

Forms and Functions of
ENGLISH AND
INDIGENOUS
LANGUAGES IN NIGERIA

A FESTSCHRIFT IN HONOUR OF
AYO BANJO

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1.0. Introduction

In several Benue Congo languages, deverbal nouns (also called gerunds) are formed by prefixing some string consisting of a copy of the initial consonant of the stem and a "fixed" vowel, to the verb base. The examples in (1) from Yoruba illustrate the process. (See Kawu 1998 for a discussion of various Benue Congo Languages.)

(1) Yoruba Deverbal noun formation

je	ji je	eat: act of eating
dára	dí dára	be good: goodness

In a recent paper, Alderete et al (1999) proposed that fixed segments in reduplication are derivable from general markedness considerations in the phonology, using the Yoruba forms in (1) as examples. They argue that the fixed segment in a reduplicant is the (unmarked) epenthetic segment of the language, as in (2). The basic argument therefore is that the vowel [i] bolded in the forms in (1) and (2) are from the same source: namely epenthesis.

(2) Epenthetic [i] in Yoruba onset clusters

store	sit ó ò	globe	gil ó òbù
scout	sik á òtù	grammar	gir á mà

In this paper, I discuss two types of asymmetries relating to the examples in (1) and (2). The first asymmetry is one that occurs across fixed segment types. Fixed segmentism in Yoruba de-verbal noun formation (in (1)) behaves differently from fixed segmentism in (regular) epenthesis (in (2)). Fixed segmentism in epenthesis shows assimilation to a neighboring labial consonant (3a), while fixed segmentism in deverbal noun formation does not (3b).

(3) a.	bread	búr é di	(cf. *bír é di)	vs.
b.	bé	bib é	"jump / jumping"	(cf. *hú b é)

I show that it is impossible for the constraint ranking proposed by Alderete *et. al.* to derive the two types of [i] in (1) and (2). Since the assimilation in (3a) is systematic, I conclude that the two types of fixed segments are not the same. I propose that the fixed [i] in deverbal noun reduplication is really an input morpheme (REDuplicant + i + verb stem), while the "fixed" [i] in loan vocabulary is from epenthesis.

The second asymmetry is one that occurs within the "fixed" segmentism in deverbal noun reduplication. The deverbal noun "fixed" segment shows variation based on whether the verb base has a high vowel or a non-high vowel. If the stem vowel is high, then the prefix vowel optionally copies the stem vowel completely, as in (4).

- (4) a. di didi dídí "to scramble: scrambling" vs.
 b. so sisi *sísó "to say, saying"

Descriptively, the reduplicant copies (the initial CV of) the base completely if the base has a high vowel, otherwise the prefix [i] is retained. The asymmetry in the deverbal noun reduplication leads to an apparent contradiction in the proposed analysis of [i] as a morpheme. This apparent contradiction is formally resolved by assuming that when the verb stem vowel is high the reduplicant vowel is faithful to both the underlying morpheme [i] of the prefix, as well as the base of the reduplicant.

I shall limit myself to broad comments on the formal analysis of the asymmetry in the deverbal prefix vowel in section 4; the reader is referred to Akinlabi (2004) for details on the formal analysis and theoretical consequences of the analysis.

2.0. Asymmetry across fixed segment types: deverbal nouns and loan words

In the straightforward cases, deverbal nouns are formed from verbs in Yoruba by prefixing a copy of the first consonant of the verb and a high vowel [i] to the verb base (Akinlabi 1985, Pulleyblank 1988, Ola 1995, and others). For the sake of clarity I will begin by discussing only verb bases with non-high vowels in this section, verbs with high vowels are discussed in section 4.

- (5) gbóná gbí-gbóná be warm, hot; warmth, heat
 je jí-je eat: act of eating
 dára dí-dára be good: goodness
 gbé gbí-gbé take: act of taking

bò	hí-bò	cover: covering
wṵ	wí-wṵ	be expensive: dearness

Alderete, *et. al.* (1999) propose that the fixed vowel [i] of the deverbal noun prefix is a classic example of "The Emergence of the Unmarked" (TETU) in the reduplicant (McCarthy and Prince 1995). They propose the following TETU derivation of the vowel [i]. The constraints in (6) are informally defined.

