

Gerundive Reduplication in Yorùbá Revisited: Insights from Auto-segmental Phonology

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Abstract

Previous studies have argued that the derivation of Yorùbá gerunds, such as *kíkú* ‘dying’ (from *kú* ‘die’) and *dídára* ‘goodness’ (from *dára* ‘be good’), is morphologically induced, specifically by partial reduplication and, by extension, an instantiation of prefixation. Other studies claim that the reduplication process is phonologically driven on the ground that the copying of the initial consonant of the verb base interacts with the epenthetic vowel [í] in the final derivation. The present study, however, argues that the derivation of gerundial nouns (including deverbal adjectives) in Yorùbá is neither a product of reduplication nor an instantiation of prefixation; and the derivation can be straightforwardly accounted for strictly within the domain of phonology without appealing to the morphology-phonology interface. Deploying the principles of Auto-segmental Phonology, this article posits that the formation of such nouns is a purely phonological affair, which is characterized by two phonological processes that must apply in a transitive order: consonantal feature spreading and vocalic insertion. In particular, the initial consonant of a verb base/stem spreads its entire features to a leftward abstract Consonant-Slot which underlyingly lacks phonetic interpretation but whose featural content is visible at the surface representation; the default vowel [í] is then inserted to complete the derivation.

Keywords: Gerundive Reduplication; Spreading; Insertion; Auto-Segmental Phonology; Yorùbá

Introduction

Reduplication is a word formation process that is very common in African languages, e.g., Igbo, Hausa, Akan, Chichewa, Sesotho, and, of course, Yorùbá. It basically involves copying either some part of the stem or the whole of the stem. Typologically, two broad patterns of reduplication have been distinguished in the literature: full and partial (Kager,

1999; Mbah, 2006; Pulleyblank, 2009; Iloene & Yusuf, 2010; Oyebade, 2010; Aziza, 2010; Arokoyo, 2017). The former has to do with complete repetition of the stem whereas the latter entails repetition of a part of the stem (Osam, Marfo & Agyekum, 2013). These two types of reduplication are attested in Yorùbá (Faraclas & Williamson, 1984; Awoyale, 1989; Bamgbose, 1990; Adewole, 1995; Ogunkeye, 2005; Pulleyblank, 2009; Oyebade, 2010; Taiwo, 2011).

The existing proposal construes the derivation of Yorùbá gerunds or deverbal nouns, such as *kíkú* ‘dying’ (from *kú* ‘die’), *dídára* ‘goodness’ (from *dára* ‘be good’), *tító* ‘being right’ (from *tó* ‘be right’), *bíbẹ̀* ‘begging’ (from *bẹ̀* ‘beg’), and *gbígboná* ‘warmth’ (from *gbóná* ‘be warm’)¹, as being morphologically induced, specifically by partial reduplication and, by extension, an instantiation of prefixation (Akinlabi, 1985, 2004; Adewole, 1995; Ola 1995; Alderete et al., 1999; Pulleyblank, 2009; Oyebade, 2010; Taiwo, 2011; Orie, 2012; Arokoyo, 2017; Eleshin, 2017). Citing a definitional model of such proposal, a reference can be made to Akinlabi (2004, 274) who says that, “deverbal nouns are formed from verbs in Yoruba by *prefixing a copy* [Italic is mine for the sake of emphasis] of the first consonant of the verb and a high vowel [i] to the verb base”. The italicised phrase in the quotation implies that reduplication of the verb base’s initial consonant takes place before attaching the copied material together with a fixed high-toned vowel [í] to the base as a prefix. Although this word formation process is conceptualized as *gerundive reduplication* in some of the existing literature (see Ogunkeye, 2005; Pulleyblank, 2009; Orie, 2012; and Oyinloye, 2021), the entire derivational pattern seems to have a dual morphological characterization, namely ‘prefixation by partial reduplication’ where the prefix has a CV shape – [Cí]. This is the more reason some scholars have termed it as a pattern of reduplication that is prefixal in nature.

The present study, however, takes a different route. In particular, it argues that the so-called gerundive (partial) reduplication in Yorùbá involving the [Cí] reduplicant is not a case of reduplication, neither is it an instantiation of prefixation. Rather, it is a case of complete spreading of features of the base’s initial consonant to a Consonant-Slot (C-Slot) that lacks phonetic interpretation at the lexical level or underlying representation; the spreading is then followed by inserting a high front unrounded vowel that is prespecified for a high tone

¹ In this study, cases of deverbal adjectives are included since they have similar pattern of derivation as the deverbal nouns: *gíga* ‘tall’ (from *ga* ‘be tall’), *sísanra* ‘fat’ (from *sanra* ‘be fat’), *kíkúró* ‘short’ (from *kúró* ‘be short’).

