Phonological Account of English Loanwords Adapted by Qunfudhah Arabic Dialect Speakers (QAD)

Khedir Almoayidi
English Department
Alqunfudhah University College, Umm Alqura University
Saudi Arabia
Email: kkattaf2014@gmail.com

Received: 01/05/2023 Accepted: 04/10/2023 Published: 05/24/2023

Abstract
The current study aimed to investigate, descriptively, how English loanwords become part of Qunfudhah Arabic Dialect (QAD), an Arabic dialect spoken in the southern part of Saudi Arabia. Hundreds of English loanwords were collected using different resources such as social media posts, news articles, blogs, every-day interactions, and shop signs. The purpose was to find out the triggering motive used by QAD speakers to adapt English loanwords. In other words, the paper sought to answer this question: what phonological rules do the QAD speakers implement to adapt the English loanwords? Using the descriptive data analysis method, the results revealed that English loanwords have been phonologically adapted to fit into the host system using a number of processes to map English consonants and vowels into the recipient language. QAD speakers exercised several modifications to produce an Arabic sound on the foreign consonants (English in this situation) by targeting the manner, place, and voicing. Vowels, on the other hand, were mapped according to the height, tensity, or backness using a number of rules such as monophthongization, lengthening, or position shift. All these processes were used by QAD speakers to more easily produce the foreign sounds, especially those sounds which differ from their own system (marked ones). The result of the current study should add more insights into the body of the literature and pave the way for researchers to investigate this Arabic dialect thoroughly.

Key words: dialect, loanword, optimality theory, phonology, Qunfudhah Arabic Dialect

Introduction

Due to the phenomenon of globalization, people often come into contact with people from different countries who speak different languages, and there are many avenues through which this contact flows (Winford, 2002). In this case, loanwords are transferred from one language to another and, according to Bussmann (1996), English loanwords are adapted using the phonology as well as the grammar system of the mother tongue.

Like many languages, the Arabic language has adopted numerous loanwords from other languages and they come into the Arabic system by the process of adaptation. The concept of adaptation, according to Holden (1972), is a procedure by which the sound systems and the structures of words are altered according to the new forms of the recipient language. Wetzels and Calabrese (2009) clarify that there are two different ways in which this borrowing takes place. The first way is when a bilingual speaker uses his/her ability to pick up a new word from the donor language to fill a gap in their mother tongue. This type of borrowing prompts the bilingual speaker to make an adjustment to the new foreign word and produce it according to their mother tongue. The second way is when a speaker who either knows some of the donor language or, in most cases, does not know the language, and subsequently maps the borrowed words into a similar word from their first language. As a result, the borrowed word is articulated according to the way it has been perceived.

Review of the Literature

Studies concerning loanword adaptation have prompted many researchers to examine what motivates speakers to adapt loanwords. Different methods have been used to study how loanwords are adapted into languages including the phonetic-based approach, the phonology-based approach, and the phonetic-phonemic-based approach. In the phonetic-based approach, researchers have claimed that adaptation is triggered by perception and takes place because the speakers of the recipient language (where loanwords are adopted) cannot perceive the donor language’s phonological features due to observing them through the grammar of their native language. To clarify, Silverman (1992) suggested that because the Cantonese language does not allow syllables to be closed, speakers tend to use the rule of ‘epenthesis’ to break-up a cluster. The author concluded that the speaker’s perception can be classified into two categories: the ‘perceptual level’ and the ‘operative level’.

Dupoux et al. (1999) pointed out that Japanese listeners find it hard to distinguish between [ebzo] and [ebuzo]. Consequently, they perceive the word [ebzo] according to their native mental structure, and the outcome is /e.bu.zo/. Aligned with this, Steriade (2001) hypothesized the perceptual map (P-map) in which words fall within the features of the recipient language while simultaneously keeping their meaning and structure. The aim of Steriade’s research was to confirm that the P-map is a process by which approximation takes place by grouping the loan phonemes with those very close to native phonemes.