- (6) MAX-V_{IO}: Input segments have correspondents in the output
 (No deletion)
 MAX-V_{HR}: Base vowels have correspondents in the reduplicant.
 DEP-V_{HR}: Reduplicant vowels have correspondents in the Base
 (No insertion)
 H_(i): The least marked vowel is [i] (Alderete, *et al* 1999:337)

With the above set of constraints, Alderete, *et. al.* (1999) argue that [i] emerges as the unmarked vowel in reduplication with the ranking: MAX-V_{IO} >> H(i) >> MAX-V_{HR}. That is, full base-reduplicant copying (MAX-BR) is less important than having [i] in the reduplicant, and this in turn is less important than ensuring that input segments (of the verb) are realized in the output (MAX-IO). This is the classic Optimality theoretic ranking for the emergence of the unmarked. Thus the vowel that serves as the default vowel in epenthesis is the same vowel that serves as the default or "fixed" vowel in reduplication. The tableau in (7) illustrates the derivation of jí je "act of eating" (< je "eat").

- (7) Proposed TETU tableau (Alderete, *et. al* 1999: 338): jí je "act of eating"
 (< je "eat")

/RED+ je/	MAX-V _{IO}	H _(i)	MAX-V _{HR}	DEP-V _{HR}
a. → jí je		ε	ε	i
b. jéje		ε, ε!		
c. jí jí	ε!	.		

Thus [i] emerges in the reduplicant (7a) because faithful copying will lead to having two "marked" vowels in the output (candidate 7b), and [i] does

not surface in both the base and reduplicant (candidate 7c) because it is crucial for the input (base) vowel to remain unchanged.

Alderete *et. al.* (1999) conclude with what they term the "Reduplication - Default Connection": "where not copied, reduplicants are like defaults" (Alderete, *et al.* 1999:334).

There are two important claims that the authors make, which I will address in this paper. First they argue that "since the same hierarchy is responsible for both fixed segmentism and classic defaults, it follows that fixed segmentism and classic defaults should not present an inconsistent picture" (p.334). Secondly, they conclude that "when reduplicative TETU and default phenomena are co-existent in a language, they cannot show attraction to inconsistent targets assuming that all relevant conditions, such as context and class of affected segments, are the same" (p.334). In the next several sections I will show that additional facts of Yoruba do not support either of these claims.

There are two phonological properties of the Yoruba deverbial noun prefix, vowel in (5): (a) the vowel is always [i]; and (b) the tone is always High. I will first argue that neither of these two properties of the deverbial noun prefix results from "the emergence of the unmarked". I will then propose that the fixed high toned [i] is in fact an input morpheme: the deverbial noun morpheme.

2.1. Phonological Property 1: The high vowel [i]

The first feature of the deverbial noun prefix vowel is that it is always [i]. Alderete *et. al.* argue that this is the same vowel [i] in regular epenthesis. In this section, I show that this cannot be the same vowel. Syllable structure (i.e. markedness) constraints rule out consonant clusters or codas in Yoruba, therefore loan vocabulary with consonant clusters or codas are resyllabified following the permissible syllable structures of Yoruba. (See Awobuluyi 1967, 1978; Salami 1969; Ojo 1977; Pulleyblank 1988; Owolabi 1989; Akinlabi 1993; and others.) A vowel /i/ or /u/ may be inserted to break up consonant clusters, or supply a nucleus to a coda consonant in the loaned vocabulary, depending on the place of articulation of the preceding consonant. Non-labial onset clusters or non-labial codas get [i] epenthesis, as in (8a) and (8b).¹

(8a) Epenthesis in Loan vocabulary (data from Owolabi 1989:153-164)

(a) Onset clusters with nonlabial consonants: epenthetic [i] breaks up clusters.

store	sítóò	globe	gílóóbù
stove	sítóófù	glass	gílaàsi
stamp	sítánbù	grease	gírìsì
scout	síkáòtù	grammar	gírámá
scarf	síkááfù	class	kílaàsi
scale	síkéèlì	clutch	kílóòsì
spell	síkḗpèlì		
slate	sílécèti		
trailer	tírèlā.		

(b) Final codas with nonlabial consonants: epenthetic [i] supplies a nucleus.²

slate	sílécèti
bread	bírèdi
grease	gírìsì
spell	síkḗpèlì
bank	bánkì
advance	álúbánsì

However, onset clusters with labial consonants or codas with labial consonants get [u] epenthesis, as in (9a) and (9b).