[ɪ] between the consonant that was derived by spreading and the initial consonant of the base. This new proposal is pursued within the purview of Auto-segmental Phonology. It is assumed that the given framework is best at providing a more principled account of the derivation within the domain of phonology without unnecessarily making recourse to the morphology of the language where the process of reduplication is first accounted for after which help is sought from the phonology to account for the insertion process. Such complex analysis can be reduced to a uniform pattern of derivation within the domain of phonology, *tout court*.

Reduplication in Yorùbá: A brief overview

Although there are very many documented works on the phenomenon of reduplication in Yorùbá, only a very few of them are reviewed in this paper and the focus is largely on the partial type which typically involves derivation of gerundive nouns. In his descriptive study of reduplication in Yorùbá, Adewole (1995) claims that partial reduplication in the language could take one of three forms: (1) copying only the segmental features of the base, with variation in the tonal features (and, in some cases, syllable structure) of the base and the reduplicant in the final derivation, e.g., *réderède* ‘disorderly’, *básubàsu* ‘in a disorganized manner’, *mànàmáná* ‘lightning’, *labalábá* ‘butterfly’; (2) copying some of the segmental features of the base and preserving some of its suprasegmental features, e.g., *ṣhínṣòhún* ‘a dubious character’, *jomijòkè* ‘amphibious character’, *lékuléja* ‘petty trader’; and (3) copying some of the segmental features of the base while at the same time altering some of its suprasegmental features, e.g., *lílò* ‘the act of going’, *mímu* ‘the act of drinking’, *gbígbiyànjú* ‘the act of trying’. The third category is of particular interest in the present study. This study attempts to show that such cases do not involve morphological copying, but rather a purely phonological process of consonantal feature spreading followed by vowel epenthesis.

Within the framework of optimality theory, Pulleyblank (2009) examines four patterns of reduplication in Yorùbá which exhibit different properties: (1) agentive reduplication which involves two identical copies of a base, with both segmental and tonal material copied, e.g., *woléwolé* ‘sanitary inspector’, *pejapeja* ‘fisherman’, *ṣoyínyoyín* ‘dentist’, *jèdijèdì* ‘piles’, *jayéjayé* ‘lover of pleasure’; (2) infixing reduplication which involves a complete copy of the base supplemented by a segmentally and tonally fixed infix, e.g., *filàkifilà* ‘any type of cap’, *jàndùkùkijàndùkù* ‘any dubious person’, *omòkòmò* ‘any child’,

olorìkòlorì ‘any queen’, *erékéré* ‘any play’; (3) distributive reduplication whose pattern involves copying some part of a base, restricting its copying to segmental material, e.g., *eweewé* ‘every leaf’, *ọ̀dọ̀dún* ‘every year’, *ọ̀jọ̀júmọ̀* ‘every day’, *òròòru* ‘every midnight’, *òwòòwúrò* ‘every morning’; and (4) gerundive reduplication which copies only part of a base, mixing the copied material with lexically specified material, e.g., *rírí* ‘seeing’, *gbígbé* ‘taking’, *dídára* ‘being good’, *sísín* ‘sneezing’, *dídùn* ‘being sweet’. With respect to the gerundive pattern of reduplication, which is the focus of this paper, Pulleyblank claims that the copying is phonological rather than morphological since only a segment (the initial consonant) of the verb base is copied and reference has to be made to the phonology of the language in order to derive the CV template by combining a high-toned vowel [í] with the copied consonant before prefixing it to the base.

In a very similar account, Orié (2012) claims that this pattern of reduplication is associated with a gerundive prefix – a high-toned vowel [í] that is variably realized as a V or CV depending on whether it occurs phrase-internally or phrase-initially. In phrase-initial position, the gerundive prefix is realized as a CV in which the initial consonant of the base is copied and is then combined with the high-toned vowel [í]. Drawing an inference from her position, the realization or derivation of the CV, that is, the [Cí] reduplicant, is independently motivated by a general phonological constraint in Yorùbá which stipulates that a “word- or phrase-initial high tone must occur in a CV syllable” (p. 212). For this reason, Orié concludes that gerundive reduplication in Yorùbá is purely phonological, and not morphological. The present study partially aligns with the position of Pulleyblank (2009) and Orié (2012) particularly with respect to the domain of grammar where the derivation takes place, namely phonology rather than morphology. It, however, deviates from their position with respect to the specific nature of the process involved: the derivation is neither reduplicative nor affixal. Again, it is simply a phonological phenomenon that is characterized by consonantal spreading which is in turn supplemented by vocalic insertion.

