRASTIVE REDUPLICATION

The desire of the reduplicant to copy the reduplicative input is sometimes impossible because of overriding constraints. It is these kinds of cases that we turn to in this section and the next. In this section we examine declarative contrastive reduplication, and in the next section we consider perfective reduplication. The only difference between the forms in this section and those in the preceding section is that the forms examined here have a subject clitic. The interaction of the tone of the subject clitic with the tone of the reduplicated verb makes all the difference in the output of the reduplicant.

As in the imperative contrastive reduplication, we begin with the high tone verbs.

(21) H tone verbs

<i>tá</i>	'chew'	á ! <i>tá-tá</i>	'he is chewing, rather than ...'
<i>dép</i>	'buy'	á ! <i>dé-dép</i>	etc.
<i>kéré</i>	'think'	á ! <i>ké-kéré</i>	
<i>yómmó</i>	'be pregnant'	á ! <i>yó-yómmó</i>	
<i>dáará</i>	'rejoice'	á ! <i>dá-dáará</i>	

The generalization from the data in (21) is that when the input is H toned, the reduplicant is a downstepped H. In this case the reduplicant is identical to neither the input nor the base. So how do we relate this to the position that the reduplicant retains the tone of the input? We propose that the underlying tonal pattern of the clitic is H \downarrow , and the floating \downarrow tone downsteps the following H of the reduplicant. This position is consistent with the analysis that Input – Reduplicant identity is dominant.

(22) DOWNSTEP (DS)

A LH sequence is realised as !H

The constraint DOWNSTEP (DS) derives the downstep on the reduplicant. It accounts for the change of a LH into !H, and it crucially dominates Input – Reduplicant Identity, forcing its violation. The tableau in (23) shows how the downstep is derived.

(23) DS >> IDENT-IR

/L +RED-kéré/	DS	IDENT-IR
a. <i>!ké-kéré</i>		*
b. <i>ké-kéré</i>	*!	

If it is more important for a LH sequence to be produced as !H than for the reduplicant to be completely featurally identical to the input, then candidate (23b) must lose out in the competition because here the reduplicant is featurally identical to the input. Thus the form [*!ké-kéré*] which obeys DS is the winner.

A more challenging set of cases comes from the L tone initial verbs. On the surface the reduplicant appears to have copied the tone of the base completely. But this is only apparent rather than real. The relevant examples are given in (24).

(24) L tone (initial) verbs

(a)	nò	'give'	á nò-nò	'he is giving, rather than ...'
	wèt	'write'	á wè-wèt	
	sàṅá	'walk'	á sà-sàṅá	
	kpèmé	'watch over'	á kpè-kpèmé	
	fèré	'run'	á fè-fèré	
(b)	yòmmó	'boo at'	á yòm-yòmó	
	tòró	'praise'	á tó-tòró	

In the preceding section, we accounted for the tonal change (L(H) → HL) in the base. Accordingly, the focus here will be on the reduplicant. The generalization from the data in (24) is that the reduplicant is HL when the input is L initial.⁴ In the reduplicated outputs of L-tone initial verbs in (24a) the reduplicant is identical to the base, suggesting Base – Reduplicant (B-R) identity, contrary to the overall claim that Input – Reduplicant identity is dominant. But the assumption that the reduplicant may have copied the base here cannot account for why the reduplicant is HL even when the base does not change, as we see in (24b). So the reduplicant could not have copied the base.

Assuming that the underlying tonal representation of the clitic is H ɿ as proposed in (21), the same line of reasoning employed in the analysis of the data in (21) accounts for the data in (24). Two constraints account for the surface realization of the reduplicant here: *ɿL and H-SPREAD. *ɿL is an OCP-type constraint (Leben 1973, McCarthy 1986, etc.), and H-SPREAD has been independently proposed in Umoh (1985) and in Urua (1995) to account for other phenomena in Ibibio. Both of these constraints take precedence over Input-Reduplicant identity and Base-Reduplicant identity.

(25) *ɿL

A sequence of floating ɿ and linked L is prohibited.

(26) H-SPREAD (Umoh 1985, Urua 1995)

A HL sequence is realized as H HL.

⁴ As opposed to rising tones, falling tones can apparently occur on short vowels without lengthening them.

Both of these assess the competing candidates at the same time, rather than serially. There is no evidence that either one dominates the other, so we will assume that they are unranked with respect to each other. The tableau in (27) shows the derivation of á tó-tòró 'he is praising, rather than ...'.

