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A CONSTRAINT-BASED ACCOUNT OF THE AGENTIVE PREFIX 'ONÍ-' IN THE STANDARD YORÙBÁ

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Abstract:

When attached to vowel-initial nouns to derive agentive nominals, the prefix /oní-/ 'owner/seller/doer/agent of' in the Standard Yorùbá transforms to five morphologically related variants – [al-], [el-], [ẹl-], [ol-], and [ọl-] – whose transformation is induced by four distinct phonological processes: vowel deletion, consonant denasalization, vowel assimilation, and tone docking. The rule-based approach employed in the existing studies to account for the phenomenon appears unnecessarily complex and analytically deficient in explaining how the processes fit together. It is against this backdrop that the present study proposed a constraint-based analysis within the framework of Optimality Theory, which explains the transformational journey of the agentive prefix in a parallel fashion. Data were obtained from 3 (2 males, aged 60 and 72; and 1 female, aged 62) native speakers of the Standard Yorùbá who permanently reside in the south-west of Nigeria, where the language under investigation is predominantly spoken, and a few others were adapted from previous studies. Within the premise of the approach adopted, the paper argued that the well-formedness of the variants (allomorphs) of /oní-/ is generally governed by a set of alignment, markedness, and faithfulness constraints whose ranking captures the four phonological processes in a uniform manner. Therefore, the paper posited that rather than postulating multiple unrelated phonological rules to account for the variants of the prefix, a single hierarchy suffices: NO-HIATUS, NO-FLOAT[TONE], MAX(GRWD) >> ALIGN[VOC]-L >> IDENT(AFX) >> MAX(AFX). The paper concluded that the simplicity of a constraint-based analysis has some implication for

language pedagogy in terms of learnability: a simple grammar is easier to learn than a complex one.

Keywords: Agentive prefix /oní-/, Generative Phonology, Language Pedagogy, Optimality Theory, Standard Yorùbá

1. Introduction

Previous studies on the transformation that the agentive prefix **/oní-/** 'owner/seller/doer/agent of' in the Standard Yorùbá (SY) (Benue-Congo, Nigeria) undergoes when it is attached to some stems, which are usually nouns, to derive agentive nominals are largely morphological while the phonological ones (e.g., Akinlabi & Oyebade 1987; Awobuluyi & Oyebade 1995; Oyebola 2004; Oyebade 2010, 2018) are rule-based in their analytical approach. When the prefix is appended to nominal roots beginning with a consonant or a high front vowel [i], its output form is invariant or slightly modified, as shown in (1) and (2), respectively.

(1)   a.   oní + fìlà → onífìlà   'owner/seller of cap'

        b.   oní + bàtà → oníbàtà   'owner/seller of shoe'

        c.   oní + gèlè → onígèlè   'owner/seller of headdress'

        d.   oní + dòdò → onídòdò   'owner/seller of plantain'

        e.   oní + mọ́í-mọ́í → onímọ́í-mọ́í   'owner/seller of mọ́í-mọ́í'

(2)   a.   oní + iṣu → oníṣu   'owner/seller of yam'

        b.   oní + igi → onígi   'owner/seller of tree/firewood'

        c.   oní + ike → oníke   'owner/seller of plastic'

        d.   oní + ìkòkò → oníkòkò   'owner/seller of pot'

        e.   oní + ìlẹ̀kùn → onílẹ̀kùn   'owner/seller of door'

Whereas the entire segmental and tonal materials of the prefix are faithfully parsed in the output in (1), the prefix's second vowel [i] is elided, albeit without its high tone, in (2).

        However, there is another morphological configuration where **/oní-/** can be phonetically realized as five morphologically related variants but whose individual

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phonological shape is sensitive to the featural specificaton of the initial vowel of the nominal root to which it is prefixed. Consider the examples in (3).

(3)   a.   **oní + ata → aláta**   'owner/seller of pepper'

        b.   **oní + ɛpo → elɛ́po**   'owner/seller of palm oil'

        c.   **oní + ẹran → ẹlẹ́ran**   'owner/seller of meat'

        d.   **oní + omi → olómi**   'owner/seller of water'

        e.   **oní + ọjà → ọlọ́jà**   'owner/seller of goods'

In (3), the agentive prefix is transformed to **[al-]**, **[el-]**, **[ẹl-]**, **[ol-]**, and **[ọl-]**, respectively. Within the rule-based generative framework, the modification is analyzed as being induced by four distinct phonological processes, namely vowel deletion, consonant denasalization, vowel assimilation, and tone docking. The rule-based approach employed in the literature to account for the phonological transformation of the prefix is quite laudable, at least by providing a systematic way of analysing its transformational journey. However, as laudable as the methodology may look, it still appears deficient in explaining how the phonological operations which the prefix undergoes fit together in the phonological grammar of SY. Moreover, the approach seems unnecessarily complex, as about four distinct phonological rules need to be postulated when an alternative approach is capable of achieving the same goal in a very simple and uniform manner.

It is against this backdrop that the present study proposes a constraint-based approach, within the Optimality Theory paradigm, whose main aim is to show that the transformational journey of the prefix can be accounted for in a parallel fashion as opposed to serial derivation. Within the ambit of this alternative analysis, it will be shown that the morphological variants (allomorphs) of **/oní-/** are governed by a set of alignment, markedness, and faithfulness constraints whose ranking captures the four phonological processes in a uniform manner. In particular, it will be shown that there is no need for postulating multiple unrelated phonological rules, which must also be ordered in a certain way, to account for the context-dependent variants of the prefix since a single constraint hierarchy can formally express its phonological transformation.

2.   The Agentive Prefix /oní-/ in Standard Yorùbá and the Rule-Based Account

Prefixation is a very productive word formation process in Yorùbá, and one of such types involves prepending the bound morpheme **/oní-/** to a root word to derive a class of lexical items commonly referred to as 'agentive constructions' in the existing literature on Yorùbá morphology. Of all the studies on Yorùbá affixing morphology, the account of /oní-/ is the most widely engaged, ranging from its semantic characterization to positing its actual underlying form. Over the years, different proposals have been put forward (see Bamgbose 1963, 1986, 1990, 1995; Awobuluyi 1967; Oyelaran 1971; Akinlabi & Oyebade 1987; Oyebola 2003, 2004; Ogunkeye 2005/2006; Owolabi 2011; Arokoyo 2017; Oyebade 2018). Among the various proposals, the most salient is the rule which converts /n/ to [l]. It is also interesting to know that some of the existing studies even recognize **/oní-/** and **/oni-/** as two distinct agentive prefixes in Yorùbá (e.g., Bamgbose 1986; Owolabi 1995; Ogunkeye 2005/2006; Taiwo 2011). Also, contrary to the traditional account of **/oní-/** as a single-unit prefix, a number of studies have proposed that the prefix is decomposable into two separate morphemes where **o-** is analyzed as a prefix while **ní** is a verb meaning 'to have' (Adewole 1995; Awobuluyi 2008; Eleshin 2017). Although the present study would not be drawn into the arguments on the phenomenon, it lends credence to positing **/oní-/** as the underlying form of the categories of agentive constructions under investigation and, most importantly, contends that a constraint-based framework handles the issue better than the existing rule-based proposals.