Eleshin (2017) is another study on reduplication in Yorùbá. The work examines the full type with respect to agentive reduplication, e.g., *kólékólé* ‘builder’ and *pẹjapẹja* ‘fisherman’, and reduplication with linkers, such as *ọ̀mọ̀kọ̀mọ̀* ‘bad child/any child’ and *ilédélé* ‘house-to-house’. Above all, Eleshin posits that there is only one type of reduplication in Yorùbá, and that is full reduplication. He argues that the so-called partial type of reduplication in the language, that is, the one involving derivation of gerundive nouns, is an instance of prefixation. While the present study partially agrees with his view

that formation of deverbal or gerundive nouns in Yorùbá is not a case of reduplication, it disagrees with his interpretation of the derivational pattern as an instance of prefixation.

Auto-segmental phonology

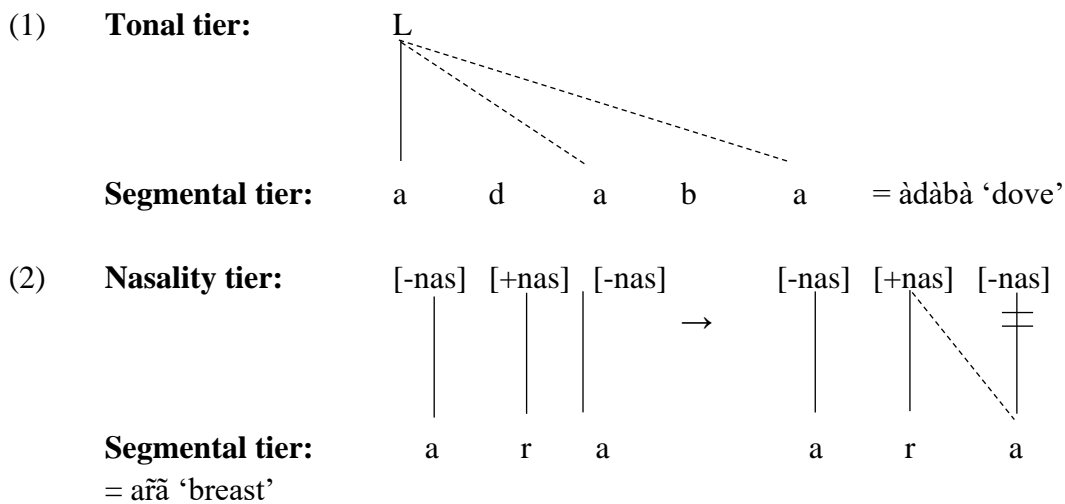
In response to the inadequacies of the classical Generative Phonology (GP) most especially with respect to the treatment of suprasegmental features of speech, particularly tones, Goldsmith (1976) proposed a theory that would be able to give account of how speech could be segmented into phonological units as well as how they should be phonologically represented. Although the foundations of the theory were laid by previous scholars such as Williams (1971) and Leben (1973), the formal exposition of the theory was brought to limelight in 1976 via Goldsmith's iconic Ph.D. thesis titled *Autosegmental Phonology*.

Given the 'absolute slicing hypothesis', Goldsmith (1976) posits that speech can be phonologically represented as successive discrete segments, and these segments can be analyzed in a multilinear fashion in such a way that they would be placed on separate tiers. In particular, Auto-segmental Phonology (ASP) revolves around the strong assumption that tones and the segments (vowels and syllabic consonants) that bear them are autonomous of each other; therefore, the former are abstractable from the latter. On this premise, it is proposed that tones should be represented on the tonal tier and the tone-bearing units, on the segmental tier. This proposal contravenes the previous claim in the classical generative framework (Chomsky and Halle's (1968) *The Sound Pattern of English*) that segmental and suprasegmental units are housed in the same feature system. That is, they are inseparable. Although the two sets of features are assumed to be independent or autonomous within the framework of ASP, it is proposed that they are linked with each other by association lines. Another significant departure from its predecessor concerns the approach to phonological analysis: while its predecessor favoured a linear approach, ASP's approach is non-linear. Notwithstanding the noticeable differences between GP and ASP, intermediate levels of derivation are also recognized in ASP just as in GP (Ajiboye, 2020) thus, ASP is also derivational in its modus operandi.

