

A CONSTRAINT-BASED ANALYSIS OF ENGLISH LOANWORDS IN YORUBA

Sanusi, I. O., Rafiu, K. A. & Oyinloye M.E.
Department of Linguistics & Nigerian Languages
University of Ilorin, Kwara State, Nigeria
sanusisa2@yahoo.com

Abstract

Vowel insertion has generated several controversies in the adaptation of English loanwords in Yoruba within the rule-based framework. The rules usually postulated still remain inadequate to account for this process, either to break consonant clusters or open closed syllables of the loanwords in Yoruba. In respect of this, this study attempts to employ a constraint-based model to address those issues, using Optimality Theory (OT) as the theoretical framework. OT is a model which employs constraints, instead of rules and selects candidates that are preferred by language. For the purpose of this study, six constraints are selected, namely: *CODA, *COMPLEX, UNIFORMITY, MAX-I/O, DEP-I/O and *SUBST. The data used for the study were obtained principally via introspective method since the researchers are native speakers of Yoruba and a second language speaker of English. This method was complemented by observation in various domains in which English loanwords are adapted in Yoruba during conversation. The study reveals that English loanwords are modified in Yoruba by virtue of ranking constraints *CODA and *COMPLEX higher, and ranking constraints DEP-I/O and *SUBST lower. Thus, the actual output forms (i.e. the optimal candidates) among the competing candidates are those that strictly obey the highly ranked constraints, notwithstanding their violation of the lowly ranked ones. The study concludes by recommending that the application of OT be extended to other areas of the language such as Yoruba morpho-phonology, morpho-syntax, phono-syntax, syntax, as well as language acquisition.

Keywords: loanwords, English/Yoruba, insertion, constraints, ranking.

Introduction

Language contact has been identified as a major reason why there is lexical borrowing across languages. Rafiu (2011, p.24) echoes this observation by asserting that one of the obvious consequences of contact is linguistic borrowing; and borrowing, according to Kemmer (2013, p.1), is a morphological process that involves taking words from one language to another. Thus, Hardman and Stork (1972, p.13) define loanwords as words introduced into a language directly from a foreign language by either translation or adaptation.

It follows from the latter definition that words which are loaned from one language will, either be wholly rendered, or adapted via phonological modification in order to conform to the phonological pattern of the host language. The latter choice is usually the norm when lexical items are loaned from English (a West Germanic Indo-European language) into Yoruba (a Kwa language of the Niger-Congo). The adaptation of these lexical items is usually accounted for within the premise of Generative Phonology, where rules of u- and i- epenthesis are postulated, as in /bred/ in English becoming [bùrédi] in Yoruba.

This study, however, finds out that the rule-based approach is not efficient enough to handle the phenomenon under investigation because in the process of analysis, many issues are usually left unresolved. For instance, apart from the multiplicity of rules postulated in the nativization process of the loanwords, most of the rules are not always tenable. Moreover, the most controversial puzzle is concealed in the type of vowel to be inserted to break the consonant clusters and open the closed syllables of the loanwords. Therefore, it becomes paramount making recourse to the constraint-based approach in this study, using Optimality Theory.

Theoretical Framework

The chosen theoretical framework for this study is Optimality Theory. Optimality Theory (henceforth, OT) is a phonological theory developed in the early 1990s to address the shortcomings of the generative framework. According to McCarthy (2002, p.20), OT was first described in-depth by its proponents, Alan Prince and Paul Smolensky in 1991; while the first detailed exposition of the theory

appears in Prince and Smolensky (2004, p.19). Since then, the theory had witnessed a lot of theoretical developments and its frontier has been subsequently extended to other levels of linguistics, such as morphology, syntax, sociolinguistics, etc. It is as a result of its wide coverage of application that prompted Kager (1999) to infer that "OT is a general theory of grammar, rather than one of phonology".