Apart from the fact that this pattern of prefixation is unique in that the prefix is typically attached to nouns to derive 'larger' nouns, it is also a dynamic one considering the fact that the well-formedness of the derived noun is governed by an operation (or non-operation) of a number of phonological processes. Depending on the phonological structure of the root noun to which it is appended, the prefix manifests three morphological forms of different categories. The prefix is *unmodified* when it is prepended to consonant-initial nouns; when it is prefixed to vowel [i]-initial nouns, it is *slightly modified* by having its final vowel deleted but retaining its underlying high tone; and it is *radically modified* by an operation of an array of phonological processes when it is added to nouns beginning with any of the following vowels: a, e, ẹ, o, and ọ. Refer to data (1), (2), and (3), respectively, for empirical illustration of these generalizations.

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The third set involving radical modification is of particular interest in this paper for an obvious reason: its derivational well-formedness is triggered by a complex phonological operation. Within the rule-based generative account (e.g., Akinlabi & Oyebade 1987; Awobuluyi & Oyebade 1995; Oyebola 2004; Oyebade 2010, 2018), the modification is driven by three segmental phonological processes that are in turn formalized by their corresponding phonological rules: (i) deletion of the prefix's final vowel but without its high tone; (ii) denasalization of /n/ to [l]; and (iii) long distance assimilation of the initial vowel of the prefix to the root noun's initial vowel. A tone-centric rule, high tone re-linking or docking, is then added to complete the systematic derivation. A sample derivation is shown in (4) for **/oní + epo/ → [elépo]** 'seller/owner of palm oil'.

(4) Underlying Representation: /oní + epo/
    Rule 1: vowel deletion   on´ epo
    Rule 2: consonant denasalization   ol´ epo
    Rule 3: vowel assimilation   el´ epo
    Rule 4: tone docking   elépo
    Phonetic Representation: [elépo]

As interesting as the transformational journey of the phonetic realization of **/oní-/** presented in (4) looks, there are two issues surrounding such approach. One, the multiplicity of phonological rules involved in the derivation can create a tendency of two analysts independently presenting two different patterns of rule ordering. As an example, while Akinlabi and Oyebade (1987), Awobuluyi and Oyebade (1995), Bamgbose (1990), and Oyebade (2010, 2018) are united in analyzing the denasalization rule as applying before the assimilation rule, Arokoyo's (2017) proposal presents the opposite picture: assimilation before denasalization. Whether denasalization applies before assimilation or vice versa remains open for debate. In fact, one could alternatively argue for a simultaneous application of the two rules owing to the fact that the same output would still be obtained regardless of the precedence relation holding between them. Such proposal, however, would run afoul of the principle of 'linear sequential ordering' characterizing the application of rules in the standard Generative Phonology (GP). As highlighted in Sommerstein (1977) and extensively discussed in Oyebade (2018), the phenomenon of rule ordering itself constitutes one of the issues confronting GP.

Also, Oyebade (2018) offers a possibility of positing **/olĩ-/** as the underlying form in which nasalization of /l/ to [n], as opposed to denasalization, takes place – for example, /olĩ + bàtà/ → [oníbàtà]. Meanwhile, Oyebola (2003, 2004) had posited **/olú-/** as the underlying form for all categories of agentive constructions in Yorùbá, thus giving rise to a similar rule which converts /l/ to [n]. The possibility of positing two alternative underlying representations – **/oní-/** and **/olĩ-/** or **/olú-/** – thereby leading to two alternative rules – denasalization vs. nasalization, respectively – surprisingly reveals one of the limitations of the rule-based approach: rewrite rules are excessively input-driven, they offer little or no insight into the outcome of the derivation. Kager (1999: 57-58) explains this in detail as follows:

> In a derivation the application of a rule solely depends on whether the structural description is met by the output of the immediately preceding rule. Rules are *blind* to their own outputs, which they produce mechanically. Moreover, each rule is blind to the output of the derivation as a whole, which arises only after the last rule has applied. It is thus predicted that the application of a rule can never depend on its eventual consequences at the surface.

A final illustration of the first issue surrounding the rule-based approach demonstrated in (4) is evident in the treatment of the deletion process that operates when **/oní-/** is prepended to vowel [i]-initial nouns (e.g., /oní + ilé/ → [onílé] 'owner of house'). A lack of consensus is again observed in the literature. For example, whereas Owolabi (2011) says that it is the initial vowel /i/ of the base noun that consistently undergoes deletion, Arokoyo (2017) asserts that the final vowel of the prefix is the one that is deleted. Although Owolabi (2011) may be right given the evidence that a high-toned vowel [í] resembling exactly that of the prefix is the one that shows up in the derivation, the prevalent position taken in the literature is that the second vowel of the prefix is the one that gives way but with a retention of its underlying high tone that is eventually relinked to the base noun's initial vowel /i/. Note that this is exactly analogous to the cases where the prefix is attached to nouns beginning

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with all the other vowels except [u]¹. The seemingly inconclusive nature of this argument provides an opportunity to appeal to an alternative analytical approach in which rules have no place.

The second issue arising from the linear rule-based analysis which was sketched in (4) is that it misses a significant generalization about the unique role of some surface-structure constraint licensing those rewrite rules. In particular, there is a surface-structure condition in Yorùbá which forbids a sequence of two adjacent heterosyllabic² vowels linked to two different sets of features both intra-morphemically and inter-morphemically (Orie & Pulleyblank 2002; Ehineni 2017, etc.). If **[oníepo]** were the surface form, this constraint would be violated by the contiguous presence of [í] and [e] at the morphological boundary. Since the actual phonetic realization is **[elépo]** where the [i] of **/oní-/** is elided, the morpheme structure condition is obeyed. Similarly, the need to satisfy the output-based constraint in question motivates the deletion of the final vowel of the prefix when attached to vowel [i]-initial nouns, and the constraint is satisfied vacuously if the root noun to which the prefix is linked begins with a consonant. It could be observed in (4) that it is the first rule, vowel deletion, that opens the door for the remaining rules – denasalization, assimilation, and tone docking – to apply. Thus, one could argue that the vowel deletion rule, in conspiracy with the other rules, applies to ultimately fulfill the surface-based morpheme structure condition described above. This argument has also been upheld by McCarthy (2008: 2) when he says that, "When two or more rewrite rules are involved in a conspiracy, they directly or indirectly support some constraint on surface forms." The rule-based theory, however, lacks a formal mechanism for explaining conspiracies despite the fact that conspiracies are common in the languages of the world (McCarthy 2008).