The tenets of ASP are anchored on a universal convention popularly known as the *Well Formedness Condition* (WFC). This convention is interpretable in the context of four fundamental principles outlined in Durand (1990), as cited in Oyebade (2018, 114). These principles are presented below:

- (a) Mapping: Associate vowels with tones in a one-to-one fashion from left to right until we run out of tones or vowels.
- (b) Dumping: If after applying [mapping] some tones are still free (that is, unassociated), link them to the last vowel to the right.
- (c) Spreading: If after applying [mapping] some vowels are still free, link them to the last tone on the right.
- (d) Association lines are not allowed to cross.

It should be borne in mind that, although the principles of ASP were first applied to tonal phenomena, subsequent adaptations of the theory gave room for its diverse applications to other aspects of suprasegmental phonology such as vowel harmony, nasality, and so on (Clark, Yallop & Fletcher, 2007; Oyebade, 2018). A sketch of the theory's modus operandi is aptly illustrated in (1) and (2) for tone-to-vowel association in Yorùbá and nasality spread in Igbo, respectively.



In (1), the low tone represented as L, which is mapped onto the first vowel, spreads rightward to the second and the third vowels. What the graphic shows is that a single level tone can be set up for all the vowels if they all bear the same tone at the underlying level of representation. In (2), the underlying nasal feature of the intervocalic sonorant /r/ spreads to the following underlying oral vowel such that the vowel ends up acquiring nasality at the phonetic level of representation, thereby delinking it from its underlying feature [-nas].

Data presentation and analysis

As stated in the introduction, derivation of gerundial nouns and deverbal adjectives in Yorùbá is generally posited in the literature to be a product of reduplication which involves copying the initial consonant of a verb base and joining it with a high front unrounded vowel that is prespecified with a high tone [í]. The reduplicant, that is, [Cí], is then prefixed to the base to derive the reduplicated output form. Examples involving mono-morphemic verbs are given in (3).

	Base	Gloss	Output	Gloss
(3)	a. lọ	go	<u>l</u> ílọ	going
	b. jẹ	eat	<u>j</u> íjẹ	eating
	c. sùn	sleep	<u>s</u> ísùn	sleeping
	d. rà	buy	<u>r</u> írà	buying
	e. fọ	wash	<u>f</u> ífọ	washing
	f. bè	beg	<u>b</u> íbẹ	begging
	g. sọ	say	<u>s</u> ísọ	saying
	h. kú	die	<u>k</u> íkú	dying
	i. pọ̀n	fetch	<u>p</u> ípọ̀n	fetching
	j. rún	squeeze	<u>r</u> írún	squeezing

The output forms in (3) consistently show that the reduplicant consists of a copy of the verb's consonant together with [í] which is not represented in the base.² For this reason, it

² For clarity of representation, the underlined phonological materials in the output forms constitute the reduplicant while the plain ones constitute the base.

has been hitherto argued that the derivation of the deverbal nouns in (3) involves (partial) reduplication. Secondly, the pattern of reduplication has been widely purported as an instantiation of prefixation since the reduplicant is prepended to the base in the final derivation. In fact, it is as a result of this observation that Eleshin (2017), for example, proposes a single type of reduplication for Yorùbá – full or total. This study, however, argues that the derivation in (3) is neither a product of reduplication nor an instantiation of prefixation. The argument is presented as follows:

On the one hand, gerundial nouns and deverbal adjectives in Yorùbá are not derived by reduplication for two reasons. First, the so-called reduplicant is made up of two phonological materials, one of which is exactly a copy of the initial consonant of the verb base, and the other a fixed phonological unit, both segmentally and tonally, that is supplied by the phonological grammar of Yorùbá. The fixity of the vowel [í] in the reduplicant which surprisingly does not bear any resemblance with any of the phonological materials in the base is testament to the fact that the derivation is purely phonological rather than morphological. Let us even assume that the initial consonant of the base is actually copied. The issue, however, gets complicated given the obvious fact that the so-called initial consonant copying would never produce a well-formed structure unless the insertion of the high-toned vowel is appealed to. Of course, one is at liberty to argue that the copying and the insertion processes empirically illustrate the convergence of morphology and phonology. But the question is: If the derivation of such forms can be accounted for within a single compartment of the grammar, phonology in this case, why then do we have to gratuitously make reference to interface phenomena? After all nothing would be lost if the analysis is confined to phonology.

Second, it is weird that irrespective of the phonological size of the base, only its initial consonant can be copied. The data in (4) and (5) below present verb phrases that have more phonological segments than mono-morphemic or monosyllabic verbs which were presented in (3) above. Still, only the initial consonant of the stem is duplicated.