(27) *ɿL, H-SPREAD >> IDENT-IR >> IDENT-BR

/H ɿ+RED-tòró/	*ɿL	H-SPREAD	IDENT-IR	IDENT-BR
a. tó-tòró			*	*
b. tó-tòró		*!	*	*
c. tó-tòró		*!	*	*
d. tó-tòró	*!	*	*	*

The two interesting candidates are (27a) and (27b); (27a) satisfies both of the top ranked constraints, while (27b) prefers perfect Input – Reduplicant and Base – Reduplicant satisfaction. Since the structural constraints are more important, the optimal candidate is (27a) which satisfies them both, violating IDENT-IR and IDENT-BR in the process.

5. PERFECT RELATIVE ASPECT REDUPLICATION

Finally, we turn to perfective reduplication, in which another constraint hides the effect of dominant Input – Reduplicant identity. Ibibio perfective reduplication also illustrates a type of "fixed segmentism" (Alderete et al. 1996, Akinlabi 1997) resulting from the realization of a tonal morpheme. The following examples illustrate perfective reduplication with H tone (28) and L tone initial (29) verbs.

(28) H tone verbs

tá	'chew'	á!á tá-tá	'he has already chewed'
dép	'buy'	á!á dé-dép	etc.
kéré	'think'	á!á ké-kéré	
yómmó	'be pregnant'	á!á yó-yómmó	
dáará	'rejoice'	á!á dá-dáará	

(29) L tone (initial) verbs

(a)	nò	'give'	á!á nò-nò
	wèt	'write'	á!á wè-wèt
	sàṅá	'walk'	á!á sà-sàṅá
	kpèmé	'watch over'	á!á kpè-kpèmé
	fèré	'run'	á!á fè-fèré
(b)	yòmmó	'boo at'	á!á yó-yómmó
	tòró	'praise'	á!á tó-tòró

The generalization from these examples is that the reduplicant surfaces with a H tone, regardless of the underlying tone of the verb. The examples in (28) do not help much in determining the source of the H tone of the reduplicant. From these examples alone one could conclude that the H tone of the reduplicant copies either the input or the base H tone. But the examples in (29b) prove that this cannot be the case, i.e. that the H tone of the reduplicant could not have spread from the base.

We propose that the Ibibio perfective has a H tone. The realization of this perfective H take precedence over Input – Reduplicant identity, and of course also over Base-Reduplicant identity, by transitivity. Following Akinlabi (1996) we assume that an alignment constraint ALIGN-perf_H (30) determines the location of the H tone.

- (30) ALIGN-perf_H
Align(perf_H, stem, L)

The perfective H is aligned with the Left edge of the (reduplicated) verb stem.

ALIGN-perf_H hides the effect of Input – Reduplicant faithfulness, which is otherwise preferred in Ibibio. It sits on top of the constraint hierarchy with LH-D, and this ensures that neither the base nor the reduplicant has the input tone. The following tableau (31) illustrates the derivation of sà-sà (stem sà).

- (31) ALIGN-perf_H, LH-D and Faithfulness.⁵

/perf _H + RED- <u>sà</u> /	ALIGN-perf _H	LH-D	IDENT-IB	IDENT-IR	IDENT-BR
a. <u>sá-sà</u>			*	*	*
b. <u>sà-sà</u>		*!		*	*
c. <u>sà-sà</u>	*!		*	*	*
d. <u>sà-sà</u>	*!	*		*	*

6. CONCLUSION

In the foregoing we have demonstrated that the prefixed reduplicant in Ibibio primarily copies the input tone. But this happens only when there are no overriding constraints, as is the case in the imperative contrastive reduplication. When overriding constraints exist, these take precedence over Input – Reduplicant faithfulness. In all cases Base – Reduplicant identity, which is usually prominent in reduplicative identity, takes a back seat in Ibibio tonal transfer.

⁵ In addition, MAX perf_H must dominate MAX-IR and MAX-BR to rule out the candidate sá-sà, and others like it.