Kager (1999) made a similar observation by claiming that the rule-based theory is not equipped with the necessary apparatus for predicting the functional unity of processes which generally operate in languages to ensure well-formedness of morphemes. Using the same example to buttress this position, the derivational representation given in (4) only portrays a sequential application of four phonological rules without a formal explanation

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¹ In the Standard Yoruba, there are seven oral and five nasal vowels: a, e, ẹ, i, o, ọ, u, an, ẹn, in, ọn, and un. All the oral vowels except [u] can occur word-initially; whereas none of the nasal vowels can occur in this position.
² The term 'heterosyllabic' means 'belonging to separate syllables'.

of the functional unity inherent among them. This is because the rule-based framework "has no formal means of expressing the notion of 'output goal' of a phonological rule" (Kager 1999: 56). Interestingly, functionally related processes are handled in Optimality Theory (OT) in a straightforward fashion on the prediction that a single markedness constraint, depending on its interaction with some faithfulness constraints, can trigger an array of structural changes even within a single language (Kager 1999).

Given the weakness of the rule-based methodology highlighted above, it is assumed that constraints which are output-oriented in nature would constitute a better alternative. The present study, therefore, aims at demonstrating OT's efficiency in explaining how phonological systems fit together, in this case, the functionally related processes which conspire to convert the Yorùbá agentive prefix **/oní-/** to its various surface alternants when it is added to vowel-initial nouns. Since "OT does not have rewrite rules or anything that resembles them" (McCarthy 2008: 6), a parallel mapping of a set of candidate outputs on the basis of a constraint hierarchy is appealed to at the expense of iterative application of rules. The thesis of this paper is built around the proposal that all the surface realizations of **/oní-/** belonging to the three categories presented in (1), (2), and (3) – unmodified, slightly modified, and radically modified – follow from different rankings of the same set of constraints.

3. Optimality Theory

Optimality Theory (OT, hereafter) is a linguistic model of grammatical analysis proposed by Prince and Smolensky (1993) with the aim of accentuating the universal properties of language through the mechanism of constraints at the expense of rules. OT is not just a theory of phonology but an encompassing theory of grammar. Although it is an offshoot of the generative grammar, it radically differs from the modus operandi of the rule-based generative theory. For instance, OT does not recognize intermediate or multiple levels of representation in which serial derivation takes place via iterative application of rules; rather, evaluation of surface forms is computed over the entire candidate set and the whole hierarchy in a parallel fashion (Kager 1999). OT carries out this task by mapping an input onto an output and evaluating the possible output forms in terms of their well-formedness and relative faithfulness to the input. The evaluation is done with the aid of violable universal constraints that are hierarchically ranked on a language-particular basis.

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The OT grammar is made up of a central component known as Constraints (CON), as well as two crucial functions whose roles in the grammar are inter-dependent: Generator (GEN) and Evaluator (EVAL) (Archangeli 1999). The interconnected operations of these three forces in the grammar of every language is aptly summarized by McCarthy (2007: 4) as follows:

> OT sets up a basic dichotomy between the operational component of the grammar and the constraint component. The operational component, called GEN, constructs a set of candidate output forms that deviate from the input in various ways. The constraint component, called EVAL, receives the candidate set from GEN, evaluates it using some constraint hierarchy, and selects its most harmonic or optimal member as the output of the grammar. The output is referred to as the optimal candidate in OT parlance.

Being a theory of constraints interaction, rather than rules application, OT consists of three families of constraints: Faithfulness, Markedness and Alignment. A constraint is defined as a structural or featural requirement that may be either satisfied or violated by an output form. A form satisfies a constraint if it fully meets the given requirement, while any form not meeting the requirement is said to violate it. According to Prince and Smolensky (2004: 5), "The faithfulness constraints govern the input-output relation by conditions asking for the exact preservation of the input in the output along various dimensions." In other words, "faithfulness constraints are inherently conservative, requiring the output of the grammar to resemble its input" (McCarthy 2007: 5). On the other hand, Blutner et al. (2004), as cited in Hameed and Abdurrahman (2015: 6), claim that markedness constraints impose requirements on the structural well-formedness of the output. Such requirements may take the form of prohibitions of marked phonological structures, including segment types, prosodic structures, or occurrences of segment types in specific positions (Kager 1999). Generally, markedness constraints either demand unmarked configurations or prohibit marked configurations (Archangeli 1999).

Alignment constraints ensure proper matchness or coincidence of edges of morphological and prosodic materials. It is important to point out that alignment constraints were introduced by Prince and Smolensky (1993) originally as part of a theory of morphological infixation. The general idea, according to McCarthy (2008: 181), is that every affix is

associated with a violable constraint aligning it to initial or final position of the word, depending on whether it is a prefix or a suffix. The concept has, however, been extended to other morphological aspects, such as prefixation and suffixation, over the years. Furthermore, alignment within OT is usually interpreted in terms of the distance between the edges of morpho-prosodic constituents (see *inter alia* McCarthy & Prince 1993; Kager 1999; Orie & Pulleyblank 2002; McCarthy 2008). However, this study extends this interpretation to featural configurations, demanding some form of coincidence or resemblance between two distant phonological units, one belonging to the agentive prefix and the other to the grammatical word, that is, the base noun to which the prefix is attached.

4. Methodology

The qualitative methodology was adopted for this research. Data were obtained from 3 (2 males, aged 60 and 72; and 1 female, aged 62) native speakers of the Standard Yorùbá who permanently reside in the south-west of Nigeria, where the language under investigation is predominantly spoken. The three of them were born in the region and at the time of collecting the data from them, they claimed to have been living there right from birth. The language informants were purposively selected based on three fundamental criteria: his/her first language (mother tongue) must be Yorùbá; he/she must be at least 60 years of age; and his/her years of residence at the study area must not be less than 50. My interaction with them revealed that they are competent and fluent speakers of the Standard Yorùbá. I was able to confirm this not only because they all fulfilled the three criteria but also because I am also a competent native speaker of the Standard Yorùbá who could easily identify a fellow competent native speaker via linguistic performance.

A simple wordlist carefully designed by the researcher was used as instrument of data collection. The wordlist was partitioned into two segments; one part comprised 100 Yorùbá basic nouns of various types and their meanings since the agentive prefix attaches to nouns only, and the other segment, also comprising 100 items, contained the structuring of the prefix with the nouns. The wordlist was designed in such a way that would make the informants provide the output forms arising from combining the prefix with the nouns. In a separate but related endeavour, the three language helpers were independently asked to supply 20 Yorùbá basic nouns and thereafter provide the output forms that were derivable from attaching the agentive prefix to them. All the items were read to the language helpers by the researcher and they were told to repeat each item three times so as to ensure

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consistency and accuracy of the data being elicited. Interestingly, the same results were obtained from the three of them: attaching the agentive prefix /oní-/ to a noun produced three morphological categories of 'larger' nouns, which the present study has labelled as *unmodified*, *slightly modified*, and *radically modified*.