According to the central idea of OT is that surface forms of language reflect resolutions of conflicts between competing constraints. Though it is indubitable that the methodology in OT is also partly generative in nature (at least say for example, the existence of GEN function which generates some output candidates on the basis of a given input), the crucial point of departure between OT and the previous generative models is that, while the earlier approaches were mainly preoccupied with the postulation of phonological rules to account for alternations in language i.e. how the underlying representation is converted to the surface representation, OT, on the other hand, is principally concerned with constraints that characterize every human language (Akanlabi, 1996, p. 34).

In OT, the Underlying Representation is not converted to the Phonetic Representation via any application of rules; rather, many possible output forms are generated on the basis of a given input, and will be made to compete with one another with respect to the set of constraints made available. According to Bennett (2013, p.13), the candidates that best satisfies the constraint hierarchy will be chosen as the correct output form among all other competing candidates. It follows from here that these constraints are set against all the possible output candidates, and not that they are applied to the input to generate the outputs, contrary to the norm in the rule-based account. Thus, "OT is not a theory of representations (in which one level of representation is converted to another via application of rules) but a theory of interactions of grammatical principles" (Kager, 1999, p.xii), technically referred to as constraints which are usually formalized abstractly.

The Basic Principles of OT

McCarthy and Prince, cited in Oyeade (2008, p.194), present five basic principles of OT, which are:

- a. UNIVERSALITY
- b. VIOLABILITY
- c. RANKING
- d. INCLUSIVENESS
- e. PARALLELISM

The above principles can be lucidly summarized as follows. As far as UNIVERSALITY is concerned, every grammar of every language is characterized by a set of constraints. These constraints are language universal. VIOLABILITY states that constraints violation by the set of candidates generated is allowed. The only restriction this principle imposes is that violation must be minimal. The RANKING principle basically illustrates the point at which languages differ from one another with respect to constraints. They differ not in the types of constraints inherent in them, but in the hierarchical ranking of such constraints. Thus, these constraints are ranked on a language particular basis, to determine the candidates with the maximal and minimal violations. With regard to INCLUSIVENESS principle, all the candidates generated are equally qualified to be admitted into the ranking system, and they are evaluated based on the constraint set made available to determine which one wins or loses out. PARALLELISM deals with the choice of the winning candidate after some evaluation carried out on the whole constraint hierarchy and the entire candidate set. The candidate that best satisfies the constraint hierarchy is, therefore, picked as the optimal candidate.

Constraints in OT

From the principles of OT, it becomes apparent that the central theme around which the theory revolves is the issue of universal constraints and their language-particular ranking (Ola, 1995, p.95; Pulleyblank, 1997, p.67). These constraints are broadly summarized into: Markedness and faithfulness constraints. According to Prince and Smolensky (2004, p.5), the markedness constraints govern the input-output relation by conditions on the well-formedness of the output, while the faithfulness constraints govern same by conditions asking for the exact preservation of the input in the output along various dimensions. In

other words, while the former determine the well-formedness of segmental combinations, syllabic sequences, prosodic patterns, etc. in languages, the latter requires that the surface representation (output) be similar or identical to the underlying representation (input). These constraints (markedness and faithfulness) incorporate all other available constraints, such as syllable structure constraints, alignment constraints, parse constraints, stress-related constraints, and so on. These constraints are linguistically innate and universal such that "there is no constraint identified for one language that is not present in another" (Oyeade, 2008, p. 95).

Various constraints have been extensively discussed in the literature (see Kager, 1999; McCarthy 2002; Prince and Smolensky, 2008; Oyeade, 2008). However, only the ones used for the analysis of the data in this study are reviewed as follows:

- a. **MAXIMALITY INPUT, OUTPUT (MAX-I,O)**: This constraint ensures that input segments are maximally represented in the output. That is, every input segment should correspond to some segment in the output, no deletion.
- b. **DEPENDENCY-INPUT, OUTPUT (DEP-I,O)**: This constraint requires that the segments in the output be dependent on the segments in the input. No segment which does not appear in the input must surface in the output. (No insertion/epenthesis).
- c. **UNIFORMITY**: This constraint disallows two distinct segments in the input from merging into a single segment in the output. (No coalescence).
- d. **SUCCEDAE (CODA)**: This constraint prohibits closed syllables while maximizing open syllables. It stipulates that no syllable must end with a consonant.
- e. **NO CONSONANT CLUSTER (*COMPLEX)**: This constraint disallows contiguous occurrence of two or more consonants in a word.
- f. **AVOID SUBSTITUTION OF SOUNDS (* SUBST)**: This constraint forbids replacing an input segment with another in the output.