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TONE IN IBIBIO VERBAL REDUPLICATION

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INTRODUCTION

In this paper, our primary goal is to describe the tonal patterns observed in prefixing reduplication in Ibibio verbs, specifically prefixing reduplication in three constructions: (i) the imperative contrastive, (ii) the declarative contrastive and (iii) the perfective. We shall also provide a formal analysis of the system within Optimality theory (Prince and Smolensky (1993). In doing this we provide evidence for (i) the full model of reduplicative identity (McCarthy and Prince 1995), and (ii) apparent “fixed segmentism” which results from the realization of a tonal morpheme.

1. BACKGROUND INFORMATION

We begin with a few introductory notes which will be of relevance to our discussion. Ibibio is a “two tones plus downstep” language (Umoh 1985; Urua 1990, 1995; Essien 1990; and others). That is, on the surface there are three contrastive tones, but the third tone, the downstepped high tone, is restricted in distribution. In monosyllabic items and in disyllabic items after a low tone only two tones contrast, the High (H) tone and the Low (L) tone. However in disyllabic items after a High tone, three tones contrast: the High tone, the downstepped High tone and the Low tone. The downstepped High tone is thus restricted in that it contrasts with the other tones only after a High tone.

(1) Ibibio contrastive tones

má	H	like	óbón	HH	mosquito
mà	L	complete	óbò	HL	cane
			óbón	H!H	king

Verb roots may be monosyllabic or disyllabic. Longer verb roots occur, but these are rare. Monosyllabic verbs may be L(ow) or H(igh), and disyllabic verbs may be HH or LH. Therefore, if we assume that the HH pattern represents a multiply linked single H tone, verbs may have one of three tone patterns: L, H or LH.

(2) Tonal patterns of verb roots

H verbs **L** verbs **LH** verbs

sé	look	nò	give	kpèmé	watch over
dép	buy	kòp	lock	fèré	run
kéré	think			sàṅá	walk
				kèré	be called

As we shall see, the fundamental tonal division in Ibibio verbs is between verbs whose initial tone is Low as opposed to those whose initial tone is High. Thus all Ibibio verbs will ideally be split into Low tone initial and High tone initial for the purposes of tonal alternations.

Finally, disyllabic verbs are of two types: they may be bimoraic or trimoraic, and these behave differently in tonal reduplication. Trimoraic verbs are again of two types, some having a geminate consonant,¹ others a long vowel in the first syllable.

(3)	<u>Bimoraic</u>		<u>Trimoraic</u>	
	sàṅá	walk	kàppá	interpret
	kèré	be called	tòró	praise

2. ASSUMPTIONS

Certain theoretical assumptions are crucial to the analysis of Ibibio tonal reduplication proposed in this paper. In this section we spell out these assumptions. First, following Myers and Carleton (1996) and Akinlabi (1997), we take the position that *tones reduplicate with segments*, i.e. there is tonal “transfer” (Clements 1985). This follows from the larger assumption that reduplication is always complete (i.e. replicates the base completely; see Steriade 1988, McCarthy and Prince 1988, 1995, and others). Where tones are observed not to have reduplicated or to have reduplicated partially, other things are responsible, just as is the case in segmental reduplication. In essence, the claim here is that tone is no different from other aspects of the signal when it comes to reduplicative transfer. We will demonstrate that apparent non-reduplication of tone can be handled by various proposals of Correspondence theory (McCarthy and Prince 1995). In spite of the assumption that tone reduplicates with segments, we hold the position that faithful transfer of tone must be independent of faithful transfer of segments (Akinlabi 1997).

In Correspondence theory, faithfulness between two structures S_1 , S_2 is monitored by three families of constraints: MAX, DEP and IDENT. McCarthy and Prince (1995) define these families of faithfulness constraints as follows.

(4) Faithfulness constraints (McCarthy and Prince 1995):

MAX

If $\alpha \in S_1$ then there exists some $\beta \in S_2$ such that $\alpha \mathfrak{R} \beta$. That is, every segment of S_1 has a correspondent in S_2 .

¹ There is some disagreement as to whether the consonants are actually geminated (see Connell 1992). The crucial thing for us is that these verbs pattern with the verbs with long vowels, which are undoubtedly trimoraic. Therefore we analyze them as trimoraic as well.

DEP

If $\beta \in S_2$ then there exists some $\alpha \in S_1$ such that $\alpha \mathfrak{R} \beta$. That is, every segment of S_2 has a correspondent in S_1 .

IDENT (Feature)

If $\alpha \in S_1$, $\beta \in S_2$, $\alpha \mathfrak{R} \beta$, and α is $[\gamma F]$, then β is $[\gamma F]$. That is, correspondent segments have identical values for the feature F .