	VP	Gloss	Stem	Output	Gloss
(4)	a. jẹ – é	eat it	jeé	jíjẹé	eating it
	b. mu – ú	drink it	muú	mímuú	drinking it
	c. bi – í	ask her	bíí	bíbíí	asking her
	d. ẹ – é	do it	ẹé	şíşẹé	doing it

e. kọ – ọ	write it	kọ́ọ	kíkọ́ọ	writing it
f. rà – á	buy it	ràá	ríràá	buying it
g. sè – é	cook it	sèé	sísèé	cooking it
h. bù – ú	scoop it	bùú	bíbùú	scooping it
i. tì – í	push her	tíí	títíí	pushing her
j. bè – é	beg him	bèé	bíbèé	begging him
k. yí – í	falsify it	yíí	yíyíí	falsifying it
l. wá – a	search for her	wáa	wíwáa	searching for her
m. gé – e	cut it	gée	gígée	cutting it
n. fọ – ọ	break it	fọ́ọ	fífọ́ọ	breaking it
o. rán – an	send him	rán-an	rírán-an	sending him

	VP	Gloss	Stem	Output	Gloss
(5)	a. sá – eré	run race	sáré	sísáré	running
	b. wò – ilé	enter house	wólé	wíwólé	entering the house
	c. rà – ojà	buy market	rajà	rírajà	buying of goods
	d. fọ – aṣọ	wash cloth	fọṣọ	fífọṣọ	washing of cloths
	e. lọ – ata	grind pepper	lọta	lílọta	grinding of pepper
	f. mú – ara	take body	múra	mímúra	preparation
	g. jó – ilé	burn house	jólé	jíjólé	burning of house
	h. gbà – ọbẹ	collect soup	gbọbẹ	gbíggbọbẹ	collecting of soup
	i. jẹ – oyè	eat title	joyè	jíjoyè	conferment of title
	j. tà – àgbàdo	sell maize	tàgbàdo	títàgbàdo	selling of maize

It is awkward to claim that reduplication is in place in (4) and (5) when it is only one segment that is copied. Thus, this study proposes that copying just one segment from the base or stem does not pass for a process of reduplication; for reduplication to take place, at least two segments must be duplicated. In line with this proposal therefore, cases such as those in (3-5) should simply be phonologically characterised as a process of consonantal feature spreading. Again, if the account of the derivation of gerundial nouns in Yorùbá does not defy the domain of phonology, why then making recourse to morphology where it is dubiously analysed as a process of reduplication?

On the other hand, the so-called gerundive pattern of reduplication in Yorùbá is different from the canonical pattern of prefixation in the language. Therefore, it cannot be analysed

as an instantiation of prefixation. In specific terms, the reason the pattern of derivation in (3-5) cannot be analysed as being prefixal is because the canonical prefixes in Yorùbá are morphologically fixed in the lexicon of the language (e.g., à-, í-, è-, o-, ì-, è-, a-, àì-, òh-, àti-, oní) and they select the base to which they will be attached. For instance, some are attached to a base to derive agentive nouns, some are used to derive instrumental nouns, some are used to derive inanimate nouns, some derive animate nouns, while others derive abstract nouns.³ On the contrary, the partial reduplicant [Cí] is not fully fixed: only the vowel [í] is fixed, whereas the phonetic content of the consonant [C] is uniquely determined by the initial consonant of the base. However, if the base has a high front unrounded nasal vowel [ĩ], only then would the epenthetic vowel become nasalized; otherwise, the vowel remains oral. This implies that the nasality of the epenthetic vowel is contextually governed. Barring this context-driven case, the epenthetic vowel is usually fixed in terms of segmental feature and tonal specification. Consider the data in (6) for empirical illustration.

	Base	Gloss	Output	Gloss	
(6)	a. yìn	praise	<u>yín</u> yìn	praising	
	b. yàn	choose	<u>yí</u> yàn	choosing	* <u>yín</u> yàn
	c. fín	spray	<u>fín</u> fín	spraying	
	d. fọ̀n	blow	<u>fí</u> fọ̀n	blowing	* <u>fín</u> fọ̀n
	e. kín	support	<u>kín</u> kín	supporting	
	f. kún	be full	<u>kík</u> kún	being full	* <u>kín</u> kún
	g. sín	bury	<u>sín</u> sín	being buried	
	h. tán	finish	<u>tít</u> tán	being finished	* <u>tín</u> tán
	i. rìn	soak	<u>rín</u> rìn	being soaked	
	j. wọ̀n	measure	<u>wí</u> wọ̀n	being measured	* <u>wín</u> wọ̀n

The asterisked forms in (6) are aberrant in the language because the base's vowel is not a high front unrounded nasal vowel [ĩ] – they are [ã], [õ] and [ũ].