With the aid of a digital audio recorder, all the informants' responses were documented in an environment that was devoid of noise. During the entire data elicitation and recording sessions, the researcher implored the language helpers to be as natural as possible, and he also made sure they were as relaxed and unguarded as much as possible. The recorded data were transcribed afterwards and 40 items were randomly selected for analysis. Apart from these, 10 items were adapted from previous studies, namely Bamgbose (1990), Oyebade (2010), and Owolabi (2011). Altogether, 50 data items were presented for analysis in this paper. With respect to the analysis of the data, the researcher employed a descriptive approach that was rigorously grounded in the tenets of OT. The method of analysis was carried out by first of all presenting the selected data, followed by their analyses in the tableaux, and the tableaux were accompanied by explanatory discussions. By and large, the modus operandi of the chosen theoretical framework was judiciously adhered to in the course of analyzing the data.

5. A Constraint-Based Account

The thesis of this study is hinged on the argument that the transformation of the agentive prefix is governed by an interplay of a number of universal constraints which are ranked in Yorùbá to produce the three categories of the agentive constructions under analysis. It is, therefore, expedient to define the relevant constraints before proceeding to a formal analysis of the data. These constraints are presented as follows:

(a) NO-HIATUS

Two adjacent vowels that are linked to different sets of features are banned.
The need to satisfy this markedness constraint actually motivates getting rid of the final vowel of the prefix whenever the prefix is prepended to a vowel-initial nominal root since the configuration creates a sequence of two contiguous vowels at morpheme boundary.

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(b) MAX(AFX)

Every segmental element of an input affix must be preserved in the output.
This faithfulness constraint specifically kicks against deleting the final vowel of the agentive prefix.

(c) IDENT(AFX)

Corresponding input and output elements of an affix must be identical.
This constraint militates against both the denasalization of /n/ to [l] as well as the long-distance assimilation between the affix's and Grammatical Word's initial vowels. Note that denasalization and assimilation lead to a change in corresponding features.

(d) ALIGN-VOCOID (AFX, L; GRWD, L)

A vowel at the left edge of an affix must be aligned with the vowel at the left edge of a Grammatical Word[3].

Although alignment constraints, as originally assumed in McCarthy and Prince (1993), basically serve to measure the distance between the edges of two constituents, subsequent adaptations of the Generalized Alignment (GA) theory, a sub-theory of OT itself, have provided a way of accounting for featural coincidence of edges of two similar or opposing categories (see Akinlabi 1996; Orie 2001; Oyinloye 2020, among others). The constraint defined in (d), which is shortened here as ALIGN[VOC]-L, is feature-based; it requires total harmony between the initial vowel of the agentive prefix and the initial vowel of the GRWD, that is, the nominal root. Thus, ALIGN[VOC]-L is an adapted version of McCarthy and Prince's (1993) component of GA that is associated with two constituents belonging to the same morphological category (Mcat; Mcat). Both an affix and a GRWD are morphological categories.

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[3] The Grammatical Word in this case refers to the nominal root. It is named as such in this paper for the purpose of having a uniform way of characterizing it as a morphological entity like the affix, following the tradition of the Generalized Alignment (McCarthy & Prince 1993).

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(e) NO-FLOAT[TONE]

A tone that is not affiliated with a segmental constituent is banned.
This tone-centric markedness constraint demands that the surviving tone of the elided terminal vowel of the prefix be relinked with the following tone-bearing unit, which is the vowel of the nominal root in this case.

(f) MAX(GRWD)

Every segmental element of an input Grammatical Word must be preserved in the output. In particular, this markedness constraint demands that no segment in the nominal root must be deleted in the final derivation.

In the case of the unmodified category of agentive constructions in Yorùbá, MAX(AFX) and MAX(GRWD) are highly ranked (hence, undominated) because all the segmental and tonal materials of the input affix and GRWD are faithfully parsed in the output. This also implies that IDENT(AFX) and NO-FLOAT[TONE] are vacuously satisfied. Furthermore, since the nominal root begins with a consonant, hiatal configuration is avoided in the final derivation; hence, a satisfaction of NO-HIATUS. Finally, ALIGN[VOC]-L is obeyed by default owing to the fact that the requirement of alignment is not met: the left edge of the prefix is defined by a vowel while that of the GRWD, by a consonant. Put in another way, since no alignment is required between two opposing featural edges, the alignment constraint cannot be violated[4]. In sum, none of the six constraints defined in (a-f) is violated at the morphological level by the unmodified case. Any infractions that may arise would have to exist elsewhere, for example, at the syllable level when ONSET would be violated by the onsetless initial vowel of the prefix. Since syllabification is outside the scope of this paper, such possibility is not explored here. Likewise, given the fact that the derivation of the unmodified case is devoid of transformation of any sort, the analysis is fairly straightforward. Thus, there is no point in subjecting it to a formal analysis in an OT tableau. In fact, the central aim of this paper is the transformation the agentive prefix undergoes when it collocates with a vowel-initial noun.

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[4] Note that the ideal situation to gauge the satisfaction or violation of ALIGN[VOC]-L is when both of the edges of the two morphological constituents are vocoids.

For the slightly modified category, there are two changes that take place: deletion of the prefix's final vowel and tone re-affiliation. These result in a violation of MAX(AFX) and a satisfaction of NO-FLOAT[TONE], respectively. Also, the optimal forms satisfy the remaining constraints except ALIGN[VOC]-L because the left edge (initial vocoid) of the prefix is not featurally aligned with the left edge of the GRWD. The question, therefore, is: Why does featural alignment fail to apply in this case when the left edge of the prefix and that of the GRWD are vocoids? In other words, why does the initial vowel [i] of the GRWD fail to trigger total regressive assimilation of the prefix's initial vowel just as in the radically modified category, after all, the left edges of both morphological constituents are vocoids? Two possible explanations could be made to account for this recalcitrance. The first comes from language internal evidence. Vowel [i] does not usually trigger assimilation in the SY when it is contiguous with another vowel; rather it is usually the 'target' for assimilation. Consider the data in (5) for an illustration.

(5)	a.	ilé – ìwé	iléèwé	'school'	*ilîîwé
	b.	ará – ilé	aráalé	'a family member'	*aríilé
	c.	òjò – ìbùkún	òjòòbùkún	'rain of blessing'	*òjììbùkún
	d.	ará – ìlú	aráàlú	'a community member'	*aríîlú
	e.	iṣẹ́ – ipá	iṣẹ́epá	'compelled assignment'	*iṣíipá
	f.	iṣẹ́ – ilé	iṣẹ́elé	'domestic work'	*iṣíilé
	g.	ilé – ifẹ̀	iléefẹ̀	'a town in Osun state'	*ilíifẹ̀

What the data in (5) clearly show is that, if at all assimilation will occur between vowel [i] and another contiguous vowel, the former cannot be the trigger. This independent evidence in the language readily serves as a pointer to why the initial vowel [i] of the GRWD cannot trigger assimilation of the prefix's initial vowel.