Davis and Cho (2005) conducted research to discover how Korean language speakers manage English loanwords containing an /s/ such as ‘bus’. They found that such words are perceived as [pʰɪs], but when the /s/ occurs word initial as in ‘stop, they perceive it as [sɪtʰo]. According to LaCharite and Paradis (2005), Davis and Cho’s (2005) study shows that the /s/ sound is perceived by Korean language speakers as if it belongs to two separate phonemes in Korean. Even though it is lax in English, whether it is used as lax or used as tense depends on the
environment. In addition, Kim (2006, 2007, 2008) identified that an English [s] is perceived by Koreans as fortis /s'/, meaning words such as ‘salad’ and ‘sign’ are perceived by Korean as /s'æl.ɪ.tɪ/ and /s'a.in/. Moreover, Lee and Iverson (2006) confirmed that the English fricative [s] is perceived as short when it is followed by a consonant such as in ‘stop’ and ‘desk’. Alternatively, it is perceived as long when it is preceded by a consonant such as in ‘dance’ and ‘matrix’.

Silverman (1992) stated that the sound /v/ is not within the Cantonese inventory and, for this reason, when speakers of this language borrow an English word that contains this sound, they substitute it with the sound /w/ rather than /v/. This is because the former is more likely to share features with the English /v/. Moreover, Kang (2003) demonstrated that Korean speakers tend to aspirate final stops and insert vowels when speaking English words with final stops such as ‘bat’ [pætʰɪ] and others. This is despite the Korean language including words that end with final stops such as [pat] (‘field’). Kang wanted to confirm that the adaptation here is a matter of phonetics rather than ill-formed repairing. To consolidate, Dupoux, Peperkamp and Sebastian-Galles (2001) illustrated that one of the problems French speakers encounter is the perception of stress variations. For this reason, they adapt loanwords according to their native language system which leads them to stress the word final sound. This enhances Peperkamp and Dupoux’s (2003) argument that loanword adaptation is ‘perceptual assimilation’ and deals with a word as a whole, not only as a single segment.

Some studies have shown that other elements can contribute to loanword adaptation. Paperkamp and Dupoux (2003), for instance, argued there is psychological evidence which links loanword adaptation and perception. Such linkages include all features of sounds which are distorted in a systematic way during the course of perception. To consolidate their argument, the researchers demonstrated how Korean speakers find it challenging to discriminate between [l] and [r] when they occur in the initial position of English words. As a result, they adapt it as [r]. This study can also be confirmed by how Arabic speakers in Saudi Arabia perceive the sound [r] when it is in the initial position of English loanwords such as ‘radiator’ [reɪdɪətər]. Speakers tend to perceive it as [l] instead of [r], and the word is always used as /lɪdɪətər/. According to Calabrese (2005), “unfamiliar sounds disallowed by active constraints must be repaired in perceptual representation, thereby resulting in a perceptual adaptation of the unfamiliar sounds” (p. 83).

From the perspective of the phonological-based approach, researchers have adopted production as the main factor in loanword adaptation, typically focusing on bilingualism in their studies. LaCharite and Paradis (2005) supported the idea that loanword adaptation is phonological rather than phonetic. They studied how English word sounds are adapted by Spanish native speakers and found that English voiced stops are similar to Spanish voiceless stops. In this case, if perception is considered, the speakers would map it the same, but Spanish speakers would express them as voiced stops not as voiceless stops. This study was inspired by the Constraints and Repairs Strategies (TCRS) principle, through which certain sounds from the source language are grouped with those in the target language using some phonological rules (LaCharite & Paradis, 2005).

Speakers also tend to substitute foreign phonemes with ones very similar in their native language while some phonemes remain without any change. Using Hooper’s Theory of Natural Generative Phonology, Evans (2014) investigated how English loanwords are used in one dialect in Western Kenya. The researcher concluded that certain phonological rules such as vowel insertion, sound substitution, and vowel deletion are used by speakers to adapt English loanwords
into the native language. Moreover, he confirmed that no single loanword has maintained its original features.