Another way [Cí] differs from the canonical prefixes in Yorùbá is that it can be associated with any kind of verb in the language unlike the latter that invariably select the verb base to which they will be attached. Put in another way, all monosyllabic verbs and even complex verb phrases in Yorùbá can undergo the kind of transformation under consideration in which a gerundial noun is derived, as shown in (7a). This is not so with

³ See Eleshin (2017) for a detailed classification of the various types of nouns derived by Yorùbá prefixes.

the canonical prefixes, as some select some kinds of bases or stems while others select other kinds, as shown in (7b).

(7) a. [Cí] selecting any kind of verb and verb phrases

- | | | | | | |
|------|-----------|---------------|---|--------------|---------------------|
| i. | wẹ | ‘bathe’ | → | wíwẹ | ‘bathing’ |
| ii. | mu | ‘drink’ | → | mímu | ‘drinking’ |
| iii. | wọlé | ‘enter house’ | → | wíwọlé | ‘entering of house’ |
| iv. | sáré | ‘run’ | → | sísáré | ‘running’ |
| v. | gbowó òde | ‘collect tax’ | → | gbígbowó òde | ‘collection of tax’ |

b. Canonical prefixes portraying selectional restrictions

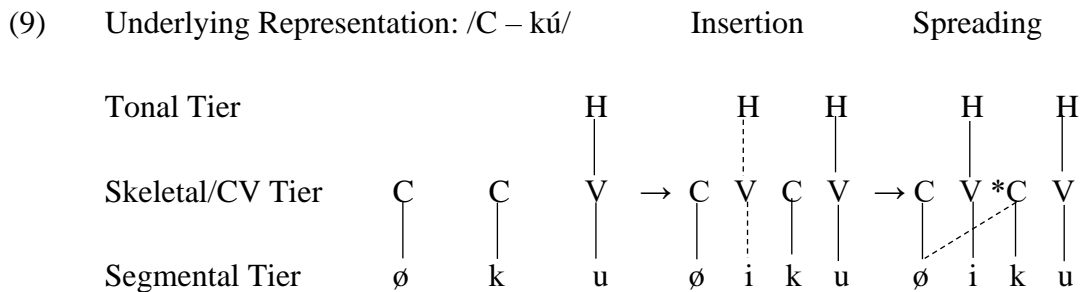
- i. wẹ → iwẹ ‘bath’; àiwẹ ‘not bathing’; but not *ẹwẹ, *òwẹ, *ewẹ, *ẹwẹ, *iwẹ.
- ii. mu → ẹmu ‘palm wine’; imu ‘drinking’; but not *imu, *ọmu, *òmu, *omu, *èmu, *òhmu.
- iii. wọlé → àiwọlé ‘not entering the house’; but not *ẹwọlé, *awọlé, *àwọlé, *oníwọlé.
- iv. sáré → àtisáré ‘the act of running’; àisáré ‘not running’; but not *onísáré, *ònsáré, *àsáré, *èsáré, *osáré, *esáré.
- v. gbowó òde → agbowó òde ‘tax collector’; but not *egbowó òde, *ogbowó òde, *igbowó òde, *ògbowó òde, *àgbowó òde, *òngbowó òde, *onígbowó òde.

In a nutshell, the so-called [Cí] reduplicant is not prefixed to the base in any way. Rather, it is best to view it as a situation whereby the initial consonant of the base spreads its feature leftward to an abstract phonological slot which is a *shadow* of an underlying consonant. In order to get rid of the consonant cluster created after spreading, vowel [í] is then epenthesized between the derived consonant and the initial consonant of the base or stem. Interestingly, insertion of vowel [í] and, of course, any other kind of vowel is not a new information about Yorùbá phonology, not least in respect of its treatment of loanwords. Consider the examples in (8) of how loanwords of English origin are adapted in Yorùbá by vowel insertion to get rid of consonant clusters and closed syllables. The epenthetic vowels are in bold.