The second explanation is hinged on the core tenet of OT which stipulates that violation of constraints is allowed; only that it must be minimal. By implication, an optimal candidate can violate not just a lowly ranked constraint but also a highly ranked one, so long the candidate fares better on the hierarchy as a whole than its fellow competitors. Based on this assumption, optimal forms belonging to the slightly modified category violate

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ALIGN[VOC]-L under the pressure to preserve lexical contrast in the output. In particular, satisfying IDENT(AFX) takes priority over featural alignment.

From the foregoing discussion, the ranking which produces the optimal forms as far as the slightly modified case of Yorùbá agentive constructions under consideration is concerned is given in (6) while the formal analysis is presented in Tableau 1.

(6) NO-HIATUS, NO-FLOAT[TONE], IDENT(AFX), MAX(GRWD) >> ALIGN[VOC]-L >> MAX(AFX)

Tableau 1: Analysis of **/oní-iṣu/** → **[oníṣu]** 'owner/seller of yam'[5]

/oní-iṣu/	NO-HIATUS	NO-FLOAT[TONE]	IDENT(AFX)	MAX(GRWD)	ALIGN[VOC]-L	MAX(AFX)
☞ a. on[íṣu]					*	*
b. ol[íṣu]			*!		*	*
c. iní [iṣu]			*!			
d. on ´ [iṣu]		*!			*	*
e. in[íṣu]			*!			*

In Tableau 1, one could observe that none of the five candidates is impeccable, as all of them violate at least one constraint each. However, the candidate with the least offences is picked as the winner by the grammar of the language under analysis, and that candidate is (a). Candidates (b), (c) and (e) are knocked out for violating the correspondence constraint

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[5] Note that in Tableau 1 and in the subsequent Tableaux, the grammatical word (GRWD) in each candidate is demarcated using square brackets; an asterisk indicates a violation of a constraint; an exclamation mark after an asterisk indicates a fatal violation; and a pointed finger identifies the optimal candidate, that is, the well-formed item in the language under investigation.

militating against change of features of the input affix whereas candidate (d) is disqualified on the ground that it entertains a floating tone, a move that is forbidden in Yorùbá. By and large, the first candidate is the form that is acceptable in Yorùbá while the rest are ill-formed.

 Turning to the radically modified case which is the major concern of this study, the constraints NO-HIATUS, NO-FLOAT[TONE], MAX(GRWD), and ALIGN[VOC]-L must dominate the constraints IDENT(AFX) and MAX(AFX) for well-formedness to be achieved. The ranking is proposed in (7).

(7) NO-HIATUS, NO-FLOAT[TONE], MAX(GRWD) >> ALIGN[VOC]-L >> IDENT(AFX) >> MAX(AFX)

The given ranking in (7) can be explained in the following way. The terminal vowel of the prefix is elided under the pressure to satisfy the undominated markedness constraint NO-HIATUS. The surviving high tone of the elided vowel then docks on the GRWD's initial vowel so as to avoid a violation of NO-FLOAT[TONE], another highly ranked markedness constraint in Yorùbá. All the segments of the input GRWD are maximized in the output, leading to a satisfaction of MAX(GRWD). Finally, changing the initial vocoid of the prefix to the initial vocoid of the GRWD in order to satisfy ALIGN[VOC]-L and deleting the final vocoid of the prefix in order to satisfy NO-HIATUS imply a violation of IDENT(AFX)[6] and MAX(AFX), respectively.

On theoretical grounds, the crucial difference between the slightly modified category and the radically modified category is expressed by the mutual raking of two contending forces, one involving input-output correspondence (IDENT(AFX)) and the other involving output-based featural alignment (ALIGN[VOC]-L). For the vowel [i]-initial nominal root category, IDENT(AFX) outranks ALIGN[VOC]-L whereas reverse is the case for the 'other vowel'-initial nominal root category. What is, however, common to both cases is the lowest ranking of MAX(AFX) since both of them invoke deletion of the final vowel of the prefix to satisfy NO-HIATUS, as well as the highest ranking of NO-FLOAT[TONE] and MAX(GRWD), in addition to NO-HIATUS. More data on the radically modified type and their corresponding formal analysis are presented as follows:

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[6] Note that denasalization of the input /n/ to the output [l] also leads to a violation of IDENT(AFX).

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5.1 Derivation of **/oní-/** before Vowel [a]-initial Nouns: /oní-/ → [al-]

(8)	a.	**oní – ajá**	**alájá**		'owner/seller of dog'
		pre	dog		
	b.	**oní – àgbàdo**	**alágbàdo**		'owner/seller of maize
		pre	maize		
	c.	**oní – aṣọ**	**aláṣọ**		'owner/seller of cloth'
		pre	cloth		
	d.	**oní – àkàrà**	**alákàrà**		'owner/seller of bean-cake'
		pre	bean-cake		
	e.	**oní – àánú**	**aláàánú**		'a merciful person'
		pre	mercy		
	f.	**oní – àkóso**	**alákòóso**		'manager'
		pre	control		
	g.	**oní – agbára**	**alágbára**		'a powerful person'
		pre	power		

Tableau 2: Analysis of /oní-ajá/ → [alájá]   'owner/seller of dog'

/oní-ajá/	NO-HIATUS	NO-FLOAT[TONE]	MAX(GRWD)	ALIGN[VOC]-L	IDENT(AFX)	MAX(AFX)
a. on[ájá]				*!		*
b. oní[ajá]	*!			*		
☞ c. al[ájá]					**	*

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Tableau 2 presents three competing candidates on the basis of the input **/oní-ajá/**. The first candidate satisfies the three highest ranked constraints: NO-HIATUS, NO-FLOAT[TONE], and MAX(GRWD), just as the last candidate does. This implies that the competition between (a) and (c) is undecided on these three constraints; hence, the need to move further on the hierarchy. The next highly ranked constraint, ALIGN[VOC]-L, however, settles the competition in that (a) violates it fatally by misaligning the left edge of the prefix (defined by vowel [o]) and the left edge of the GRWD (defined by vowel [a]); whereas (c) obeys this constraint via perfect alignment of the left edges of both morphological constituents. For the second candidate, the hiatal configuration at the boundary between the prefix and the GRWD implies a severe violation of the undominated markedness constraint NO-HIATUS. Since the last candidate satisfies the constraint, it is more harmonic with the entire hierarchy than (b), notwithstanding its violations of the last two constraints. In a nutshell, the last candidate wins the competition. The same hierarchy can be used to analyze the rest of the data in (8).