These constraints hold over different domains like Input-Output (I-O), Base-Reduplicant (B-R), Input-Reduplicant (I-R), or Output-Output (O-O) (Benua 1995, 1997). The crucial domains for us here are those involving reduplication.

For the sake of clarity, we illustrate the different aspects of reduplicative identity (or faithfulness) with the example in (5).

(5) $y\grave{o}mm\acute{o}$ boo at $y\grave{o}o$ - $y\grave{o}mm\acute{o}$ boo at rather than...

In (5), $y\grave{o}mm\acute{o}$ "boo at" is the STEM. In Correspondence theory, the input to reduplication consists of a morpheme RED (= reduplicant) plus the STEM. In this case the morpheme RED is prefixed to the stem. The input is reduplicated as $y\grave{o}o$ - $y\grave{o}mm\acute{o}$ "boo at rather than..." This is the output of the reduplication process in this case. This output consists of the BASE of reduplication $y\grave{o}mm\acute{o}$ and its partial copy RED which is $y\grave{o}o$. Notice that the STEM and the BASE are identical in this case; this need not be so, hence the distinction between the STEM and the BASE.

Reduplicative identity is monitored from three perspectives in Optimality theory: Input-Output (I-O), Base-Reduplicant (B-R), and Input-Reduplicant (I-R).

(6) Reduplicative Identity in Correspondence Theory (McCarthy and Prince 1995)

- (a) Input - Base (output) Faithfulness (I-B or I-O Correspondence)
- (b) Base - Reduplicant Identity (B-R Correspondence)
- (c) Input - Reduplicant Faithfulness (I-R Correspondence)

Input - Base (output) faithfulness calls for complete identity between the STEM and its output, the BASE. Base - Reduplicant identity calls for complete identity between the BASE and its copy, the RED. Finally, Input - Reduplicant faithfulness calls for complete identity between the STEM and the output copy RED. The various identities monitored can be diagrammed as in (7).

(7) Full Model of Reduplicative Identity (McCarthy and Prince 1995)

Input:	/RED +	STEM
	↗ /	yòmmó/
		↑↓
Output	<u>yòó</u>	yòmmó
	→	
	RED ←	BASE

Each of the three identity relations discussed in (6) and (7) is monitored in terms of the three families of constraints in (4), namely MAX, DEP, and IDENT. For example, in the Base-Reduplicant (B-R) relation which monitors identity between the base and the reduplicant, there are independent MAX-BR, DEP-BR, and IDENT-BR. The same goes for Input-Output (I-O) and the Input-Reduplicant (I-R) relations. The focus of this paper is on tone; therefore these relations will be discussed for tonal reduplication. As we shall see, the overall structure presents a picture in which the reduplicant wants to copy the reduplicative input rather than the reduplicative base. We motivate the overall structure with the imperative, and then deal with the other reduplication types within this motivated structure.

3. IMPERATIVE CONTRASTIVE REDUPLICATION

The Ibibio imperative contrastive reduplication expresses the notion "do X rather than..." Regardless of the number of syllables in the base, the reduplicant is always one syllable, the first CV of the base,² and it is prefixed to the base. If the reduplicant has a rising contour tone then it surfaces as a heavy syllable (CVV). This follows from an independent constraint on the occurrence of rising tones in Ibibio, the details of which we will not explore here. In the following examples (and in all others in this section) we separate examples involving stems (or inputs) with a High tone (initial) from stems that are Low tone (initial), as seen in (8) and (9) respectively. For visual clarity we underline the reduplicants in all examples, except when otherwise stated.

(8) H tone verbs

tá	chew	<u>tá</u> -tá	chew rather than...!
dép	buy	<u>dé</u> -dép	etc.
kéré	think	<u>ké</u> -kéré	
yómmó	be pregnant	<u>yó</u> -yómmó	
dáárá	rejoice	<u>dá</u> -dáárá	

(9) L tone (initial) verbs

(a) nò	give	<u>nòó</u> -nò	give rather than...!
wèt	write	<u>wèé</u> -wèt	etc.