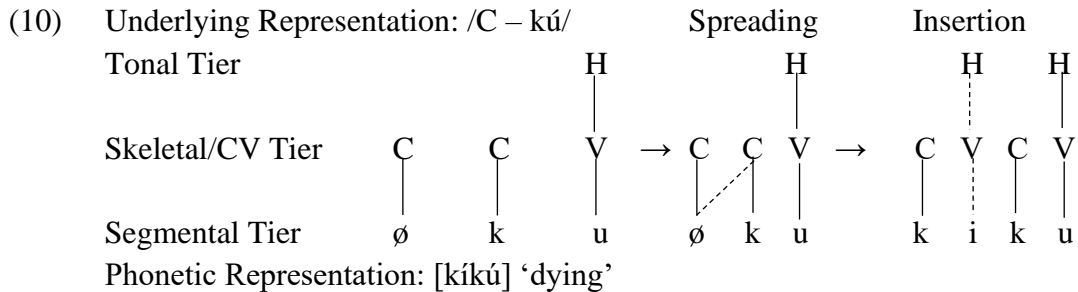
- | | | | | |
|-----|---------|---|--------------------|---------|
| (8) | /bred/ | → | [b ú rédì] | ‘bread’ |
| | /sleit/ | → | [s í lèètì] | ‘slate’ |
| | /blɔk/ | → | [b ú lòkù] | ‘block’ |
| | /fəʊn/ | → | [f ó ònù] | ‘phone’ |

/fɔ:k/ → [fò̀kì] ‘fork’

Following the foregoing chain of argumentation, this article proposes that the output form *kíkú* ‘dying’, for example, is derived from the following input: /C - kú/ where the ‘C’ is an abstract phonological unit (a consonant) that is otherwise devoid of featural content. The abstract feature only receives its interpretation at the phonetic level of representation via spreading of the consonantal features found at the initial position of the base or root morpheme. The two processes (spreading and insertion) must apply in the given order and not otherwise for an obvious reason: if insertion (i.e., prothesis) were to apply first, spreading would be blocked due to lack of adjacency between the abstract Consonant-Slot (C-Slot) and the base’s initial consonant. Within the ambit of the Auto-segmental Phonology, applying the spreading rule after the insertion rule would inevitably lead to crossing of association lines, a move that runs afoul of the well-formedness principle of the theory which stipulates that “association lines must not cross”. The ill-formed derivation arising from reversing the order of the rules is provided in (9).

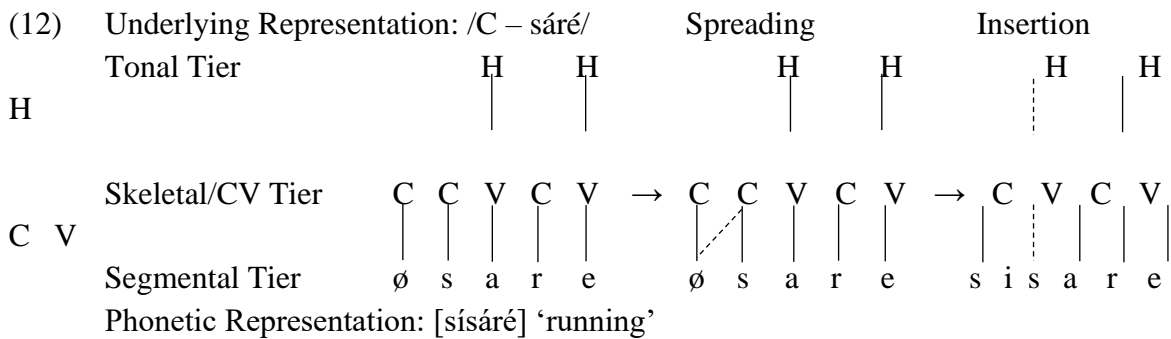
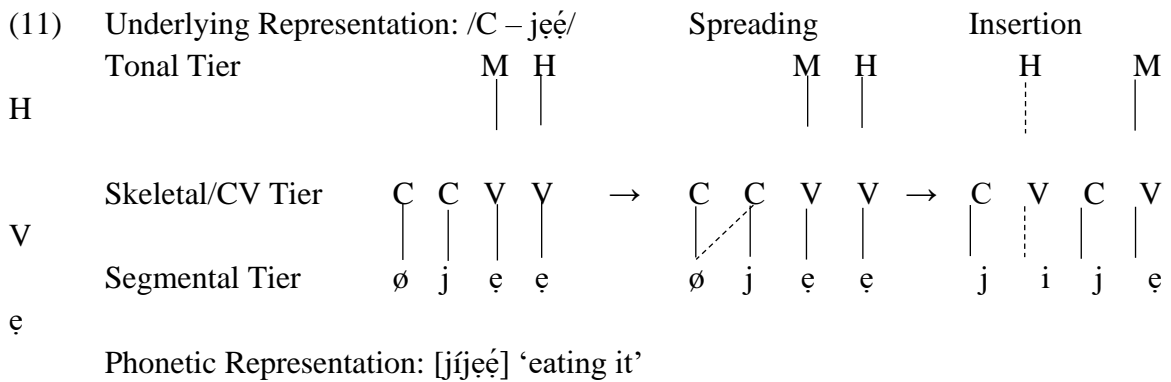