5.2 Derivation of **/oní-/** before Vowel [e]-initial Nouns: /oní-/ → [el-]

(9)   a.   oní – ewúrẹ́   eléwúrẹ́   'owner/seller of goat'
             pre   goat

       b.   oní – ètò   elétò   'a very organized person'
             pre   organization

       c.   oní – èké   elékèé   'liar'
             pre   falsehood

       d.   oní – eré   eléré   'one that is given to play or merriment'
             pre   play

       e.   oní – ebi   elébi   'starved person'
             pre   hunger

       f.   oní – egbò   elégbò   'one that is afflicted with sores'
             pre   sore

       g.   oní – èpè   elépè   'one who curses'
             pre   curse

Tableau 3: Analysis of **/oní-ewúrẹ́/ → [eléwúrẹ́]**   'owner/seller of goat'

/oní-ewúrẹ́/	NO-HIATUS	NO-FLOAT[TONE]	MAX(GRWD)	ALIGN[VOC]-L	IDENT(AFX)	MAX(AFX)
a. oní[ewúrẹ́]	*!			*		
b. ol[éwúrẹ́]				*!	*	*
☞ c. el[éwúrẹ́]					**	*
d. ení[ewúrẹ́]	*!				*	
e. on[éwúrẹ́]				*!		*

Given Tableau 3, candidates (b), (c) and (e) satisfy the first three constraints which are undominated in the hierarchy. This means that no winner can be determined yet. Moving further on the hierarchy, (b) and (e) incur fatal violations of the alignment constraint, which is otherwise obeyed by (c). By implication, EVAL prefers (c) to (b) and (e) as far as their relative harmony with the given constraint hierarchy is concerned. On the other hand, candidates (a) and (d) also lose to candidate (c) for fatally violating the markedness constraint which disprefers an occurrence of two contiguous non-identical vowels. By and large, the third candidate is the observable form in Yorùbá, and it is referred to as the optimal candidate in optimality-theoretic term. All the other items in data (9) can be successfully accounted for using the same constraint hierarchy deployed in Tableaux 2 and 3.

5.3 Derivation of **/oní-/** before Vowel [ẹ]-initial Nouns: **/oní-/ → [ẹl-]**

(10)   a.   **oní – ẹran**   **ẹlẹ́ran**   'owner/seller of meat'
             pre   meat

       b.   **oní – ẹ̀pà**   **ẹlẹ́pà**   'owner/seller of groundnut'
             pre   groundnut

c.	oní – ẹyin	ẹléyin	'owner/seller of egg'
	pre egg		
d.	oní – èṣè	ẹléṣè	'sinner'
	pre sin		
e.	oní – ẹja	ẹléja	'owner/seller of fish'
	pre fish		
f.	oní – ètàn	ẹlétàn	'deceiver'
	pre deceit		
g.	oní – èkọ	ẹlékọ	'owner/seller of pap'
	pre pap		

Tableau 4: Analysis of /oní-ẹran/ → [ẹléran] 'owner/seller of meat'

/oní-ẹran/	No-Hiatus	No-Float[TONE]	Max(GrWd)	Align[Voc]-L	Ident(Afx)	Max(Afx)
a. ẹlí[ẹran]	*!				**	
b. on[éran]				*!	*	*
c. ẹlí[ran]			*!		**	
☞ d. ẹl[éran]					**	*
e. ẹl ´ [ẹran]		*!			*	*

No candidate is perfect in Tableau 4, as candidates are not expected to be perfect in OT, anyway. According to the tenet of the theory, candidates with severe violations are less preferred to those with minimal violations. It is on the basis of this that EVAL selects candidate (d) as the optimal form because it is the only candidate that does not incur fatal violations. The analysis in Tableau 4 is representative of how the constraint hierarchy proposed in (7) and which is used hitherto can also be utilized to analyze the remaining items in data (10).

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5.4 Derivation of /oní-/ before Vowel [o]-initial Nouns: /oní-/ → [ol-]

(11) a. **oní – oyún**   **olóyún**   'a pregnant woman'
          pre   pregnancy

      b. **oní – òkìkí**   **olókìkí**   'a famous person'
          pre   fame

      c. **oní – òtítọ́**   **olótìítọ́**   'a truthful person'
          pre   truth

      d. **oní – òróró**   **olóròóró**   'owner/seller of groundnut oil'
          pre   groundnut oil

      e. **oní – oko**   **olóko**   'owner of farm'
          pre   farm

      f. **oní – orí**   **olórí**   'leader'
          pre   head

      g. **oní – òfófó**   **olófòófó**   'a person who gossips'
          pre   gossip

Tableau 5: Analysis of **/oní-oyún/ → [olóyún]**   'a pregnant woman'

/oní-oyún/	NO-HIATUS	NO-FLOAT[TONE]	MAX(GRWD)	ALIGN[VOC]-L	IDENT(AFX)	MAX(AFX)
☞ a. ol[óyún]					*	*
b. oní[oyún]	*!					
c. l[óyún]					*	**!
d. ol ´ [yún]		*!	*		*	*

The worst candidate in Tableau 5 is the last one in that it runs afoul of two highest ranked constraints for entertaining a floating tone and deleting the first segment of the grammatical word, that is, the nominal root. The constraints violated are NO-FLOAT[TONE] and MAX(GRWD), respectively. For these reasons, it is knocked out of contention. Candidate (b) preserves all of the input segments; hence, it satisfies all the three faithfulness constraints in the hierarchy, namely MAX(GRWD), IDENT(AFX), and MAX(AFX). Interestingly, it also satisfies the alignment constraint (ALIGN[VOC]-L) just as all the other candidates do. However, failure to delete the second vowel of the prefix in order to get rid of the hiatal structure at the boundary between the prefix and the grammatical word forces it to flout the undominated markedness constraint NO-HIATUS. Therefore, it is ruled out as the winner.

One could observe a very tight competition between candidates (a) and (c). They both obey the first four constraints and equally violate the last but one constraint. This implies that the competition extends to the last constraint in the hierarchy. The hallmark of OT is that constraint violation is permitted, only that it must be minimal. The two candidates violate MAX(AFX), the last constraint, but at varying degrees: while (a) does so on a single point, (c) does so on two points. Since an additional violation on the given constraint is forbidden (fatal), candidate (a) wins the competition. It is important to state that the choice of candidate (a) over candidate (c) is consistent with the principle of economy in OT which says *do only when it is necessary.* In this light, although deleting the second vowel of the prefix is required for well-formedness, any other deletion becomes unsolicited. Candidate (c) deletes the first vowel of the prefix, in addition to deleting its second vowel, thereby leading to a violation of the principle.