OT's Modus Operandi

The mode of operation in OT is concisely described by Prince and Smolensky (2001, p. 5) as follows: "...we generate (or admit) a set of candidate outputs, perhaps by very general conditions ... and then we assess the candidates, seeking the one that best satisfies the relevant constraints". In the words of Akinlabi (1990, p.5) and Bennett (2013, p.13), the available constraints in every grammar of every language usually disagree or conflict with one another over well-formedness phenomena. To resolve this conflict, the constraints will be ranked in terms of hierarchy in order to judge the candidate (output) which best satisfies the constraint set (Oye, 2003, p.35). The crucial constraint, among the competing and conflicting ones, that determines which candidate wins will be ranked higher than the rest. The notion 'ranked higher' is illustrated by the sign '>'. By convention, all the constraints are arranged in order of ranking from the highest-ranked to the lowest-ranked from left to right.

Conventionally, a star or asterisk '*' is used to indicate violation of a constraint, while the insertion of an exclamation mark '!' after an asterisk indicates fatal or severe violation. The shading of a cell against a particular candidate usually shows that such candidate can no longer be considered for further evaluation, in as much as, it had earlier incurred a fatal violation. The optimal candidate i.e. the output which best satisfies the constraint set is indicated, using a thumbs-up sign or a pointed finger '☝'. All these signs or symbols are conventionally represented, accordingly, in an illustrative table technically called an OT Tableau. Best-satisfaction of the constraint hierarchy by the optimal candidate is defined in terms of either of two conditions. If it obeys the highest-ranked constraint, even if it violates the lowest-ranked one; or if it incurs a minimal violation of any single constraint.

Brief Features of Yoruba and English

The Yoruba language belongs to the Niger-Kordofanian language family. It is a Kwa language spoken mainly in the South-Western region of Nigeria. Yoruba has many dialects which include Igbomina, Ijebu, Ife, Ibadana, Ondo, Yagba, Egbu, Ijesa, Ekiti, Alare, Owo, Ikare, and Ilaje. The language is well-documented in terms of

linguistic description, and according to Yusuf (2010, p.126), it is one of the most highly developed of Nigerian languages.

According to Oyeade (2010, p.228), the Yoruba Sound System comprises 18 consonants, 7 oral vowels and 5 nasal vowels. The consonants are: b, t, d, k, g, p [kp], gb, f, s, ʃ [ʃ], h, j [dʒ], m, n, r, l, y [j] and w. The oral vowels are: i, e, ɛ [ɛ], a, o [ɔ], o, u; while the nasal vowels are: in [ĩ], en [ɛ̃], an [ã], on [ɔ̃], un [ũ]. The most salient feature of the Yoruba language is that it uses tone. It employs tones (high [ˈ], low [ˌ] and mid [ː]) to mark semantic contrast between or among lexical items, which have the same graphical representation, although the mid tone is not marked orthographically in the language. Morphologically, Yoruba is predominantly an isolating or analytic language; while syntactically, it attests the Subject (S) – Verb (V) – Object (O) basic word order typology.

On the other hand, English language is primarily a West Germanic language that originated from the Anglo-Frisian dialects, brought to Britain by Germanic invaders and/or settlers from the places which are now called North-West Germany and the Netherlands (Singh, 2005, p. 15).

Going by linguistic features, Ladefoged (1975, p.75) claims that the sound inventory of English comprises 24 consonants and 20 vowels-monophthongs and diphthongs. The consonants are: p, b, t, d, k, g, ʃ, f, v, θ, dʒ, s, z, ʒ, h, m, n, ŋ, l, r, j, w, ð. The monophthongs are: i, ɪ, e, æ, a, ɔ, ɔː, u, ʊ, ʌ, ɒ, ɔ̃, while the diphthongs are: eɪ, əʊ, aɪ, ɔɪ, aʊ, ɪə, eə and uə. In the words of Giegerich (1992, p.92), the most noticeable phonological feature of English language is stress. Stress is significant in spoken English, as it can be employed to differentiate the word classes of two words, whose orthographical representations are identical. It also employs features such as intonation, vowel length in its prosodic make-up.