### Phonetic- and phonemic-based approaches

Phonetic- and phonemic-based approaches have also been utilized to investigate how loanwords are adapted in languages. According to Hefferman (2005), both the phonemic and phonetic approaches are useful, specifically in social contexts. Studying the Polynesian language, the researcher discovered that speakers of this language adapt the English /d/ as /t/ because their language lacks voiced ones. As such, this supports the idea of the phonetic-based approach. However, when researching Chinese loanwords used in the Japanese language, Hefferman concluded that the adaptation of /ŋ/ as the nasalised vowel /ũ/ provided clear evidence that such adaptation is phonemic contrastive, not phonetic.

Chang (2008) studied the role of bilingualism in loanword adaptation, focusing on Burmese speakers in order to determine if the adaptation there is purely phonetic or phonological. He concluded that both phonetic and phonological levels play a crucial role in loanword adaptation in Burma. It is noted, however, that Chang’s (2008) study focused on a bilingual country which is not the case in Saudi Arabia where English is considered as a foreign language located within the expanding circle.

#### 1. Arabic sound system

In response to what has been mentioned above, this study aims to investigate how English loanwords are adapted into the Arabic phonological system. Specifically, the system of QAD spoken in the southern part of Saudi Arabia. The main objective is to examine how English loanwords have become part of this dialect and how the phonological features of these loanwords are changed to adapt to the features of the Arabic language.

Not surprisingly, the Arabic phonological system lacks certain kinds of sounds found in the English phonological system and vice versa. English sounds, such as /p/ (as in the word ‘park’), /v/ (as in ‘have’), and /ʒ/ (as in ‘pleasure’), are not part of the Arabic sound system. Therefore, when an Arabic speaker encounters one of these sounds in an English loanword, he/she tends to either substitute a sound or to modify the sound system in order to utter it. To illustrate, the Arabic sound system does not have word initial or final consonant clusters (two or more consonants without a vowel). This process is also used by speakers in Saudi Arabia when they encounter an English word which starts or ends with a cluster. A word like ‘plastic’, for example, is uttered as [bələsti:k]. Speakers of the QAD tend to insert a vowel between the cluster for simplification and to change the internal structure of words; for example, voiceless /p/ becomes voiced /b/, and the lax vowel /u/ becomes a tense vowel [i:]. This also happens when a word such as ‘bus’ is used by these speakers. It is uttered as [bæ:ʃʌ] - the English /s/ is produced as an emphatic one [ʃ]. In addition, when uttering a word such as ‘stadium’, which is very popular in Saudi culture because it refers to soccer, the whole structure of the word is inverted through the following processes:

/ˈstɛidɪəm/
Insertion → [ʔɪstɛidɪəm]
Deletion → [ʔista:d]
Surface R. → [ʔista:d]
These examples show that loanword adaptation in the Arabic language, and in the QAD in particular, is a result of perception given that speakers filter the new sounds through their native ones. An English word such as ‘gas’ is perceived by QAD speakers in various ways, with the first phoneme /ɡ/ perceived as two distinctive phonemes, either [ɡ] or [ɣ], and the /s/ also perceived as either [s] or [z]. Hence, some speakers say [ɡæz] or [ɡ̥æs] while others say [ɣæz]. The /s/ sound in the word ‘chassis’ is perceived as emphatic [sˤ]. Moreover, in the word ‘stable’, the /t/ sound is perceived as an emphatic /tˤ/. To confirm the results of Kim’s study, as mentioned in the literature above, QAD speakers tend to perceive the word /ˈsæləḍ/ (‘salad’) as /ṣələṭəh/ and /zələṭəh/. This is done by mapping the first sound [s] into the Arabic emphatic one [sˤ] and the voiced [z], but not the voiceless one, even though the Arabic language does have the voiceless sound [s]. In this case, the English loanword becomes trisyllabic in Arabic rather than being disyllabic.

**Emphatic sounds in Arabic**

This final section of the literature review sheds light on the concept of emphatic sounds of Modern Standard Arabic from which the QAD descends. According to Sybawayh (796), there are four emphatic sounds in Arabic: [tˤ], [dˤ], [ðˤ] and [sˤ], which are the same as the non-emphatic sounds from the perspective of articulation. The only difference is that the tongue expands to cover more areas of articulation, which is why the sounds are called mut‘baq (‘covered’). This centuries-old observation by Sybawayh was consolidated by the x-ray study conducted by Al-Ani (1970) which stated that emphatic sounds differ from non-emphatic sounds in that the former are produced by both the front and the dorsal of the tongue at the same time.