5.5 Derivation of /oní-/ before Vowel [ọ]-initial Nouns: /oní-/ ⇢ [ọl-]

(12) a. oní – ọ̀pá   ọlọ́pàá   'a policeman/owner of rod'
          pre   rod

      b. oní – ọsàn   ọlọ́sàn   'owner/seller of orange'
          pre   orange

      c. oní – ọpọlọ   ọlọ́pọlọ   'a brainy person'
          pre   brain

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d.   **oní – ọlá**   ọlọ́lá   'an honourable person'
      pre   honour

e.   **oní – ọtí**   ọlọ́tí   'a drunkard'
      pre   alcohol

f.   **oní – ọta**   ọlọ́ta   'owner/seller of bullet'
      pre   bullet

g.   **oní – ọkọ**   ọlọ́kọ   'owner of husband'
      pre husband

Tableau 6: Analysis of **/oní-ọ̀pá/** → **[ọlọ́pàá]** 'a policeman/owner of rod'

/oní-ọ̀pá/	NO-HIATUS	NO-FLOAT[TONE]	MAX(GRWD)	ALIGN[VOC]-L	IDENT(AFX)	MAX(AFX)
a. ọlí[pàá]			*!		**	
☞ b. ọl[ọ́pàá]					**	*
c. on[ọ́pàá]				*!		*
d. oní[pàá]			*!			

The first and the last candidates in Tableau 6 elide the initial vowel of the grammatical word. This leads to a fatal violation of the undominated faithfulness constraint which requires the input segments of a grammatical word to be maximized or preserved in the output. The third candidate infracts the alignment constraint which requires the left edges of the prefix and the grammatical word to be featurally aligned. The second candidate is the most harmonic form due to its obedience of all the highly ranked constraints which are otherwise violated by its fellow competitors. Note, however, that the winner itself is not without fault; it flouts the last two faithfulness constraints by changing the first two segmental features of the prefix and deleting its last segment. Nevertheless, considering the fact that these constraints are lowly ranked in the hierarchy, violating them is not

consequential to the outcome as far as the given candidates in the tableau are concerned. In a nutshell, given the input /oní-òpá/, the actual output form is [ọlọpàá].

As opposed to the multiple rules usually postulated in the rule-based frameworks, the foregoing constraint-based analysis has shown that a single set of constraints can account for the three categories of the agentive constructions examined in this paper. Each formal analysis presented in each tableau is representative of how the same set of constraints can account for all the data sets. In particular, the constraint set uniformly captures the various phonological processes that the prefix undergoes in order to be well-formed when it is prepended to a nominal root. Even when the prefix does not undergo any transformation with respect to the case where it is attached to consonant-initial nouns, the same set of constraints is tenable. The only difference among the three broad categories of data presented in (1), (2) and (3) follows from re-ranking of the same set of constraints. Explaining both inter-linguistic and intra-linguistic variations is one of the strengths of OT, and this is premised on the assumption that languages are generally the same with respect to the constraints, they only differ in how they individually rank the same set of universal constraints. By and large, a constraint-based grammar is more economical than a rule-based one. Consequently, a more economical grammar has more pedagogical relevance. This is briefly discussed in the next section.

6.   Implication for Language Pedagogy

At the heart of Universal Grammar is language pedagogy, a sub-field of applied linguistics which entails the teaching and learning of a language, either a mother tongue or a second (or foreign) language. The exercise of teaching and learning most especially a foreign language is a herculean one, taking into consideration a host of variables or factors, such as the task of securing a pedagogical setting that is suitable for the exercise, availability of up-to-the-task human resources (tutors), choosing and applying an apt teaching methodology, procurement of resourceful instructional materials, inevitable individual differences of the learners, cultural variation between the learners' native languages and the target language, temporal factor, and, most crucially, the nature of the grammar of the language to be learned. Needless to say, complex grammars often prove much more difficult to teach and learn than simple ones.

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The rule-based approach proposed hitherto in existing studies of the morpho-phonological transformation of the agentive prefix **/oní-/** 'owner/seller/doer/agent of' in the Standard Yorùbá appears much more complex than necessary, and has a serious implication on two major pedagogical grounds. One, since the prefix undergoes four distinct phonological processes when it is appended to nouns beginning with a vowel other than [u], four separate (unrelated) phonological rules must be postulated to adequately account for the changes. By implication, foreign learners of Yorùbá would not only have to go through the rigours of learning how the processes operate but also to postulate relevant rules for the processes in formal terms. Two, since the 'golden rule' in rule-based phonological framework stipulates that multiple rules must be appropriately ordered, then, the needed rules for the processes undergone by the prefix must be made to apply in a certain fixed way, otherwise the analysis would be faulty. This again becomes a problem for foreign learners of Yorùbá with respect to the systematic derivation of agentive nominals, as they would need to master the rubrics of rule ordering in phonology first before determining how to situate such knowledge within the context of the subject matter which they are learning in the language.

On the contrary, employing a simple, straightforward and uniform approach proposed in this study would not only assist the tutor in teaching how the surface forms of the prefix are derived from the underlying form in a less arduous manner but would also fast track the learning of the subject matter by the learners. While constraints are inherent in the grammar of a language, rules are postulated by analysts to account for the observable changes in the language. Therefore, as learners are learning a language, they are by default learning about how the language employs the constraints in building its grammar. Finally, learning a language using a constraint-based methodology would offer the learners the additional advantage of being exposed to the universal properties of human language much more than it would be possible using a rule-based approach for an obvious reason: constraints are linguistically universal but rules are language-specific.

7. Conclusion

The present paper has argued for a constraint-based approach to the study of the agentive prefix **/oní-/** 'owner/seller/doer/agent of' in the Standard Yorùbá within the framework of Optimality Theory. It was established that the morphological form of the prefix remains

unchanged when it is attached to stems (nouns) beginning with a consonant; it is slightly modified when it is attached to nouns beginning with a high front vowel [i]; and it is radically transformed to either [al-], [el-], [ẹl-], [ol-], or [ọl-] when it is added to nouns beginning with [a], [e], [ẹ], [o], or [ọ], respectively. The modification of the prefix in the latter context is systematically triggered by four distinct phonological processes: vowel deletion, consonant denasalization, vowel assimilation, and tone re-linking or docking. By implication, four phonological rules would be postulated and formalized to account for the derivation within a rule-based analytical methodology. The study has pointed out some of the issues associated with favouring such approach. Those issues, as argued in the paper, are avoidable if recourse is made to a constraint-based framework.

The alternative approach proposed in this study was crucially motivated by the observation that the rule-based analytical approach employed in the existing studies to account for the phenomenon appears unnecessarily complex and analytically deficient in explaining how the processes fit together. Within the context of the alternative approach, the paper argued that the well-formedness of the variants (allomorphs) of **/oní-/** in SY is generally governed by a hierarchy of alignment, markedness, and faithfulness constraints that captures the four phonological processes in a parallel fashion. In this light, it was posited that rather than postulating multiple unrelated phonological rules, which must also be ordered in a certain way to account for the context-dependent variants of the prefix, a single hierarchy suffices: NO-HIATUS, NO-FLOAT[TONE], MAX(GRWD) >> ALIGN[VOC]-L >> IDENT(AFX) >> MAX(AFX). The paper hereby concludes that the simplicity of a constraint-based analysis has some implication for language pedagogy in terms of learnability: a simple grammar is easier to learn than a complex one.

