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Applicability of optimality theory in selected religious texts from the Holy Quran

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Abstract

This study is intended to shed light on the applicability of optimality theory in Quran verses, particularly with respect to Arabic syllable structure via comparative qualitative research methods. As a result, the occurrence of geminates is justified by the IDENT-IO constraint that recommends that input representation of an input that is geminate should appear in the output. In conclusion, Semisyllable branching is the most optimal candidate Standard Arabic appeal because it contributes substantially to resolving both coda and onset clusters resulting in more natural utterances.

Keywords: Applicability, Optimality, Theory, Selected Religious.

Aplicabilidad de la teoría de la optimización en textos religiosos seleccionados del Sagrado Corán

Resumen

El objetivo de este estudio es arrojar luz sobre la aplicabilidad de la teoría de la optimización en los versos del Corán, particularmente con respecto a la estructura de la sílaba árabe a través de métodos comparativos de investigación cualitativa. Como resultado, la

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aparición de geminados está justificada por la restricción IDENT-IO que recomienda que la representación de entrada de una entrada geminada aparezca en la salida. En conclusión, la ramificación semisílabo es el candidato árabe estándar más óptimo porque contribuye sustancialmente a resolver los grupos de coda y de inicio, lo que resulta en expresiones más naturales.

Palabras clave: Aplicabilidad, Optimidad, Teoría, Religiosos seleccionados.

1. INTRODUCTION

Developed in the early 1990s, optimality theory is concerned with the relationship between input and output representations. This theory recommends that an input representation is associated with a host of candidate output representations and some kinds of the filter with the aim of evaluating the candidates and selecting the most well-formed ones on language-specific constraints. These constraints are arranged in hierarchical order with respect to the relevance scale put forward by a given language (CRYSTAL, 2003). It should be emphasized that a low ranked constraint should be violated to satisfy a high ranked one resulting in choosing the most optimal candidate output. The negative English prefix, for instance, has two output candidates before labials (e.g. impossible), and in elsewhere (e.g. insufficient). This suggests that there is conflicting interaction between two kinds of constraints, viz. faithfulness and markedness constraints, which will be explained in detail later on. Applicable to also morphology and syntax, this approach is mainly concerned with phonology, assuming that the possible output forms for a certain input are created by a mechanism so-called GEN (The generator) and subsequently evaluated by another decisive mechanism labeled EVAL. An evaluation for the well-formed phonetic form is conducted by screening the candidates through the constraints and the candidate form passing the fewest constraints is selected as the most suitable one. This can be clearly illustrated in the diagram below (YAVAS, 2011):

As is posited previously, this theory is based on the conflict between faithfulness and markedness constraints which are in tough competition to yield the optimal candidate. Demanding identity between the input and output forms, faithfulness constraints intend to preserve the properties of the input in the output without loss, addition or change. They are of three types:

a. MAX-IO: demands that the input forms must have their correspondents in the output forms, i.e. the input is maximally represented in the output and, hence, there is no deletion at all.

b. DEP-IO: requires that output segments should have correspondents in input segments, i.e. the output must completely depend on the input; therefore, there must be no insertion.

c. IDENT- IO(F). This constraint recommends the input representations of place, manner and voice features must appear in the output.

On the other hand, the second type of constraint, markedness constraints, impose structural restrictions on possible sequences of sounds or syllable phonotactics. These constraints are of two kinds:

marked and unmarked. Universal, innate and found in children's language as well as the phonologies of all languages, the latter features are natural, expected and not learned. The former, unlike the latter, are peculiar to language and are to be learned. Examples of markedness constraints are NO CODA. Syllables must not have codas and *COMPLEX. No clusters.

Though universal and common in all languages, markedness constraints operate variously in different languages and they are not equally applicable to all languages as far as their ranking scale is concerned. Having nothing to do with lexical contrasts because they are not directly associated with the input-form, markedness constraints compare the candidates with other candidates. Put differently, the constraint which is ranked highly in one language is likely to be rated low in another language and easily violated to satisfy a high ranked constraint. Accordingly, *COMPLEX ONSET is ranked higher in Turkish and Arabic than English, which allows onset clusters. Consequently, different languages assign different degrees of priority to various constraints, and floating the high ranked ones will not lead to the optimal candidate (GUSSENHOVEN & HAIKE, 2011).

It should be emphasized that the precedence of the markedness and faithfulness constraints is clearly expressed in terms of a left-to-right ordering, with the highest-ranked constraint being placed on the left. The notation devoted to this theory states that the use of double arrowheads signals the ranking of the constraints at issue. As such, A>>B reads as constraint A outranks constraint B. Consider the following sample tableau to illustrate the phenomena in question more clearly (YAVAS, 2011).