² If the base has a high vowel, the reduplicant does not copy its height. We will abstract away from this slight complication and use examples with nonhigh vowels.

	sàṅjá	walk	<u>sáá</u> -sáṅjà
	kpèmé	watch over	<u>kpèé</u> -kpémè
	fèré	run	<u>fèé</u> -fèrè
(b)	yòmmó	boo at	<u>yòó</u> -yòmmó
	tòdró	praise	<u>tòó</u> -tòdró

The generalization from the examples in (8) is that the reduplicant is H toned if the input (and base) is H toned. It is not clear from these H toned verb stems if the reduplicant is faithful to the input (that is, the stem) or to the base (that is, the output of the stem, the part to which the reduplicant is prefixed). But the examples in (9) provide a clearer picture. The reduplicant is LH if the input is L initial. The base becomes HL, except if it is trimoraic (Heavy-Light), in which case the tone of the base does not change.

If we begin with the base, there are at least two ways in which the output tone can be derived:

- (i) We can assume that the Falling tone on the base arises from spreading the H tone of the reduplicant, or
- (ii) The Falling tone on the base occurs as a result of dissimilation of the input tone.

The first option must be wrong because of examples like yòó-yòmmó in (9b), where there is no spreading from the prefixed reduplicant. More importantly, the tone of the base is in general predictable *independently* of the type of prefixal reduplication. An input High tone always remains unchanged as High in the base, as we have in (8). But Low tone initial inputs (L monosyllabic verbs and LH disyllabic verbs) become HL in the base, as in (9) above and in (10)-(12) below, regardless of the type of prefixal reduplication. For visual clarity we underline the base in the following examples.

(10) Imperative Contrastive

kpèmé	watch over	kpèé- <u>kpémè</u>	watch over rather than...!
fèré	run	fèé- <u>fèrè</u>	etc.
sàṅjá	walk	sáá- <u>sáṅjà</u>	
kèré	be called	kèé- <u>kèrè</u>	

(11) Declarative Contrastive

kpèmé	watch over	á kpè- <u>kpémè</u>	he is watching over, rather than...
fèré	run	á fè- <u>fèrè</u>	etc.
sàṅjá	walk	á sà- <u>sáṅjà</u>	
kèré	be called	á kè- <u>kèrè</u>	

(12) Perfective Relative Aspect

kpèmé	watch over	á!á kpè- <u>kpémè</u>	he has already watched over
fèré	run	á!á fè- <u>fèrè</u>	etc.
sàṅjá	walk	á!á sà- <u>sáṅjà</u>	
kèré	be called	á!á kè- <u>kèrè</u>	

It is rather the tone of the *reduplicant* that is subject to variation depending on the type of reduplication in (10)-(12). We propose a structural constraint called L(H) Dissimilation to handle the tonal change in the base.

- (13) L(H) Dissimilation (LH-D)
Final L(H) dissimilates to HL.

Returning now to the reduplicants in (8) and (9), we find that they retain the input tone, rather than the tone of the base. Two of the examples are repeated below.

- | | | | |
|------|-------|------------|------------|
| (14) | kpèmé | watch over | kpèé-kpémè |
| | fèré | run | fèé-fèrè |

Let us recapitulate the two important observations made so far. First, the tone of the base changes from what it was in the input (LH → HL). Second, the tone of the reduplicant is the same as that of the input.³

For both of the above to take place two things must happen. First, there must be a constraint, (call it \mathbb{C}), that forces the base of the reduplication not to be faithful to the input. That is, such a \mathbb{C} forces the base to change. In Optimality theoretic terms, \mathbb{C} is said to dominate Input - Base faithfulness. In our present case, \mathbb{C} is the constraint LH-D proposed above. Secondly, it must be more important for the reduplicant to retain the tone of the input rather than copy the changed tone of the base. Again in Optimality theoretic terms, Input - Reduplicant faithfulness is said to dominate Base - Reduplicant Identity. These two relations are summarised in (15).

- (15) Crucial relations in Ibibio I-R Identity:

LH-D >> I-B Faithfulness *There is \mathbb{C} - driven phonology*

I-R Faithfulness >> B-R Identity *Copy stem rather than base.*

In order for such a pattern to emerge, McCarthy and Prince (1995:113) give the necessary ranking of the four constraints as in (16):

- (16) Overall ranking for I-R Identity:

\mathbb{C} >> I-B Faithfulness >> I-R Faithfulness >> B-R Identity.