Abbreviations

AFX	Affix
CON	Constraints
EVAL	Evaluator
GEN	Generator
GP	Generative Phonology
GRWD	Grammatical Word
IDENT	Identity
L	Left

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MAX	Maximality
OT	Optimality Theory
Pre	Prefix
SY	Standard Yoruba
VOC	Vocoid

References

Adewole, Stephen Monday. 1995. *Yoruba Word Formation Processes*. PhD Dissertation, University of California, Los Angeles.

Akinlabi, Akinbiyi. 1996. "Featural Affixation." *Journal of Linguistics* 32: 239-89.

Akinlabi, Akinbiyi and Francis Oyebade. 1987. "Lexical and Post-lexical Rule Application: Vowel Deletion in Yoruba." *Journal of West African Languages* 17 (2): 23-41.

Archangeli, Diana. 1999. "Introducing Optimality Theory." *Annual Review of Anthropology* 28: 531-552. http://www.jstor.org/stable/223405

Arokoyo, Bolanle Elizabeth. 2017. *Unlocking Morphology* (2nd edn.). Ilorin: Chridamel.

Awobuluyi, Oladele. 1967. "Vowel and Consonant Harmony in Yoruba." *Journal of West African Languages* 6 (1): 1-8.

Awobuluyi, Oladele. 2008. *Ẹ̀kọ́ Ìṣẹ̀dá-Ọ̀rọ̀ Yorùbá*. Àkúrẹ́: Montem Paperbacks.

Awobuluyi, Oladele and Francis Oyebade. 1995. "Denasalization in Yoruba: A Non-linear Approach." In *Language in Nigeria: Essays in Honour of Ayo Bamgbose*, edited by K. Owolabi, 16-31. Ibadan: Group Publishers.

Bámgbóṣé, Ayọ̀. 1963. *A Study of Structures and Clauses in the Grammar of Modern Yoruba*. Doctoral Dissertation, Edinburgh University, Edinburgh.

Bámgbóṣé, Ayọ̀. 1986. "Yoruba: A Language in Transition." In J. F. Odunjo memorial lectures series, 1, Lagos.

Bámgbóṣé, Ayọ̀. 1990. *Fonọ́lọ́jì àti Gírámà Yorùbá*. Ibadan: University Press.

Bámgbóṣé, Ayọ̀. 1995. "Vowel Deletion or Vowel Coalescence: A Problem in Yoruba Phonology." In *Issues in African Languages and Linguistics: Essays in Honour of Kay* Williamson, edited by E. N. Emenanjo and O. Ndimele, 19-29. Aba: National Institute for Nigerian Languages.

Ehineni, O. Taiwo. 2017. "Prosodic Reduplication in Yorùbá." *Journal of Universal Language*, 18 (2): 39-59. DOI: 10.22425/jul.2017.18.2.39.

Eleshin, Abisoye. 2017. *A Unified Analysis of Nominalization in Yoruba Language*. PhD Thesis, University of Lagos, Nigeria.

Hameed, Nidham Sheet and Israa B. Abdurrahman. 2015. "How Has Optimality Theory Achieved the Goals of Linguistic Theory?" *Arts Journal*, 111 (1436): 1-16.

Kager, Rene. 1999. *Optimality Theory*. Cambridge: Cambridge University Press.

McCarthy, John. 2007. "What is Optimality Theory?" *Language and Linguistics Compass*, 93: 1-28. Retrieved December 10, 2019, from https://scholarworks.umass.edu/linguist_faculty_pubs/93

McCarthy, John. 2008. *Doing Optimality Theory: Applying Theory to Data.* Oxford: Blackwell.

Ogunkeye, M. Olufunmilayo. 2005/2006. "A Syntactic and Semantic Description of Yoruba Affixes." *Journal of the Linguistic Association of Nigeria,* 9: 1-20.

Orie, Olanike Ola. 2001. "An Alignment-Based Account of Vowel Harmony in Ife Yorùbá." *Journal of African Languages and Linguistics*, 22: 117-43.

Orie, Olanike Ola and Douglas Pulleyblank. 2002. "Yorùbá Vowel Elision: Minimality Effects." *Natural Languages and Linguistic Theory*, 20 (1): 101-156.

Owólabí, Kola. 1995. "More on Yorùbá Prefixing Morphology." In *Language in Nigeria: Essays in Honour of Ayo Bamgbose*, edited by K. Owolabi, 92-112. Ibadan: Group Publishers.

Owolabi, Kola. 2011. *Ìjìnlẹ̀ Ìtúpalẹ̀ Èdè Yorùbá I*: *Fònẹ́tíîkì àti Fonọ́lọ́jì*. Ibadan: Universal Akada Books Nigeria Limited.

Oyebade, Francis. 2010. "Yorùbá Phonology." In *Basic Linguistics for Nigerian Languages*, edited by O. Yusuf, 228-246. Ijebu-Ode: Shebiotimo Publications.

Oyebade, Francis. 2018. *A Course in Phonology* (3rd edn.). Ijebu-Ode: Shebiotimo Publications.

Oyebola, Michael. 2003. "Vowel Harmony in Yoruba: An Autosegmental Approach." *Centrepoint,* 11 (1): 122-137. Ilorin: University of Ilorin Press.

Oyebola, Michael. 2004. "The oní/olú Issue in Yoruba Agentive Constructions." *Centrepoint,* 11 & 12 (1): 140-153. Ilorin: University of Ilorin Press.

Oyelaran, O. Olasope. 1971. *Yoruba Phonology*. PhD Dissertation, Stanford University, Stanford.

Oyinloye, Mayowa. 2020. "Reduplication in Yorùbá: A Case Study of Foot Copying." In *Issues in Minority Languages and Language Development Studies in Nigeria: A Festschrift in Honour of Andrew Haruna*, edited by H. Adeniyi, G. Ibileye, and N. AbdulMalik, 180-189. Published by the Linguistic Association of Nigeria.

Prince, Alan and Paul Smolensky. 1993. *Optimality Theory: Constraint Interaction in Generative Grammar.* Ms., Rutgers University and University of Colorado.

_____

Prince, Alan and Paul Smolensky. 2004. *Optimality Theory: Constraint Interaction in Generative Grammar.* Oxford: Blackwell.

Sommerstein, H. Alan. 1977. *Modern Phonology.* London: Edward Arnold Publishers Ltd.

Táíwò, Oyè. 2011. *Mofọ́*lójì (Àtúnṣe Kejì). Ibadan: Universal Akada Books Limited.