MAX.IO >> DEP.IO >>*COMPLEX

Table 1:

/plet/ plate	MAX.IO	DEP.IO	*COMPLEX
√ (a)Plet			*
(b)Pet	*!		
(c) pəlet		*!	

An asterisk (*) in a cell means that the form of that row floats the constraint in that column, while *! suggests that such violation is fatal and ruled out from further consideration. In this tableau, the optimal output is the faithful [plet] simply because it violates the low ranked markedness constraint *COMPLEX. The candidate form, [pet], flouts MAX, which bans deletion, and the third candidate form, [pet], breaches DEP, which prohibits insertion, which is both ranked higher than their competing counterparts.

Looked from a different angle, the candidate output, [pet], as revealed in children's language due to a cluster reduction process, is regarded as the optimal output form. Consequently, the ranking of the faithfulness and markedness constraints is different from that in adults' language shown in the tableau above, i.e. the markedness constraint *COMPLEX has precedence over the other two competing for faithful constraints, viz. MAX and DEP as illustrated in the tableau below:

*COMPLEX >> DEP.IO >>MAX.IO

Table 2:

/plet/ plate	*COMPLEX	DEP.IO	MAX
(a)plet	*!		
√ (b)pet			*
(c)pəlet		*!	

Here, *COMPLEX constraint is the highest one and, therefore occupies the leftmost position. Candidate (a) flouts the highest-ranked constraint and is thus eliminated from further consideration, candidate (c) is ruled out because it inserts a vowel and thus violates DEP, and candidate (b) violates the lowest-ranked constraint, MAX, by deleting the consonant from the input, and is regarded the optimal choice.

2. METHODOLOGY

It has been pointed out that a syllable structure should have a nucleus (NUC), and may have an onset (ONS) or a coda (Coda) in addition to the nucleus, or onset preceding and coda following the nucleus. The components ONS and COD, may be filled by consonants or vowels or may be empty. In OT theory, the syllable structure is assigned to the underlying form (input) by a general function GEN. Central to OT is the violable constraints imposed by a particular language system. Accordingly, any syllabification, irrespective of the canonical rules of syllable structure prescribed by the phonology of a given language, can be produced in conformity with what is natural and expected by the speakers of that language that guarantees economy of efforts. The vast majority of phonologists and researchers unanimously agree that the basic syllable structure is CV type which is universal. Now, consider (1) below that states the key constraints with regard to syllable structure:

What is posited in (1) above describes the universal unmarked and natural characteristics of the syllable structure involved. As such, the input /CVCV/ may be syllabified as a. CVC.V b.CV.CV. Because it violates No-Coda constraint for ending with a consonant, the first structure in (a) is sub-optimal. The second structure in (a) violates ONSET constraint for beginning with a vowel. The structure in (b), satisfying both constraints, is optimal.

Looked at from another angle, the input/CVC/ can be syllabified in accordance with the faithfulness constraints, MAX-IO, DEP-IO, and IDENT- IO, into (11a) represents a syllable structure, but it violates NO-CDA constraint, (11b) satisfies the NO-CODA constraint but violates the MAX-IO constraint since it deletes the final consonant. (11c) satisfies both No-CODA and MAX-IO constraints because it allows insertion of a vowel, a process so-called vowel epenthesis, but it violates the DEP- IO constraint which demands that the segments of the output have correspondents in the input forms. Accordingly, resyllabification is a crucial process in OT the aim of which is to produce the syllable structure harmonic to the way speakers of all languages, including Arabic, behave.

3. RESULTS

It has been argued that classical Arabic exhibits five types of syllable structures to which all words should conform. The model Anees presents with respect to the phonotactics of Arabic syllables can be illustrated as follows:

To illustrate this, the following verse will be syllabified to show some of the syllable structures mentioned above.

The first syllable (wæ) adheres to the first syllable structure (C+ short vowel) while the second syllable (ma: d) conforms to the fourth type (C+ VV+C) the fifth syllable (ʕeq.) represents the third type. It is noteworthy that a syllable in all languages, including classical Arabic, consists of three parts; onset, nucleus, and coda. The first two components are obligatory while the third one is optional. The second (the nucleus) and the third (the coda) constitute the rhyme of the syllable (FROMKIN, 2007).

Generally speaking, it has been argued that the nucleus slot is usually occupied by vowels whereas the coda and onset slots are filled by consonants. Less frequently, nuclei are represented by syllabic consonants which, like vowels, serve as peaks of syllables, e.g. button [b tn]. The consonants in question are marked by a small circle under the consonants as shown in the example above (ROACH, 1995).