In addition to this finding, Giannini and Pettorino (1982) pointed out to the difference between emphatic and non-emphatic sounds in duration. That is, emphatic sounds are considered longer when they occur before the vowel [a], whereas non-emphatic sounds are longer when they occur before the vowel [i]. In his acoustic study of emphatic sounds, Bin-Muqbil (2006) concluded that emphatic sounds have a greater coarticulatory impact on the neighboring sounds than non-emphatic sounds. To confirm this finding, it can be clearly observed that when any vowel occurs close to an emphatic sound its feature will be changed.

When considering the following Arabic minimal pairs: [ʁalət] (wrong calculation) and [ʁalətˤ] (spoken error), [sarər] (‘bed’) and [sˤarər] (‘creak’), and [nasəb] (‘kin’) and [nasˤəb] (‘luck’), it is evident that both vowels [a] and [i:] have different features when they are substituted due to following emphatic sounds or non-emphatic sounds. Both the vowels and the consonants can be affected by the ‘Law of the Stronger’ introduced by Grammont (1950) when they occur in a certain environment. This theory was first introduced 700 years ago by the Arabic linguist, Albatil‘yosi, when he stated that when the /s/ is followed by one of the sounds [x], [ɣ], [q] or [tˤ] it is appropriate to change it into the emphatic sound /sˤ/. He also added that whenever a word begins with /sˤ/ it used to be a non-emphatic sound. However, because the emphatic sound is stronger, it replaces the non-emphatic sound. A recent study by Jongman et al. (2011) observed that emphatic sounds were different to non-emphatic sounds from the acoustic point of view.

Finally, Al-Raba’a (2015) investigated the manner of articulation of emphatic sounds in one of the Saudi dialects and in the Palestinian dialect. The author found that Saudis produce the emphatic /dˤ/ as a fricative while Palestinians produce it as a stop. Additionally, he noticed that Saudi speakers tend to pronounce both /ðˤ/ and /dˤ/ as [ðˤ] without any difference, whereas Palestinian speakers distinguish between them. However, Al-Raba’a’s (2015) observation about
Saudis who do not discriminate between the two emphatic sounds is fragile because there are many dialects (e.g., Southern region dialects spoken in the QAD), where it is difficult to pick up the full sentence other than a single phoneme.

**Optimality Theory**

This paper is partially couched in Optimality Theory (OT) and, as such, a brief account of the theory is introduced in this section. During the 1990s, OT held a pivotal role in theoretical and empirical linguistics studies. Introduced by Prince and Smolensky in early 1991, the theory was developed by several researchers (e.g., Bermúdez-Otero, 2006; Kiparsky, 2015; McCarthy, 2002). According to McCarthy (2007), OT draws a dichotomic line between the operational constituent and the constraint constituent of the grammar of a given language. The former constituent is referred to as GEN, which helps to generate a number output (candidates) which do not resemble the given input. The later constituent is referred to as EVAL and selects some of the inputs generated by the GEN to form the optimal or actual input of the particular grammar. In this case, OT hypothesizes that the ranking of the constraints is the only method through which the grammars are differentiated. As such, central to the OT analysis is that the constraint ranking should be supported by logical justification (McCarthy, 2007).

A key aspect is that the ranking can be justified by comparing the output candidates derived from the source input. One of the candidates is referred to as the ‘winner’ and represents the exact output of the language under examination. The other candidate is referred to as the ‘loser’ because it is not harmonic due to violating the ranking constraints based on EVAL (McCarthy, 2007). It is worth mentioning here that the constraints are language specific, and they are ranked from left to right in which the leftmost constraint carries the highest restriction value in a language under consideration.