As illustrated in (9), the spreading of /k/ to the phonetically empty slot /∅/ crosses the association line linking the epenthesized vowel [i] with the skeletal tier. Conversely, once the spreading rule has successfully applied, the default vowel [í] can then be inserted in the appropriate phonological context with the aid of an association line. Note that the insertion rule is motivated by the need to break the illicit cluster of consonants created after the spreading rule, given the fact that consonant clusters are generally prohibited in Yorùbá. The derivational journey is presented in (10).



In (10), at the underlying segmental tier, the phonologically abstract C-Slot is represented with a null symbol /∅/ simply because the supposed underlying segment lacks phonetic interpretation. The abstract ‘C’ must be part of the input so as to prepare a slot to which the initial consonant of the base or stem would spread. In other words, the abstract entity which is a *shadow* of an underlying consonant must be visible to spreading with respect to consonantal features. Thus, the segment becomes fully interpreted after spreading has taken place. Note that all the consonantal features inherent in the initial segment of the base must be spread, analogous to what is known as total assimilation. The derivation becomes complete after an insertion of the default [i].

In light of the above analysis, this study contends that the derivation of *kíkú* ‘dying’ (from *kú* ‘die’), as an illustrative example, is not a function of interface relation involving morphology and phonology, as insinuated in Pulleyblank (2009) and Orié (2012) where it is analyzed as gerundive reduplication (hence, morphology) that is phonologically driven, in addition to claiming that such pattern of reduplication is prefixal (again, morphology) in nature. Rather, it suffices to argue that the entire derivation is solely a function of phonology. The transformation of the base to derive the output form is strictly phonologically driven by two rules operating in a feeding relationship – consonantal feature spreading and vowel insertion. Consequently, the derivational journey of *kíkú* portrayed in (10) is exclusive of the morphological grammar of Yorùbá – it is neither driven by partial reduplication nor functions as prefixation, as it is widely believed in the existing studies. Two other items are analysed in (11) and (12) in order to corroborate the foregoing proposal.



The foregoing analysis, via the application of the principles of ASP, has clearly shown that what previous studies have treated as gerundive reduplication can simply be accounted for in terms of spreading within the realm of phonology. ASP assumes that segmental and suprasegmental features are autonomous; they are only linked together by association lines. As the analysis has shown, the abstractable features of the initial consonant of a verb base are linked to a C-Slot so that the abstract features can receive full phonetic interpretation by spreading. For the gerundial noun to be eventually well-formed, insertion has to be invoked, a process which ASP can equally account for. One crucial thing to note in the analysis is that, whereas the mapping of the corresponding tiers is done in a one-to-one fashion in accordance with WFC, the direction of spreading contradicts the stipulation of WFC: it is from right to left rather than left to right, as demanded by the convention. This apparent contradiction is not new in the literature (see Oyebola, 2003; Sanusi, Adeagbo & Rafiu, 2015; Afeez & Rafiu, 2016, among others). It only empirically shows that theories can be adapted to account for a set of language data and not vice versa.

Conclusion

The central argument of this article is that derivation of gerundial nouns (and deverbal adjectives) in Yorùbá is not morphologically driven by reduplication but rather a purely phonological phenomenon that is characterized by two phonological processes that must apply in a transitive order: consonantal feature spreading and vocalic insertion. The initial consonant of a verb stem or base spreads its entire features leftward to an abstract Consonant-Slot (C-Slot) which lacks phonetic interpretation at the underlying representation but whose featural content is visible at the surface (phonetic) representation. The process of spreading then creates an illicit structure of consonant cluster which must be repaired by vowel epenthesis due to the general phonotactic constraint in Yorùbá which forbids consonant clusters. The default vowel that is inserted is a high front unrounded vowel that is prespecified with a high tone [í]. Consequently, the paper argued that the so-called reduplicant [Cí] is never prefixed to the base as it is generally assumed in the previous studies; rather, both the spreading of the base's initial consonant and the insertion of the default vowel conspire to produce a set of well-formed expressions known as deverbal nouns and adjectives in Yorùbá. The insights drawn from Auto-segmental Phonology have provided a way of giving a more principled account of the derivation of such grammatical categories strictly within the domain of phonology without resorting to morphology or the interface relation between morphology and phonology.

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