The tableau in (17) shows how the output **kpèé-kpémè** "watch over rather than...!" emerges from the input /RED-kpe~me/, following this overall ranking. The constraint IDENT-IB calls for sameness of the (tonal) features of the input and the base. IDENT-IR calls for sameness of the features of the input and the reduplicant. Finally, IDENT-BR calls for sameness of the features of the base and the reduplicant. These constraints are all crucial in reduplication, but their importance is relative, and this is what determines the overall output.

³ See below for our proposal on the monosyllabic L tone verbs in (9).

(17) I-R Identity in Ibibio. Input **kpe~me**/from (9, 14)

/RED-kpèmé/	LH-D	IDENT-IB	IDENT-IR	IDENT-BR
a. ☞ kpèè-kpémè		*		*
b. kpèè-kpémé	*!			
c. kpèè-kpémè		*	*!	
d. kpèè-kpémé	*!		*	*

It is impossible to satisfy LH-D and IDENT-IB at the same time, since LH-D calls for the base tone to be changed whereas IDENT-IB calls for the opposite. Since LH-D is dominant, this rules out candidates (17b) and (17d) which violate it. Among the two remaining candidates, candidate (17a) obeys the constraint IDENT-IR which calls for identity between the input and reduplicant, whereas (17c) violates it. Since it is more important for the reduplicant to retain the tone of the input than to change with the base, candidate (17a) is the optimal candidate, and hence the output. The satisfaction of LH-D and IDENT-IR determines the optimal candidate.

The trimoraic verb stems in (9b) involve an additional complication. The LH in the base does not change to HL. We see this as a classic case of “Do something except if” (Prince and Smolensky 1993); that is, an input L(H) is changed to HL in the base, except when the base is trimoraic (Heavy-Light). We repeat the relevant examples below.

- (18) yòmmó boo at yòó-yòmmó
tòòró praise tòó-tòòró

The standard Optimality approach to this is to assume that there is another constraint, (call it \mathbb{C}'); this \mathbb{C}' crucially dominates a constraint \mathbb{C} , and \mathbb{C} dominates a faithfulness constraint (Prince and Smolensky 1993, Myers 1993, McCarthy and Prince 1995). What this means is that there are two constraints at play, one of them calling for a phonological change; this is \mathbb{C} . In order for the effect of \mathbb{C} to be felt it must dominate a faithfulness constraint calling for the input not to change. We have seen this in the discussion of the examples in (9a) immediately above, where \mathbb{C} was identified as LH-D, the constraint that calls for a structural change in the base. But the other, still more important constraint overrules it in certain circumstances; this is \mathbb{C}' . The constraint \mathbb{C}' that overrules LH-D is one that exempts trimoraic bases from changing. We call this IDENT-óμμ (T), and we define it in (19).

- (19) IDENT-σμμ (T)

A tone associated with a bimoraic syllable is the same in both input and output.

IDENT- $\sigma\mu\mu$ (T) is a form of “positional faithfulness” constraint (Beckman 1997a,b). It demands tonal faithfulness to heavy syllables. The tableau in (20) shows how an output like *tòó-tòòró* "praise rather than...!" is derived from the input /RED-*tòòró*/.

(20) IDENT- $\sigma\mu\mu$ (T) >> LH-D >> IDENT-IB

/RED- <i>tòòró</i> /	IDENT- $\sigma\mu\mu$ (T)	LH-D	IDENT-IB
a. <i>tòó-tòòró</i>		*	
b. <i>tòó-tóóró</i>	*!		*

The optimal candidate (20a) satisfies IDENT- $\sigma\mu\mu$ (T) by retaining the input tone, violating LH-D in the process. Thus it is more important to retain the tone of a trimoraic input than to change it.

Before closing this section, we must address the issue of the monosyllabic L tone verbs in (9). One generalization that is obvious from the facts in (9) and throughout this paper is that monosyllabic L tone verbs pattern the same way as LH verbs. We observed this fact at the beginning of the paper. The resulting bases change the same way, and the reduplicants are the same. One could propose an unmotivated constraint spreading the H tone of the base to the reduplicant. This move will solve just this data but it will not explain the more fundamental question of why L toned stems behave like LH toned stems in constructions throughout the phonology of *Ibibio*. To account for this generalization we propose that all L toned stems are in fact L(H) in the input. The floating H does not get realized when the monosyllabic verb is realized in isolation.