In light of this, there is the need to briefly discuss the syllable structure in general and the Arabic syllable structure more specifically before initiating the data analysis in this study. The basic syllable structure, according to Selkirk (1982), Clements and Keyser (1983), and Venneman (1988), can be viewed as a CV (consonant + vowel) type. In light of this, Prince and Smolensky (1993) introduced the following Optimal Universal Constraints:

I.

a- **ONSET**

   Syllable must have an onset

b- **NO-CODA**

   Syllable must not have a coda

In addition to the above-mentioned constraints, Prince and Smolensky (1993) added the constraints of PARSE and FILL to avoid any failure of segment incorporation in syllable structure:

II.

a- **PARSE**

   Underlying segments must be parsed into syllable structure

b- **FILL**

   Syllable positions must be filled with underlying segments

The two constraints identified in II represent the faithfulness (Prince & Smolensky, 1993). These constraints align the structure with the input and require that the input correspond one-to-one with the syllable positions. In this regard, McCarthy and Prince (1995, 1999) argue that the
FILL constraint and part of the PARSE constraint can be substituted by DEP and MAX, referring to this as Correspondence Theory (CT).

So, the following constraints:

III.  
   a- MAX-IO
      Every segment of the input has a correspondent in the output (no deletion)

IV.  
   b- DEP-IO
      Every segment of the output has a correspondent in the input (no insertion)

The ranking of these constraints, as stated earlier, is language specific. Therefore, in a language which allows coda such as the QAD, the NO-CODA constraint would be ranked low on the scale of constraints. Alternatively, in languages where MAX-IO is ranked low, (IVb) would be the optimal one, and so forth.

2. Data Collection

Data (roughly 300 English loanwords) were collected from participants including students, family members, friends, and colleagues. Moreover, other sources such as documented blogs on the Internet, Twitter, and a collection of written words were gathered from several participants. A selection of English loanwords used in this study were pronounced by the participants (n = 40) to ensure their pronunciation matches the actual use of the loanword in Arabic interaction.

3. Objective

No previous studies have investigated this dialect (QAD); therefore, the main objective of this study is to investigate the role of QAD phonological system in adapting foreign sounds, English in this regard. The hypothesis that will be tested here is whether the adaptation of English sounds is influenced directly by the dialect as well as the accent of people or by the general system of the language. In particular, this paper will examine the following question:

- What phonological rules do the QAD speakers implement to adapt the English loanwords?

4. A Brief Account of the QAD Syllable Structure

The QAD is spoken in Alqunfudhah city (350 km from the Holy City of Makkah) and in a number of villages there. The syllable structure of QAD descends from the Standard Arabic Language. In this regard, the QAD syllable system can be summed up as:

a- CV = tʃə.ɾə  ‘mentioned’

b- CVV = tʃəː.ɾi  ‘mentioning’

CVC = ɾə.ɾəm  ‘goats’

c- CVVC = mah.ɾəː.bə:l  ‘an idiot’

d- CVCC= rəbːtʃə  ‘tying’

e- CVCC= rəbːtʃə  ‘tying’

The above syllable structure shows three types of syllable weights in the QAD: CV represents the light syllable, CVV and CVC represent the heavy syllable, and CVVC and CVCC represent the super-heavy syllables. The light syllable is the most common in this dialect, while the super-heavy syllable is the least frequently used. A closer look at the last syllable of CVCC reveals some of its specific features.
The above syllabification exemplifies the syllable structure of Arabic words. In the example (a), we notice that the cluster exists in a word final position. This is part of the Arabic sound system, but it is restricted according to the feature of the pre-final sound. In this environment, the pre-final sound should be a consonant and unreleased such as the /b/ before the emphatic /tʕ/. In example (b), the syllable comprises a light CV which is permissible in Arabic language in general and in this dialect in particular. However, in example (c), the initial cluster is prohibited in the Arabic system in general and in the QAD; the onsetless syllable is also impermissible in this dialect. This is shown in the following examples from the QAD:

b- ?ansadah ‘lied down’
c- ?intah ‘you’

These examples reveal that the insertion (epenthesis) of the guttural sound is part of this dialect and prohibits the onsetless syllable. This leads us to consider the interaction between the ONSET and DEP-IO constraints. In this situation, ONSET should be ranked above the DEP-IO. See Table (1):