(9) (a) Onset clusters with labial consonants: epenthetic [u] breaks up clusters.³

break	búrèkì/ bírèkì	Ephraim	héfúrècémù
brandy	burandi/birandi	Friday	fúràidèc
bladder	búládà/ bíládà	flannel	fúlánèzì
blouse	búláòsì	flower	fúláwá
bread	bírèdi	rafter	ráfútà
brassiere	búrèsìà		

(b) Final codas with labial consonants: epenthetic [u] supplies a nucleus.

stamp	sítánbù
pomp	kḗpónbù
jeep	jìipù
gem	jèémù
Bethlehem	bétìlèhèmù
Ephraim	héfúrècémù
Condemn	kòndèémù

fò	"wash"	*fúfò	(cf.	fifò	"washing")
bò	"pre-cook"	*bùbò	(cf.	bibò	"pre-cooking")

There are two important points to note. First, Base-Reduplicant faithfulness (MAX-V_{BR}) cannot rescue this analysis because in forms like *fifò* "washing", the vowel [i] remains unassimilated, even though has a [fò] labial vowel. Secondly, Input-Output faithfulness (IDENT-IO_(LAB)) is hopeless in rescuing the analysis because the vowel [i] in the deverbal noun prefix in (15) is supposed to be "epenthetic", and therefore has no Input correspondent. We *must* therefore conclude that the vowel [i] of the deverbal noun reduplication cannot result from the emergence of the unmarked.

2.2. Phonological Property II: The high tone

The second feature of the fixed segment [i] in the deverbal noun prefix is that it has a fixed high tone. The question here is whether the High tone the least marked tone in Yoruba. Independent evidence suggests this is not the case.

The Yoruba mid tone has been analyzed as underlying tonelessness since Akinlabi (1985) and Pulleyblank (1986). In both Akinlabi's and Pulleyblank's works, several arguments are given for this hypothesis, including tone stability, tone spreading, and tonal OCP (Akinlabi and Liberman 2001). For reasons of space, we will briefly sketch two examples, relating to *tonal stability*, and *tone insertion*.

2.2.1. Tone Stability

When an object noun follows a verb in Yoruba, the two words are combined phonologically by deleting either the final vowel of the verb or the initial vowel of the object. Any High or Low tones of the deleted vowel are retained in the result. However, Mid tones are not "stable" in this sense, but instead behave in various combinations with other tones as if they were simply not there. Thus a Mid tone verb followed by an object whose initial vowel is Low will yield a combined form whose first vowel is simply Low, not some sort of Mid-Low contour, or a Mid with a following down step, or anything else of the sort.

The crucial cases are exemplified below. The tone patterns in each of the (a) and (b) examples in (16) - (20) are the same: in the (a) examples the vowel of the verb is deleted whereas in the (b) examples the vowel of the

noun is deleted. (Examples from Akinlabi 1985, Akinlabi and Liberman 2001).

H verb + L initial noun

(16a)	wa (H) look (for)	eko (LH) education	→	weko (H LH) "look for education"
(b)	mu (H) take	iwe (L H) book	→	muwe (H LH) "take a book"
(17a)	wa (H) look (for)	oṣo (L L) way	→	wṣoṣo (H L) "look for a way"
(b)	wa (H) look (for)	imọ (L L) knowledge	→	wamọ (H L) "look for knowledge"
(18a)	ji (H) steal	oḃe (L M) knife	→	joḃe (H (L) M) "steal a knife"
(b)	fẹ (H) want	iwo (L M) horn	→	fawo (H (L) M) "want a horn"

H verb + M initial noun

(19a)	wa (H) look (for)	owo (MH) money	→	wowo (H H) "look for money"
(b)	wa (H) look (for)	ile (MH) house	→	wale (H H) "look for a house"

M verb + L initial noun

(20a)	jo (M) resemble	aje (L H) witch	→	jaje (L H) "resemble a witch"
(b)	sin (M) bury	oku (L H) dead (body)	→	sinku (L H) "bury the dead"

A few remarks are necessary for the motivation behind the selection of the above forms. First, since V-initial nouns cannot start with H in Yoruba, no examples of the form X+HX can arise. Second, when a L-tone verb precedes its object, the tone always deletes even if the vowel is preserved, so the case L+XX offers no evidence in this matter.

helm
handkerchief

hèzùnù
aikašiiñù/hánkàšiiñù

I propose the following formal analysis of the data in (8) and (9). In agreement with Alderete *et al.*, I assume that epenthesis in loan vocabulary as (8) and (9) represent valid cases in which markedness determines the nature of the epenthetic segment. The data in (9) can be accounted for by assuming labial assimilation between a labial consonant and a following (epenthetic) vowel.⁴ Input-Output Faithfulness prevents nonlabial Input (non-epenthetic) vowels from changing. I assume that Labial assimilation is driven by the constraint $AGREE_{(IL,AB)}$ (10). The constraint $IDENT-IO_{(L,AB)}$ (11) enforces the output realization of underlying labial specification.

(10) $AGREE_{(IL,AB)}$

Vowels must agree with the preceding consonant in labiality.