Morphologically, English is a predominantly isolating or analytic language, but with elements of the inflectional typology. At the syntactic level, the basic word order that is attested in English is Subject (S) – Verb (V) – Object (O), although transformations can sometimes alter this canonical order to suit communication purpose.

On the whole, Yoruba and English are both decamillionaire languages i.e. they have more than 10 million speakers each; and they both have sizable number of second language speakers. The two languages came in contact via colonization; hence, a necessity for borrowing from English into Yoruba.

Loanwords

Following Hardman & Stork (1972, p.13), loanwords are words (that are) introduced into a language directly from a foreign language by either translation, or adaptation of concept taken over from another language. Also, Kemmer (2013, p.1) opines that loanwords are words adopted by the speakers of one language from a different language (the source language). From similar perspective, Crystal (2003, p.20) defines loan as a linguistic unit (usually a lexical item) which has come to be used in a language, or dialect, other than the language where it originated. From these submissions, it could be deduced that a loanword is a word that is 'imported' through borrowing from one language to another.

The major source of lexical borrowing is linguistic contact. Kemmer (2013, p.13) buttresses this fact further by maintaining that borrowing is a consequence of cultural contact between two language communities. Borrowing of words, she continues, can go in both directions between the two languages in contact, but often there is an asymmetry, such that more words go from one side to the other.

The types of borrowing usually identified in the literature are loanwords, loan translations or calques and loan blends. Loanwords are words whose both form and meaning are borrowed, or assimilated, with some adaptation to the phonological specification of the host or borrowing language. Examples are Yoruba 'bùrédi', 'bùlókù' and 'bòolù' from English 'bread', 'block' and 'ball', respectively. On the other hand, loan translations are a special type in which the morphemes composing the source word are translated item by item (McGregor, 2009, p.20). That is, there is a direct translation of the elements of a word into the borrowing language (Yule, 1996, p.96). Examples are English 'power politics' from German 'Machtpolitik'; Chinese 'nan Pengyu' (male friend) from English 'boyfriend'; English 'superman' from German

'Urbemensch'; French 'un gratteciel' (a scrape-sky) and German 'Wolken Kratzer' (cloud scraper), both from English 'skyscraper'; as well as English 'loanword' from German 'Lehnwort'. Finally, loan blends, according to McGregor (2009, p.89), are words in which one of the morphemes, the main lexical morpheme, is borrowed (i.e. foreign), and the other is native. An example of loan blend is Pennsylvania German 'bassig' (bossy), with borrowed stem but native suffix '-ig' which is a German morpheme corresponding to the English '-y' suffix.

Within the rule-based framework, adaptation of English loanwords in Yoruba are usually analysed as a case of vowel /u/ or /i/ insertion in order to break the consonant clusters, or open the closed syllables of the loanwords. For example, /bred/, /bleid/, and /blak/ in English become [bùrédì], [bílédì] and [bùlákù] respectively, in Yoruba. However, this rule becomes questionable in cases of /fræns/ and /freim/ which become [fàransé] and [fèrémù], in which vowels /a/ and /e/ respectively, are employed to break the initial consonant clusters in these words. Also, the [fàransé] example shows that vowel /e/ can be used to open a closed syllable in Yoruba at the expense of /i/ and /u/. Thus, the controversy that ensues here is a question of which epenthetic vowel should be used to break consonant clusters, and open closed syllables. Apart from the issue that the modification process does not state precisely whether it is /i/, /u/, /a/ or /e/ that is inserted, the conditioning environments under which the rules apply are untenable in some instances.