Very often, we are presented with syllables that show no full adherence to the structures mentioned in the model postulated by Anees. In consequence, classical Arabic exhibits a very limited number of syllable types, the main types of which are CV, CVV and

CVC. It is claimed that CVC syllable is prosodically expected in Arabic when occurring in final position because it is not stressed therefore it is present in pausal or final position in phonological utterances, e.g. the syllable tab in the word ka.tab (He wrote) is not stressed while the first one ka is stressed. In contrast, CVV is not found in the final position in Classical Arabic because long vowels are reduced to short counterparts in the final or pausal position. CV syllable is the unmarked syllable expected to be found everywhere in the phonological utterance. Accordingly, any problem concerning the syllabification should take these observations into account. The following are the main problematic issues.

Some Arabic words exhibit syllables with no oneset. How can we overcome such a problem? To cope with such difficulty, Arabic resorts to either of the two following processes: parenthesizing or resyllabification. alqamer the moon, for example, can be epenthesized to comply with the canonical syllable structure CVC although such procedure violates DEP-IO which reads that every segment of the output has a correspondent in the input (KIPARSKEY, 2003).

ONSET>>DEP.IO

Table 3:

/alqemer/	ONSET	DEP-IO
(a) al.qemer	*!	
√ (b)?al. qemer		*

The majority of morphemes which occur utterance- initial position have an underlying initial consonant and have abided by this requirement. Accordingly, the definite article il (the) and the relative pronoun allaDi (who, which) are assigned the glottal stop (?) as their new onsets to form optimal syllables. Another solution Arabic resorts to is resyllabification, i.e. it resorts to branching the coda of the preceding syllable to be the onset of the following syllable. As a case in point, the word/rabbak/ in the verse /Ine rabbak le bilmursad/ offers such a process as is shown in the following tableau:

ONSET >>ALIGN(R)

Tableau 4:

/rabb+ak/	ONSET	ALIGN(R)
(a) rabb.ak	*!	
√ (b) rab.bak		*

It is worth mentioning that Alignment Constraint, whether that of morpheme (ALIGN (R) for short) or that of the word (ALIGN (W) for short), holds that the domain of a feature extends to the edges of a constituent (CRYSTAL, 2003). Put differently, morpheme or word boundaries should be aligned with syllable boundaries. In the example mentioned above, this constraint is flouted to satisfy the high ranking one, i.e. onset constraint and result in a well-formed syllable structure.

It has been generally recognized that the key challenge that Arabic faces in this concern are how to avoid consonant cluster from surfacing. Unlike English and other languages, Arabic does not allow consonant clusters, except in a pausal position. Phonetically speaking, consonant clusters are firmly rejected because of such cluster yield complex syllables, a process which is not desirable in natural or unmarked language use. Creating grave difficulties in pronunciation, consonant clusters need to be simplified. What is more, consonant clusters sometimes violate the Sonority Sequencing Principle that recommends that sonority increases towards the peak (the nucleus) and decreases towards the edges (the onset and the coda), a constraint so-called SON (henceforth). Two solutions are suggested to cope with this problem: epenthesis insertion and semisyllable.

Despite the fact that such branching will result in the violation of Strict Layering (SL) that recommends that a prosodic constituent in a domain is to be contained in a domain of the next higher level (SELKIRK, 1984), it satisfied the top-ranked constraints MAX-IO and SON.

What is more, is that semisyllables are also resorted to in the syllabification of codas because such a procedure preserves the long vowels of CVVC and accounts for the non-occurrence of complex codas of CVCC in prepause positions. Without assigning C in each of these forms to a semisyllable, the whole syllable will be ruled out because not doing so will create a syllable with three moras (the symbol*3µ t, henceforth, is used to indicate non-allowance of three moras), which is not acceptable at all.

The second solution is to retain the underlying weak nucleus [i] (ki.taab) in the surface representation. It is evident that the motive behind utterance initial clusters in words such as the example word that has been just mentioned is ruled out because weak nuclei cannot stand in open stressed syllables in Standard Arabic. Put otherwise, ki. taab is excluded from candidacy because it makes a violation of the Weak Nucleus (*WN) that claims that a high short vowel in an open unstressed syllable must be deleted.

However, a solution is suggested which is harmonic to OT to address the problem of the onset consonant cluster. This implies branching the cluster in question by assigning the first consonant of the cluster to a semisyllable node. Following CHO & KING (2003), semisyllables can account for the segments that are not permissible in an onset or coda position as is shown in the branching of Ktaab into k.as a semisyllable and tab.