(11) $IDENT-IO_{(L,AB)}$

Labial specification is identical in the input and output.

Taking these two constraints with other markedness constraints such as $*COMPLEX_{(ONS)}$ (Complex onsets are forbidden) and $NO-CODA$ (Codas are forbidden), and faithfulness constraints such as $DEP-IO$ (Output segments must have input correspondents, i.e. "no insertion"), the forms in (8) and (9) can be derived.

We must assume that $*COMPLEX_{(ONS)}$ and $NO-CODA$ are undominated in Yoruba, since as we have already noted the language has no complex onsets and no codas. We must also assume that they both dominate $DEP-IO$, since epenthesis is the preferred option for resolving potential violations of either constraint. For the vowel [u] to be preferred in labial environments, we must assume that $AGREE_{(IL,AB)}$ dominates $H(i)$. Finally, since input front vowels do not get assimilated to preceding labial consonants we must assume that $IDENT-IO_{(L,AB)}$ dominates $AGREE_{(IL,AB)}$. These arguments give the following partial ranking of the relevant constraints.

(12) Ranking needed to derive epenthesis in Yoruba:

$*COMPLEX_{(ONS)}, NO-CODA \gg DEP-IO$: Epenthesis is the preferred option to avoid complex onsets or codas

$IDENT-IO_{(L,AB)} \gg AGREE_{(IL,AB)}$: Input vowels do not assimilate to the labiality of preceding consonants.

$AGREE_{(IL,AB)} \gg H(i)$: The vowel [u] is the unmarked vowel after labial consonants.

The implication of this ranking is that in the context of a labial consonant the least marked vowel is [u], not [i]. We can now derive onset simplification in a form such as *hírédí* "bread".

(13) Onset simplification in Yoruba:

br:d/	$*COMPLEX_{(ONS)}$	$AGREE_{(IL,AB)}$	$DEP-IO$	$H(i)$
a - burédi			**	u, ε
b. birédi		*!	**	ε
c bérédi		*!	**	ε, ε
d brédi	*!		*	ε

The crucial forms to compare are the forms in (13a) and (13b). Though *burédi* performs more poorly with respect to $H(i)$, it is preferred to **birédi* because the epenthetic vowel agrees in labiality with the preceding labial consonant. If we combine the ranking that we have just argued for with the one that was earlier used to derive [l] in the deverbal noun prefix, we have the following overall ranking.

(14) Overall ranking from deverbal noun reduplication and regular epenthesis:

$MAX-V_{(L)}, *COMPLEX_{(ONS)}, NO-CODA \gg DEP-IO$
 $IDENT-IO_{(L,AB)} \gg AGREE_{(IL,AB)} \gg H(i) \gg MAX-V_{(R)}$

The prediction of this overall ranking (14) for deverbal noun reduplication is that the ungrammatical forms in (15) should be the deverbal noun forms for the relevant verbs.

(15)

bé "jump" **búbé* (cf. bibé "jumping")
 fè "widen" **fúfè* (cf. fifè "widening")

Extracting the tonal input and output alone from the above examples, we have the following:

Summary of Tonal Input and Output:

(16a-b) H + L H	→	H L H
(17a-b) H + L L	→	H L
(18a-b) H + L M	→	H L M'
(19a-b) H + M H	→	H H
(20a-b) M + L H	→	L H

Thus in all the cases that can arise, and whose output is not obscured by the deletion of the verbal L, we can say that H and L always remain when their lexically-associated vowel deletes, while M never does. In essence, the entire data can be accounted for if Mid is seen as the name for "no-tone" (Akinlabi and Liberman 2001).

2.2.2. *The Genitive Vowel (Tone Insertion)*

In Yoruba genitive constructions, a vowel sometimes appears between two nouns in the genitive construction. The quality of this vowel is determined by the quality of the preceding vowel. This vowel is completely *optional*, except when the second noun in the construction is consonant initial, as the forms in (22) show. What is interesting about it for our purposes is that its tone is always Mid, regardless of the tone of the preceding or following vowels, as the examples in (21) and (22) show.

- (21a) igo (LL) aje (LH) → igo o aje (LL M LH) / igo aje (LL LH)
 bottle witch Witch's bottle
- b. aja (MH) ojo (LH) → aja a ojo (MH M LH) / aja ojo (MH LH)
 dog Ojo Ojo's dog
- (22a) ile (MH) Tayo (HL) → ile e Tayo (MH M HL)
 house Tayo Tayo's house
- b. oko (ML) šeye (LM) → oko o šeye (ML M LM)
 car Šeye Šeye's car
- c. ile (MH) šeye (LM) → ile e šeye (MH M LM)
 house Šeye Šeye's house

The quality of the genitive is obviously determined by markedness considerations: it is the same as the preceding vowel. Furthermore, given its optional nature, and given the evidence that tone is completely stable in Yoruba as seen in (16-20), we must assume that the tonal quality of this vowel is determined by markedness considerations: since all vowels must surface with a tone in the language, the least marked tone is supplied when the vowel is present.