Furthermore, it is also observed that in some loan words, apart from the general epenthesis rule, some other rules are still needed. For example, the word [fiidi] in Yoruba is derived from /fi:ld/ in English via the application of two distinct rules: deletion of consonant [l] and insertion of vowel [i] after [d]. Likewise, in [gòòlù] which is derived from /gould/, consonant [d] is deleted first, and vowel [u] is epenthesisized after [l]. Similarly, ignoring the insertion rules, voicing rule converts /p/ in /kəp/ to [b] in [kəbù]; devoicing rule converts /v/ in /va:səti/ to [f] in [fàsiti]; and spirantization rule changes /p/ in /ka:pinta/ to [f] in [káfíntà].

the foregoing, it means that once multiple rules are required, they must be ordered. This also begs for another question: In

what order must they apply? In fact, rule ordering is a problem in itself within the rule-based framework. Finally, should we regard forms which do not comply with the given rules as exceptions? If so, what informed our conclusion? These and other unanswered questions have generated controversies vis-à-vis the rule-based model; hence, the need to make recourse to the constraint-based approach.

A Constraint-Based Account of English Loanwords in Yoruba

The English loanwords in Yoruba have been classified into three for the purpose of this analysis. They are:

- Loanwords with closed syllables
- Loanwords with consonant clusters
- Loanwords with consonant clusters and closed syllables

The selected constraints are: *CODA, which forbids any syllable to be checked by a consonant; *COMPLEX constraint rules out consonant cluster; UNIFORMITY states that distinct elements in the input must abide by the status quo in the output; MAX-I,O maintains that any segment in the input must have a corresponding type in the output; DEP-I, Openalizes insertion as every element type X in the output must have a corresponding type X in the input, and *SUBST forbids substitution.

Data Presentation and Analysis

Analysis 1: Words with Closed Syllables

	English		Yoruba	Gloss
i.	/ʃəp/	→	[ʃəbù]	'shop'
ii.	/reik/	→	[rèèkì]	'rake'
iii.	/pin/	→	[pìni]	'pin'
iv.	/kəp/	→	[kəbù]	'cup'
v.	/dʒi:p/	→	[dʒìbù]	'jeep'
vi.	/tʃeɪn/	→	[tʃèni]	'chain'
vii.	/geɪm/	→	[gèemù]	'game'
viii.	/dʒəuk/	→	[dʒòòkì]	'joke'
ix.	/æsid/	→	[àsìdì]	'acid'
x.	/məʃi:n/	→	[máfìni]	'machine'

Tableau 1

*CODA>>UNIFORMITY>>*SUBST>>DEP-I,O

Input:	*COD	UNIFORMITY	*SUBST	DEP-I,O
/ʃɔp/	A	Y		
a. ʃɔp	*!			
b. ʃɔp	*!			
c. ʃɔɔbu			*	**

In the above tableau, Candidates (a) and (b) lose out of contention for the optimal candidate, as a result of their fatal violation of the highest-ranked constraint. Candidate (c) emerges as the optimal candidate because it strictly obeys the highly ranked constraints *CODA and UNIFORMITY, notwithstanding its violation of the lowest-ranked constraint.

Tableau 2

*CODA>>UNIFORMITY>>*SUBST>>DEP-I,O

Input:	*CODA	UNIFORMITY	*SUBST	DEP I,O
/dʒi:p/				
a. dʒip	*!			
b. dʒiip	*!			
c. dʒiipù				*
d. dʒiib	*!			
e. dʒiibu			*	*

Candidates (a), (b) and (d) could not emerge as the optimal candidate in the above tableau because of their violation of the highest-ranked constraint *CODA. Candidate (e) could not also win because of violating two constraints. In the long run, candidate (c) emerges as the optimal one as a result of its obedience of the highly ranked constraint, notwithstanding its violation of the lowest ranked one.

Tableau 3

*CODA >> UNIFORMITY >> *SUBST >> DEP-I, O

Input:	*CODA	UNIFORMITY	*SUBST	DEP-I, O
/tfein/				
a. fein	*!		*	
b. tfein	*!			
c. tfeeni				*
d. *fèeni			*	*

In the above tableau, the first two candidates are knocked out of contention, since they violate the constraint *CODA that is highest-ranked. Candidate (c) could have equally emerged as the optimal candidate owing to its obedience of the highly ranked constraint in the tableau. However, it is ignored because the initial consonant [tʃ] is not attested in the sound inventory of the Standard Yoruba. Thus, the last candidate is picked as the winner since it replaces the unattested consonant with the nearest, [f], in the language.