In summary, the reduplicant wants to copy the reduplicative input rather than the reduplicative base. The reduplicative base itself undergoes a tonal process, but this process may be overruled under certain conditions.

4. DECLARATIVE CONTRASTIVE REDUPLICATION

The desire of the reduplicant to copy the reduplicative input is sometimes impossible because of overriding constraints. It is these kinds of cases that we turn to in this section and the next. In this section we examine declarative contrastive reduplication, and in the next section we consider perfective reduplication. The only difference between the forms in this section and those in the preceding section is that the forms examined here have a subject clitic. The interaction of the tone of the subject clitic with the tone of the reduplicated verb makes all the difference in the output of the reduplicant.

As in the imperative contrastive reduplication, we begin with the high tone verbs.

(21) H tone verbs

<i>tá</i>	chew	á ! <i>tá</i> - <i>tá</i>	he is chewing, rather than...
<i>dép</i>	buy	á ! <i>dé</i> - <i>dép</i>	etc.
<i>kéré</i>	think	á ! <i>ké</i> - <i>kéré</i>	

yómmó	be pregnant	á !yó-yómmó
dáárá	rejoice	á !dá-dáárá

The generalization from the data in (21) is that when the input is H toned, the reduplicant is a downstepped H. In this case the reduplicant is identical to neither the input nor the base. So how do we relate this to the position that the reduplicant retains the tone of the input? We propose that the underlying tonal pattern of the clitic is H L ∞ , and the floating L ∞ tone downsteps the following H of the reduplicant. This position is consistent with the analysis that Input - Reduplicant identity is dominant.

(22) DOWNSTEP (DS)

A LH sequence is realised as !H

The constraint DOWNSTEP (DS) derives the downstep on the reduplicant. It accounts for the change of a LH into !H, and it crucially dominates Input - Reduplicant Identity, forcing its violation. The tableau in (23) shows how the downstep is derived.

(23) DS >> IDENT-IR

/ L ₀ +RED-kéré/	DS	IDENT-IR
a. !ké-kéré		*
b. ké-kéré	*!	

If it is more important for a LH sequence to be produced as !H than for the reduplicant to be completely featurally identical to the input, then candidate (23b) must lose out in the competition because here the reduplicant is featurally identical to the input. Thus the form [**!ké-kéré**] which obeys DS is the winner.

A more challenging set of cases comes from the L tone initial verbs. On the surface the reduplicant appears to have copied the tone of the base completely. But this is only apparent rather than real. The relevant examples are given in (24).

(24) L tone (initial) verbs

(a)	nò	give	á nò-nò	he is giving, rather than...
	wèt	write	á wèt-wèt	
	sàṅá	walk	á sàṅá-sàṅá	
	kpémé	watch over	á kpémé-kpémé	
	fèrè	run	á fèrè-fèrè	
(b)	yòmmó	boo at	á yò-yòmmó	
	tòrò	praise	á tò-tòrò	

In the preceding section, we accounted for the tonal change (L(H) → HL) in the base. Accordingly, the focus here will be on the reduplicant. The generalization from the data in (24) is that the reduplicant is

HL when the input is L initial.⁴ In the reduplicated outputs of L-tone initial verbs in (24a) the reduplicant is identical to the base, suggesting Base - Reduplicant (B-R) identity, contrary to the overall claim that Input - Reduplicant identity is dominant. But the assumption that the reduplicant may have copied the base here cannot account for why the reduplicant is HL even when the base does not change, as we see in (24b). So the reduplicant could not have copied the base.

Assuming that the underlying tonal representation of the clitic is H L̥ as proposed in (21), the same line of reasoning employed in the analysis of the data in (21) accounts for the data in (24). Two constraints account for the surface realization of the reduplicant here: *L̥ L and H-SPREAD. *L̥ L is an OCP-type constraint (Leben 1973, McCarthy 1986, etc.), and H-SPREAD has been independently proposed in Umoh (1985) and in Urua (1995) to account for other phenomena in Ibibio. Both of these constraints take precedence over Input-Reduplicant identity and Base-Reduplicant identity.

(25) *L̥ L

A sequence of floating L̥ and linked L is prohibited.

(26) H-SPREAD (Umoh 1985, Urua 1995)

A HL sequence is realized as H HL̥.

Both of these assess the competing candidates at the same time, rather than serially. There is no evidence that either one dominates the other, so we will assume that they are unranked with respect to each other. The tableau in (27) shows the derivation of á t̥-tòòró "he is praising, rather than..."