The tonal behaviors described above suggest that the unmarked tone in Yoruba is the Mid tone, since it is the only unstable tone in Yoruba, and it is the tone that is supplied in the absence of assimilation. Mid tone unmarkedness described in this section and in the preceding section is predicted from the following ranking of tone markedness constraints (cf. Akinlabi 1997, Pulleyblank 1986).

(23) Mid Tone Unmarkedness.

*[H], *[L] >> *[M]

The ranking in (23) returns the Mid tone as the least marked tone in a three-tone system, such as Yoruba. This predicts that in "the emergence of the unmarked" (TETU) situations such as tone insertion it is the Mid tone that should show up, except there are other prevailing circumstances. The tableau in (24) derives only the tonal part of the genitive marker, forcing the insertion of a Mid tone under the pressure of SPEC-T, which demands that every vowel surfaces with a tone. (The mid tone is left unmarked in Yoruba orthography, so all candidates in (24) actually surface with a tone.)

(24) Mid tone unmarkedness.

/... V _{GEN} .../	SPEC-T	*H	*L	*M
a. \bar{a} v				*
b. \bar{v}			*!	
c. \bar{v}		*!		

The ranking in (23) also predicts that the tone of an inserted vowel should be amenable to tone deletion, displacement and assimilation in the right

contexts, as long as the process-triggering constraints rank above the tone markedness constraints in (23). This is what we see in the epenthetic vowels in the English loan examples in (8) and (9). Tone assignment on the epenthetic vowels in these forms can be either High or Low, depending on where the epenthetic vowel is located. The overall tonal melody assigned to English loans in Yoruba is (L)HL. The syllable with the primary stress is aligned with the H tone, and subsequent syllables receive the following L. The initial (L) of the (L)HL melody gets realized only if the first input syllable does not bear the primary stress. If the epenthetic vowel in the loan equivalent is in the (original) syllable with the primary stress, then the epenthetic vowel gets an H by spreading. If the epenthetic vowel is in any other syllable, then it gets an L by spreading.⁷ In either case the tone is derived through spreading. This generalization accounts for all of the examples in (8) and (9). The examples in (25) illustrate the key tone assignment procedure described here:

(25a) Primary stress on the initial syllable: Epenthetic (onset cluster) vowel is H toned.

bladder	búládà / biládà
grammar	gírámà
trailer	tírélà

(25b) Primary stress on the non-initial syllable: Epenthetic (onset cluster) vowel is L toned.

Brassiere	bùrèsìà
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(25c) Primary stress on the non-initial syllable: Epenthetic (coda) vowel is L toned.

Condemn	kòndéémù
advance	àlùbánsì

Unlike the epenthetic vowels in the English loans the vowel [i] of the *deverbal noun prefix* does not get its tone by spreading from a neighboring vowel; neither does it take a Mid tone by default as expected from "the emergence of the unmarked" (TETU). The fixed H tone of the *deverbal noun prefix* therefore cannot be from emergent unmarkedness.

I have argued that the two invariant properties of the *deverbal noun prefix* cannot result from TETU in Yoruba. I now turn to a re-analysis of these properties in the next section.

3.0. A reanalysis of the Yoruba Deverbal Noun Prefix

In this section, I propose that the *deverbal noun prefix* in Yoruba is [i]; that is, a fixed vowel /i/ with a High tone. I argue that the purpose of reduplication is to protect the (would-be) word initial H tone vowel, which is otherwise banned in Yoruba. This proposal relates to, and sheds light on two other mysteries in Yoruba phonology.

First, as noted in the preceding section vowel initial words cannot also be H tone initial. That is, an onsetless initial vowel does not bear an H tone in Yoruba. Therefore the initial vowel in *all* VCV nouns (the only lexical class that can be vowel initial) is either Low-toned or Mid-toned (Ward 1952, Oyelaran 1971, Akinlabi 1985, Pulleyblank 1986, Owolabi 1989, Bamgbose 1990, Ola 1995, and others).