Table 1. **ONSET and DEP-IO interaction**

<table>
<thead>
<tr>
<th>/ansadah/</th>
<th>ONSET</th>
<th>DEP-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- an.sa.dah</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b- ?an.sa.dah</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Table (1) typifies how the highly-ranked constraint; namely, ONSET, establishes candidate (b) as the ‘winner’ because it violates the lowest-ranked constraint, DEP-IO. This indicates the input-output match, with no additional segment to be added. However, if we flip the script and position the DEP-IO above the ONSET, the (a) candidate would then win as the onsetless syllable is impermissible in the QAD.

The MAX-IO constraint then needs to be tested to determine whether or not it interacts with the ONSET and DEP-IO constraints, as shown in Table (2):

Table 2. **DEP-IO and MAX-IO interaction**

<table>
<thead>
<tr>
<th>/ansadah/</th>
<th>DEP-IO</th>
<th>MAX-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- nsa.dah</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b- ?an.sa.dah</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

Arab World English Journal for Translation & Literary Studies
ISSN: 2550-1542 | www.awej-tls.org
Table (2) shows that candidate (a) does satisfy the highest rank; namely DEP-IO and becomes the optimal choice. Candidate (b), on the other hand, fatally violates the highest rank of DEP-IO constraint and this prohibits any additional segments, or epenthesis, in this situation. Now let us add the ONSET constraint as shown in Table (Tableau) (3):

<table>
<thead>
<tr>
<th>/ansadah/</th>
<th>ONSET</th>
<th>MAX-IO</th>
<th>DEP-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- nsa.dah</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>b-ʔan.sa.dah</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c-an.sa.dah</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (3) shows clearly that candidates (a) and (b) have satisfied at least one of the least-ranked constraints; however, candidate (c) has violated the dominating constraint, ONSET, as being onsetless. Therefore, candidate (b) becomes the optimal choice.

This succinct explanation draws the reader’s attention toward the syllable structure of the QAD and how it should have an onset which led to the expected interaction between the ONSET and DEP-IO constraints. Elaboration of this point is presented when analyzing the data.

5. Data Analysis and Discussion (Epenthesis in English Loanwords)

Epenthesis is a phonological rule by which a segment is inserted in a sequence of segments, primarily to break-up the cluster in order to align with the syllable system of the host language. According to Silverman (1992), and Broselow (2005), epenthesis is a technique used to ensure the target language syllable system complies with the recipient syllable system. Therefore, the QAD’s syllable structure does not allow onset free syllables. Moreover, if a word has an onset, it should not comprise more than one consonant (cluster) or the cluster will be broken using the inserted vowel-epenthesis to ease pronunciation. The following English loanwords used in the QAD dialect were transcribed according to the International Phonetic Alphabet (IPA) and in accordance with Longman Dictionary of Contemporary English:

6.1 ELW

<table>
<thead>
<tr>
<th></th>
<th>Transcription</th>
<th>QAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>Stadium</td>
<td>['steɪdɪm]</td>
</tr>
<tr>
<td>(b)</td>
<td>Stamp</td>
<td>[stemp]</td>
</tr>
<tr>
<td>(c)</td>
<td>Scooter</td>
<td>['sku:tə]</td>
</tr>
<tr>
<td>(d)</td>
<td>Stereo</td>
<td>['steriə]</td>
</tr>
<tr>
<td>(e)</td>
<td>Stable</td>
<td>['stɛbl]</td>
</tr>
<tr>
<td>(f)</td>
<td>Split</td>
<td>[splɪt]</td>
</tr>
<tr>
<td>(g)</td>
<td>Studio</td>
<td>[stjuːdiə]</td>
</tr>
<tr>
<td>(f)</td>
<td>Cement</td>
<td>[sɪˈment]</td>
</tr>
</tbody>
</table>