(27) *L̥ L, H-SPREAD >> IDENT-IR >> IDENT-BR

/H L̥+RED-tòòró/	*L̥ L	H-SPREAD	IDENT-IR	IDENT-BR
a. t̥-tòòró			*	*
b. t̥-tòòró		*!		
c. t̥-tòòró		*!	*	*
d. !t̥-tòòró	*!	*	*	*

The two interesting candidates are (27a) and (27b); (27a) satisfies both of the top ranked constraints, while (27b) prefers perfect Input - Reduplicant and Base - Reduplicant satisfaction. Since the structural constraints are more important, the optimal candidate is (27a) which satisfies them both, violating IDENT-IR and IDENT-BR in the process.

5. PERFECT RELATIVE ASPECT REDUPLICATION

⁴ As opposed to rising tones, falling tones can apparently occur on short vowels without lengthening them.

Finally, we turn to perfective reduplication, in which another constraint hides the effect of dominant Input - Reduplicant identity. Ibibio perfective reduplication also illustrates a type of “fixed segmentism” (Alderete et al. 1996, Akinlabi 1997) resulting from the realization of a tonal morpheme. The following examples illustrate perfective reduplication with H tone (28) and L tone initial (29) verbs.

(28)	<u>H tone verbs</u>			
	tá	chew	á!á <u>tá</u> -tá	he has already chewed
	dép	buy	á!á <u>dé</u> -dép	etc.
	kéré	think	á!á <u>ké</u> -kéré	
	yómmó	be pregnant	á!á <u>yó</u> -yómmó	
	dáára	rejoice	á!á <u>dá</u> -dáára	
(29)	<u>L tone (initial) verbs</u>			
(a)	nò	give	á!á <u>nó</u> -nò	
	wèt	write	á!á <u>wé</u> -wèt	
	sàṅá	walk	á!á <u>sá</u> -sàṅá	
	kpémé	watch over	á!á <u>kpé</u> -kpémé	
	fèré	run	á!á <u>fě</u> -fèré	
(b)	yòmmó	boo at	á!á <u>yó</u> -yòmmó	
	tòòró	praise	á!á <u>tó</u> -tòòró	

The generalization from these examples is that the reduplicant surfaces with a H tone, regardless of the underlying tone of the verb. The examples in (28) do not help much in determining the source of the H tone of the reduplicant. From these examples alone one could conclude that the H tone of the reduplicant copies either the input or the base H tone. But the examples in (29b) prove that this cannot be the case, i.e. that the H tone of the reduplicant could not have spread from the base.

We propose that the Ibibio perfective has a H tone. The realization of this perfective H take precedence over Input - Reduplicant identity, and of course also over Base-Reduplicant identity, by transitivity. Following Akinlabi (1996) we assume that an alignment constraint ALIGN-perf_H (30) determines the location of the H tone.

(30) ALIGN-perf_H

Align(perf_H, stem, L)

The perfective H is aligned with the Left edge of the (reduplicated) verb stem.

ALIGN-perf_H hides the effect of Input - Reduplicant faithfulness, which is otherwise preferred in Ibibio. It sits on top of the constraint hierarchy with LH-D, and this ensures that neither the base nor the reduplicant has the input tone. The following tableau (31) illustrates the derivation of sá-sàṅá (stem sàṅá).

(31) ALIGN-perf_H, LH-D and Faithfulness.⁵

/perf _H +RED- sàŋá/	ALIGN- perf _H	LH-D	IDENT-IB	IDENT-IR	IDENT-BR
a. sá sá-sàŋà			*	*	*
b. sá-sàŋá		*!		*	*
c. sà-sàŋà	*!		*	*	*
d. sà-sàŋá	*!	*		*	*

6. CONCLUSION

In the foregoing we have demonstrated that the prefixed reduplicant in Ibibio primarily copies the input tone. But this happens only when there are no overriding constraints, as is the case in the imperative contrastive reduplication. When overriding constraints exist, these take precedence over Input - Reduplicant faithfulness. In all cases Base - Reduplicant identity, which is usually prominent in reduplicative identity, takes a back seat in Ibibio tonal transfer.

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⁵ In addition, MAX perf_H must dominate MAX-IR and MAX-BR to rule out the candidate sáfl-saNa~, and others like it.

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