(26) High toned vowels do not occur word initially: CvCv, Cv, *vv, *vCv

késc	'mythological place name'	cré	'play'	cf.	*'cre
ràrà	'ellegy'	àrà	'trick'	cf.	*'arà
kpúkúpò	'many'	òwú	'cotton'	cf.	*'owú
wùrà	'gold'	ewà	'beauty'	cf.	*'ewà
kó	'build/teach'				
rà	'disappear'				

A constraint requires that a high tone vowel may occur word initially only if such words are also consonant initial. We follow Kawu (2002:64) in assuming that the conjoined constraint $[\text{PRWD}] *H\&ONS$, in (27), enforces this. (See also Ola 1995: 85-86)

(27) $[\text{PRWD}] *H\&ONS$

High tone syllables at the left edge of prosodic words must have onsets.⁸

Secondly, nouns are regularly and productively formed from verbs by prefixing a vowel to a verb stem (which is invariably consonant initial). The (nominalizing) prefixes are usually Low or Mid toned. There are no H toned vowel prefixes. The only high toned prefix in Standard Yoruba is the *deverbal noun prefix*; and it "happens" to be CV!

(28) Mid-toned prefix	Low-toned prefix	High-toned prefix
i-jó dance	i-jó [the way of] dancing	ì-jó *i-jó dancing
i-kú death	i-kú [the way of] dying	kì-kú *i-kú dying
i-só fart	i-só [the way of] farting	sì-só *i-só farting
i-là marks [e.g. facial]	i-là [the method of] splitting line	lì-là *i-là splitting

If the deverbal noun prefix is a High-toned [i], "consonantal copying is triggered by the need to avoid a violation of the ... constraint" (Ola 1995). The following tableau (29) illustrates the derivation of a regular deverbal noun with the fixed morpheme [i]. In this tableau, the optimal form violates the constraint MORPHDIS, indicating that the morpheme [i] "overwrites" the reduplicant RED.

(29) Deverbal noun prefixation in Yoruba (hó / hí- bò "pre-cook/ pre-cooking)

/RED+ i- b /ò	MAX-V _{IO}	IRWD *H&ONS	MORPHDIS	MAX-V _{IR}	DEF-V _{IR}
a. <i>bí bò</i>			*	*	
b. <i>hó-bò</i>	*!				
c. <i>i- bò</i>		*!		**	

There is in fact independent evidence for the Onset requirement for initial High-toned vowels that we assumed in the above analysis. As noted earlier, English primary stress is re-interpreted as a (L)HL melody in Yoruba, with the H tone realized on the stressed syllable. Recall that initial stress translates to initial H tone in the Yoruba equivalent, as we already discussed above. A vowel initial English loan with initial stress gets a default onset in the Yoruba equivalent. In such forms, [h] is inserted before a high tone initial vowel in the loan, since in Yoruba vowel initial words cannot be high toned."

(30) Default onset insertion in loan words

hánfí	envy
hánbílóókù	envelope
hófíisi	office
hálóómù	alum
hínfí	inch
héfùrèémù	Ephraim

If the vowel initial loan word does not have initial stress (and consequently not high toned in the Yoruba equivalent) then there is no default onset insertion.

- (31) àdirési address (vb.)
 àlùbánsì advance

Thus, when the stem begins with a consonant as in the native vocabulary, it is copied; otherwise [h] is inserted to supply a default onset to protect a banned word initial high-toned vowel in loan words.

3.1. Interim Conclusion

Summarizing the arguments in the preceding sections, the proposal is that the deverbal noun prefix is a high tone vowel [i]. The basic idea is that deverbal noun reduplication takes place because Yoruba disallows a word that begins with a high-toned vowel. A copy of the stem consonant protects the prefix vowel from violating this ban. I have argued that this [i] is underlying, rather than epenthetic (and the result of "the emergence of the unmarked" (TETU)), as argued in Alderete, *et. al* (1999). I have showed that there is an asymmetry between this vowel and a regular epenthetic [i] in Yoruba loan words. First, epenthetic [i] assimilates in labiality to a preceding consonant, as in loan vocabulary; the deverbal prefix [i] does not. Secondly, the Mid tone is the unmarked tone in Yoruba, whereas the deverbal noun prefix has a fixed High tone.

4.0. Asymmetry within the deverbal noun prefix

The focus of the preceding sections has been to show that the fixed high-toned vowel [i] in Yoruba deverbal nouns is the underlying deverbal noun prefix, and that it is neither a reduplicant nor the result of the emergence of the unmarked.

In this section, I now turn to show that there is in fact an asymmetry in the realization of the deverbal noun prefix itself. I show that the entire CV prefix can in fact sometimes be a reduplicant of the stem. I argue however that when it is a reduplicant it manifests different properties than when it is not.