Analysis 2: Words with Consonant Clusters

English		Yoruba	Gloss
i.	/səuldʒə/ →	[sòdʒá]	'soldier'
ii.	/draɪvə/ →	[dírébá]	'driver'
iii.	/blædə/ →	[búládá]	'bladder'
iv.	/swetə/ →	[súwétà]	'sweater'
v.	/græmə/ →	[gírámà]	'grammar'
vi.	/mínístə/ →	[mínísítà]	'minister'
vii.	/dɒktə/ →	[dókítà]	'doctor'

- viii. /treɪlə/ → [tírélà] 'trailer'
 ix. /ʌmbrelə/ → [òbùrélà] 'umbrella'
 x. /flaʊə/ → [fúláwà] 'flower'

xi. Tableau 4

xii. *COMPLEX >> MAX-I, O >> *SUBST >> DEP-I, O

Input:	*COMPLEX	MAX-I, O	*SUBST	DEP-I, O
/dɒktə/				
a. dɒkb	*!		*	
b. dɒkta	*!		**	
c. dɒta		*!	**	
d. dɒkta	*!		*	
e. doɪtɔ		*!	**	*
f. dɒɪta		*!	**	*
g. *dókítà			**	*

There are seven output forms competing for the optimal candidate in the above tableau. The first six candidates are knocked out as a result of their fatal violation of the two highly ranked constraints *COMPLEX and MAX-I, O where applicable. However, candidate (g) is preferred as the optimal as a result of its strict obedience of the highly ranked constraints.

Tableau 5

*COMPLEX >> MAX-I,O >> *SUBST >> DEP-I,O

Input:	*COMPLEX	MAX-I,O	*SUBST	DEP-I,O
/minista/				
a. minister	*!		*	
b. *minisita			*	*
c. minsta	**!	*	*	
d. milista	*!		**	
e. minisa		*!	*	
f. milisita			**	*

As potential winners, six output candidates are selected for the input /minista/. Candidates (a), (c) and (d) incur a fatal violation of the constraint *COMPLEX which is ranked highest in the above hierarchy. Thus, they are knocked out of contention. Similarly, candidate (e) also loses out after incurring a fatal violation of constraint MAX-I,O which is the second highly ranked in the tableau. With respect to degree of violation of the two lowly ranked constraints *SUBST and DEP-I,O, candidate (b) is preferred to (f), because while the latter incurs violation at three points altogether, the former does so at two points.

Analysis 3: Words with Consonant Clusters and Closed Syllables

English	Yoruba	Gloss
i. /bleid/	→ [biléédì]	'blade'
ii. /sweid/	→ [sùwéédì]	'suede'
iii. /fridʒ/	→ [fírlédʒì]	'fridge'
iv. /gləub/	→ [gílóóbù]	'globe'
v. /glu:kəus/	→ [gúlúkóòsì]	'glucose'
vi. /gra:f/	→ [gírífí]	'graph'

vii. /hɒspɪl/	→	[ɔsɪbitù]	'hospital'
viii. /glɑ:s/	→	[gíláàsì]	'glass'
ix. /freɪm/	→	[féré-mù]	'frame'
x. /gəʊld/	→	[góòlù]	'gold'

Tableau 6

*CODA >> *COMPLEX >> *SUBST >> DEP-I,O

Input:	*CODA	*COMPLEX	*SUBST	DEP-I,O
/glob/				
a. glob	*!	*!	*	*
b. globu		*!	*	*
c. glob	*!		*	*
d. gloobu		*!	*	**
e. *gílóóbù			*	***

In the above tableau, candidates (a) and (c) incur a fatal violation of the highest-ranked constraint *CODA, hence, they are ruled out as potential winning candidates. Similarly candidates (b) and (d) could not emerge as winners as a result of violating the next highly ranked constraint *COMPLEX. On the other hand, notwithstanding its violation of constraints *SUBST and DEP-I,O, candidate (e) still emerges as the optimal candidate, since the constraints it violates are lowly ranked, as far as the above hierarchy is concerned.