ALIGN-EDG- >> MAX.IO

Table 5:

/kitaab/	ALIGN-EDG-	MAX.IO
(a) [k.t.aab]	*!	*
√ (b) [k.taab]		*

Such branching which involves semisyllable node results in k-deletion from the structure of the syllable involved, a kind of syllabification which causes the violation of the MAX.IO constraint to uphold the high- ranked ALIGN-EDG- a constraint that states semisyllables should be aligned to a morpheme edge. Looked from another angle, consonant clusters resulted from the elision of the weak vowel that occurs between consonants, a process so-called consonant reduction. Put differently the high vowel [i] that constitutes the nucleus of a syllable is subject to deletion resulting in the reduced consonant cluster. As such the underlying structure of ktaab implies the weak nucleus vowel [i], i.e. kitaab (MOBAIDIN, 1999). Noteworthy is the fact that semisyllables are not considered at all postlexically, i.e./ baa? +ktaab/ is not expected to be analyzed as /baa?.ki. taab/.

So far, the onset consonant cluster has been tackled with the solutions within the framework of OT which is basically built on the violable constraints. The syllabification depends to a very considerable extent on the Sonority Sequencing Principle which depends on the sonority values of the sounds to be merged (YAVAS, 2011). Accordingly, the construction with CVCC+VC (the plus sign indicates morpheme boundary) is likely to be syllabified as CVC.CVC. Such a process can be demonstrated, for instance, in the word yerd3u: n (They come back) in the following Aya:

ONSET >> ALIGN(R)

Table 6:

/ yerd3u:n/	ONSET	ALIGN(R)
(a) [jerd3.u:n]	*!	
√ (a) [jer.d3u:n]		*

Here, there is a violation of the morpheme alignment constraint to satisfy the high ranked constraint ONSET. Presented with CVCxCy+CV construction structure (where Cx is more sonorous than Cy), we propose CVCC.CV syllabification on the ground the CVCC syllable is structurally excusable because Arabic permits coda consonant clusters in pausal positions. The word /nadjna/ (We call) in the following Aya exhibits such syllabification more clearly:

/weleqd nadjna nooh filiniʕma almud3iboon

COMPLEX >> ALIGN(R)

Table 7:

/ nadjn+a/	*COMPLEX	ALIGN(R)
(a) [nadjn.a]	*!	
√ (b) [nadj.na]		*

In table 7, the violation of ALIGN(R) constraint yields the optimal syllable [nadj.na] to the surface, upholding the high ranked constraint, *COMPLEX constraint. When not adhered to SSP, the CVCCCV cluster is normally segmented into CV.CVC. CV. Similarly, tetra-consonant clusters allow an epenthetic vowel to be inserted creating a new syllable. The inserted epenthetic will be between the antepenultimate and penultimate consonant (SELKIRK, 1995).

It is worth noting gemination in Arabic is very frequently used in Standard Arabic. As far as syllable structure is concerned, Arabic syllables permit a geminated consonant is licensed, whereas the geminated vowel is less so. This is motivated by the claim that germination violates both SON and *COMPLEX constraints. Simultaneously it is reinforced by the fact that a mora cannot occur word-finally (LORENZO, 1996). As a result, /umm / (mother) is expected to be resyllabified as [um.m].

However, there is an occasional presence in word medially and word finally positions in Classical Arabic. From the OT perspective, the occurrence of geminates is justified by the IDENT-IO constraint that recommends that input representation of an input that is geminate should appear in the output. Nevertheless, geminated vowels are encouraged in some positions in Standard Arabic when reciting Holy Quran with the aim of lengthening and increasing the duration of the recited word, a defining characteristic of reading religious texts from the Quran.

4. CONCLUSIONS

This study has arrived at the following conclusions:

1. OT is effective in analyzing why the phonotactics of syllable structures in Standard Arabic are violated.

2. MAX-IO constraint is the constraint that is most frequently violated in Standard Arabic.

3. Unlike English Arabic, Arabic prefers germination for making the words more effective, particularly in reciting texts from the Holy Quran.

4. The consonantal clusters that do not adhere to SSP are readily more liable to be analyzable in terms of OT framework than their counterparts that do.

5. Semisyllable branching is the most optimal candidate Standard Arabic appeal because it contributes substantially to resolving both coda and onset clusters resulting in more natural utterances.

6. Epenthesis and resyllabification in terms of assigning onset clusters to codas of the preceding syllables are less common than semisyllable.

7. In some situations, it is not easy to count the number of constraints involved in analyzing the structure of a syllable.

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