The asymmetry in the deverbal noun prefix occurs when the *verb stem* has a high vowel, as opposed to non-high vowels in section 2. To be exhaustive we illustrate with both oral and nasal stem vowels below

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If the stem vowel is high, then the prefix vowel optionally copies the stem vowel completely, as in (32).

(32a) high non-round base vowel

wi	wiwi	say; saying
wi	wiwi	roast; roasting
di	didi	tie; tying

(b) high round base vowel

dù	didù	dúdù	scramble; scrambling
dú	dídú	dúdú	be black / dark; black, dark
bù	bíbù	búbù	curse; cursing
ku	kíku	kúku	butcher; butchering

The prefix forms in (32a) are similar to the ones we have examined in the preceding section, and so they do not reveal anything. The forms in (32b) show variation between the "fixed" vowel [i] and a copy of the base vowel. But these forms can also be accounted for by postulating labial assimilation between the vowel of the stem and the prefix vowels, and so they do not provide irrefutable evidence of complete copying. Nasal vowels however provide this evidence.

If the stem vowel is high and nasalized, then the prefix vowel is optionally high and nasalized, as in (33).¹⁰ (The examples in this section are in standard Yoruba orthography. Orthographic "in" = [ĩ]; "un" = [ũ], "an" [ã], "on" = [õ], "o" = [ɔ], and "e" = [ɛ]. The digraph "gb" is a voiced labial velar stop. Some of the examples from Yiwola Awoyale, personal communication.)

(33a) high non-round base vowel

sin	sisin	sinsin	sneeze; sneezing
sin	sisin	sinsin	bury; burying
kin	kikin	kinkin	brush / wipe; wiping
din	didin	dindin	fry in oil; frying
fin	fifin	finfin	spray / inscribe / decorate; spraying
gbin	gbigin	gbingbin	moan / groan / growl; moaning
pin	pipin	pinpin	divide / share out; dividing
win	wiwin	winwin	borrow / lend; borrowing
rin	ririn	rinrin	walk; walking
yin	yiwin	yinyin	gouge out the seeds from cobs; gouging

(b) high round base vowel

dun	didun	dindun	be sweet/painful/hurtful; being sweet
kun	kikun	kinkun	be full; being full
sun	sisun	sunsun	roast in fire; roasting
gun	gigin	gingun	pound / stab; pounding
gun	gígún	gúngún	tall / long; being tall
bun	bibun	bubun	donate / give off; giving off
rin	ririn	rinrin	give out an odor; giving out an odor
hun	hahun	huhun	weave; weaving
yun	yiwin	yinyin	dispense; dispensing

In the forms in (33), with nasal stem vowels, there is variation in the prefix vowel between the fixed vowel [i], which copies nothing from the stem vowel, and an exact copy of the stem vowel. In these forms, we must assume that the base vowel is copied completely. Copying either nasality alone or roundness alone from the base vowel is forbidden, as seen in (34).

34(a) Nasality only	(b) Roundness only
*kinkun	*kukun
*dindun	*dudun
*tintun	*tutun
*sinsun	*susun
*gingun	*gugun
*gingun	*gugun
*binbun	*bubun
*rinrun	*rurun
*hinhun	*huhun

Finally, if the base vowel is nonhigh, neither nasality nor rounding can be copied, as the examples in (35) show.

35 (a) Non-high non-nasal base vowels

fò	fifò	*fufò	wash; washing
sò	sisò	*súsò	speak; speaking
gbà	gbìgbà	*gbùgbà	accept; accepting
bò	bìbò	*bùbò	pre-cook; pre-cooking

(b) Non-high nasal base vowels

fòn	fifòn	*finfòn	*fufòn	*fònfòn	blow; blowing
tàn	títàn	*tintàn	*titàn	*tántàn	deceive; deceiving

The overall descriptive generalization from the examples in (33) – (35) is that the reduplicant optionally copies (the initial CV of) the base completely (except the tone) if the base has a high vowel, otherwise the prefix /i/ is retained. I now turn to a formal derivation of these facts in the next section.

4.1. *Deriving the variation in the deverbial noun prefix*

The basic derivation of the Yoruba deverbial noun prefix is as presented in (29), in section 3. Here I will give a brief formal proposal on the facts of high vowel bases, presented in the preceding section: the internal asymmetry within the deverbial noun prefix itself. The formal proposal consists of the following two key proposals:

- (i) With a non-high stem vowel, there is no correspondence between the vowel of the verb stem and the vowel of the prefix, the prefix vowel [i] is simply a deverbial noun morpheme.
- (ii) The prefix vowel corresponds both to the input morpheme [i] and verb stem vowel when the stem vowel is high. So it is both a reduplicant (i.e. a copy of the stem) and an input morpheme at the same time.