Tableau 7

*CODA>>*COMPLEX>>*SUBST>>DEP-I,O

Input: /sweid/	*CODA	*COMPLEX	*SUBST	DEP-I,O
a. sweedi		*	*	**
b. sweed	*	*	*	*
c. suwed	*		*	*
d. suweed	*		*	**
e. *suweedi			*	***
f. suuweedi			*	****
g. suweedi			*	****

Considering the above tableau, it is observed that seven output forms are generated as possible winners vis-à-vis the given input /sweid/. The first four candidates (a-d) never stand the chance of winning, since they incur fatal violation of constraints *CODA and *COMPLEX which are highly ranked. Candidates (e), (f) and (g) proceed in their contention for the optimal candidate, since all of them strictly obey the highly ranked constraints in the tableau. However, taking degree of constraint violation into consideration, candidates (f) and (g) could not win because they incur violation at five points each; while candidate (e) emerges as the optimal candidate because it incurs violation at four points.

Findings

Arising from this study are the following core findings:

The English loanwords in Yoruba belong to three broad categories, which include: loanwords with closed syllables; loanwords with consonant clusters; and loanwords containing both features. Before they are admitted into the lexicon of Yoruba, they usually undergo phonological modification in order to fulfil the restriction often placed by the phonotactics of Yoruba on segment sequence. For instance, loanwords such as /gein/, /fəun/, /reik/, /draivə/, /daktə/, /græmə/, /reilə/, /gləub/, /bleid/ and /kla:s/ are modified in Yoruba as [gèèni], [fòònu], [rèèki], [dírèbà], [dòkítà], [gírámà], [tírelà], [gílòòbù], [bílèdi] and [kílàási], respectively.

Also, for an English loanword to be modified in Yoruba, it must compete with other possible forms against six constraints, these are: *CODA, *COMPLEX, UNIFORMITY, MAX-I,O, DEP-I,O and *SUBST. Out of the six, constraints *CODA and *COMPLEX are the most highly ranked, and they are the ones that mainly determine the winning candidate, such that once a form obeys them, such form is picked as the observable form in Yoruba, while all others would be knocked out.

Finally, this study finds out that out of the six constraints made available by the grammar of Yoruba, for the modification of the loanwords, the most lowly ranked among them are *SUBST and DEP-I,O. These constraints are ranked lower because they are violable by the optimal candidates, and their violation does not prevent a candidate from winning, in as much as it strictly obeys the highly ranked constraints on the constraint hierarchy set up by the grammar of Yoruba.

Conclusion

This study has attempted a phonological analysis of English loanwords in Yoruba within the constraint-based framework in order to address the controversies which often becloud the rule-based account. Therefore, this study accentuates the problem-solving efficacy of the constraint-based model by positing that, instead of the hitherto controversial rules, constraints *CODA and *COMPLEX are highly ranked; while constraints *SUBST and DEP-I,O are lowly ranked for the

modification of the loanwords. The optimal candidates are, therefore, those loanwords that are nativized in Yoruba by obeying the most highly ranked constraints in the grammar of the language, notwithstanding their violation of the lowly ranked constraints.

On this note, it suffices to infer that the most significant contribution of OT to the phonological study of the phenomenon under investigation, is its solution of the problem of which epenthetic vowel to be favoured since phonological rules have no role in its framework in the first place. Thus, if the grammar of any language is a ranking of conflicting constraints, then what is more desirable is a constraint-based approach and not a rule-based one.

Recommendation

This study has employed the tenets of OT in carrying out a phonological analysis of English loanwords in Yoruba. However, OT is a theory of grammar in general rather than just of phonology. On this premise, this study recommends that future researchers should extend the application of this theory to other areas of the language such as Yoruba morpho-phonology, morpho-syntax, phono-syntax, syntax, as well as language acquisition in the language.

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