This variation in the surface realization of the deverbial noun prefix is formally derivable from re-ranking a block of constraints, rather than a pair of adjacent constraints, which is the norm in Optimality theoretic analyses. Specifically, when faithfulness to the input morpheme is ranked high the vowel [i] emerges, resulting in overwriting as in section 3; but when base-reduplicant constraints are ranked high, a copy of the base shows up instead.

5.0. *Conclusions*

Alderete *et. al.* (1999) present an interesting theory of reduplication-default connection, based on phonetic identity. The purpose of this paper has been to show that fixed segments in reduplication and (default) epenthetic segments can in fact manifest different properties. I have shown that though the Yoruba deverbial noun is phonetically identical to the least marked vowel in the language, the two segments are phonologically different. The proposal is that the deverbial noun prefix is an underlying high tone vowel [i]. The basic idea is that deverbial noun reduplication takes place because Yoruba disallows a word that begins with a high-toned vowel. A copy of the stem consonant protects the prefix vowel from violating this ban. I have argued that this [i] is underlying, rather than epenthetic (and the result of TETU). I have shown that there is an asymmetry between this vowel and a regular epenthetic [i] in Yoruba

loan words. First, epenthetic [i] assimilates in labiality to a preceding consonant, as in loan vocabulary: the deverbial prefix [i] does not. Secondly, the Mid tone is the unmarked tone in Yoruba, whereas the deverbial noun prefix has a fixed High tone. Finally, I showed that the deverbial noun prefix itself exhibits an asymmetry, because it can sometimes correspond to the underlying prefix [i], and at other times correspond to both the underlying prefix as well as a copy of the stem high vowel. I argued that the asymmetry occurs only when the stem vowel is identical to the prefix vowel in height.

Notes

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² The syllable structure statements are easier to state if we assume that every consonant is syllabified as an onset in Yoruba. Thus every unsyllabifiable consonant gets a vowel nucleus. See Akinlabi (in progress) for details.

³ The evidence here is quite mixed. In most cases if the vowel preceding the coda is a rounded vowel, then the epenthetic vowel after the coda is [u], and if the vowel before the coda is unrounded then the epenthetic vowel is [i], regardless of the place of articulation of the coda itself. The essential point however is that the epenthetic vowel varies with context. See Owolabi 1989, Akinlabi in progress. See the next footnote for a possible explanation.

⁴ Awobuluyi (1978) explains that the inserted vowel may be /u/ in two cases. First, /u/ is inserted if the consonant is labial /b, f, m/ (i.e. Labial Harmony).

búlóòkù	'block'	(*bílóòkù)
bùrédi	'bread'	(*bírédì)

Secondly, /u/ may be inserted as a final vowel because of the tendency for front/back vowels to exclude each other in the last "two syllables of polysyllabic nouns" (Awobuluyi 1978: 152).

búlóòkù	'block'	(*bílóòkù)
kóòtù	'coat'	(*kóòtù)
sùkùrì	'school'	(*sìkùrì)

The latter is termed Back Harmony in Pulleyblank (1988).

⁵ See Akinlabi 1993 for a discussion of other cluster simplifications in Yoruba, especially those with /r/. These involve splitting the clusters with a vowel identical to the vowel of the following syllable.

⁶ We will not discuss vowel deletion, which is complex question requiring a monograph-sized treatment of its own.

⁷ Any examples whose output is specified as (HL M) are pronounced exactly as this notation implies in some dialects, but in standard Yoruba, they are pronounced as a raised H followed by an M. In earlier studies (see Bamgbose 1966b, Akinlabi 1985, Pulleyblank 1986), this was thought to be an H followed by a tone between M and L, a sort of "downstepped Mid." The essential point is that the L tone is in some sense preserved.

Forms like brandy buráńdí/birańdí are exceptions to this general tone assignment process because the assumed stress pattern in Yoruba is not what obtained in the source language.

⁸ See also Ola (1995:85-86) who states this constraint as *#v (A high tone vowel cannot occur in the absolute word-initial position).

⁹ There is some variation between bilingual speakers and monolingual Yoruba speakers. The h-insertion is optional in bilingual speakers while it is obligatory in monolingual Yoruba speakers. Kawa (2002) argues that the forms in (30) do not copy the first consonant of the stem because this distorts the loan in violation of FAITH-SOURCE.

¹⁰ In the following discussion, I abstract away from glide nasalization. For details on sonorant nasalization see Akinlabi (2003).

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