The list of words above shows how the pronunciation of loanwords deviates from its original source and how it was adapted to meet the recipient language (the QAD in this context). It is conspicuous that all the English loanwords above consist of onset (consonant cluster). The
onset of each of these words, excepting the last one, share the feature of being voiceless fricative followed by voiceless stop. Words with this feature are prone to initial guttural [ʔ] epenthesis. This strategic epenthesis, as stated above, is exercised to ease the utterance of these words. Such presentation can be depicted using the ONSET > MAX-IO > DEP-IO constraints interaction. The ONSET constraint outranks the other constraints since the syllable system of the QAD does not allow onsetlessness, as shown in table (4):

Table 4. ONSET, MAX-IO and DEP-IO ranking interaction

<table>
<thead>
<tr>
<th>/ˈsteɪdiəm/</th>
<th>ONSET</th>
<th>MAX-IO</th>
<th>DEP-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- is.taː.diəm</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b-ʔis.taːd</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c- is.taː.d</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table (4) typifies how candidates (a) and (c) violate the dominant ONSET constraint. Candidate (b), on the other hand, violates the MAX-IO and DEP-IO constraints, which are the dominated ones. As such, candidate (b) is the optimal choice.

The key point here is that the last word in the above list does not have the onset cluster, ‘cement’ [ˈsɪ.ˈment], yet speakers of the QAD tend to insert a vowel [ʔisˈment]. This epenthesis strategy arguably indicates that speakers of this dialect perceive the first consonant as a cluster because it is followed by a lax vowel [ɪ].

Epenthesis is also observed when the onset is made of voiceless fricatives such as /f/ or /s/ followed by either a voiced alveolar lateral approximant /l/ or a voiced alveolar approximant /ɹ/ such as the following:

<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- Flash [flæʃ]</td>
<td>[filæʃ]</td>
</tr>
<tr>
<td>b- Fries [fraɪz]</td>
<td>[fɪɹaɪz]</td>
</tr>
<tr>
<td>c- Slush [slʌʃ]</td>
<td>[sɪlæʃ]</td>
</tr>
<tr>
<td>d- Snap [snæp]</td>
<td>[smæb]</td>
</tr>
<tr>
<td>e- Film [film]</td>
<td>[film]</td>
</tr>
</tbody>
</table>

It is apparent from the list above that epenthesis takes place when the onset cluster is present either in word initial or final position such as in the words [sɪlæʃ] and [film]. This confirms that the phonotactic constraints of the Arabic language in general and of the QAD in particular, plays an essential role in the adaptation of English loanwords. Moreover, it is worth mentioning here that the syllable system of the original English word has been changed by the adaptation and syllable reparsing is needed to account for the new adapted words. To illustrate, the word ‘slush’ is monosyllabic in English, but becomes disyllabic in the QAD as shown in the following:
The different syllables of the original loanword compared to the adapted syllables clearly show the reparsing and the increasing use of syllables to meet the constraints of the recipient language (QAD) by filling the gaps in the source language. Such adaptations violate the OT faithfulness constraints which is made clear in the mismatch between the output and the input. In this regard, the ranking of constraints such as ONSET>MAX-IO>DEP-IO is essential to demonstrate the interaction as presented in table (5):

Table 5. *ONSET, MAX-IO and DEP-IO constraints interaction*

<table>
<thead>
<tr>
<th>/snæp/</th>
<th>ONSET</th>
<th>MAX-IO</th>
<th>DEP-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>a- is.næb</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b- snæb</td>
<td></td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
| c- sn.ab | | | *

The interaction in table (5) reveals that all constraints have been violated. However, the aim was to identify the one which violated the lowest-ranked constraint – which is (b) in this case – to become the optimal. The other candidates, (a) and (c), have been outranked since they have violated the highly-ranked constraints of MAX-IO and DEP-IO.

6. The English loanwords consonants adaptation

An important issue to discuss is that the QAD speakers, like many other Arabic dialect speakers, tend to map the consonants which are not part of their Arabic system. As previously stated in the literature review, phonemes such as /p/, /v/ and /tʃ/ are among the most targeted to be mapped into the Arabic counterparts such as /b/, /f/ and /ʃ/. This aligns with the P-map hypothesis introduced by Peperkamp and Dupoux in 2003. According to the hypothesis, mapping is not a random issue but rather a systematic process that targets the manner features. It does this because it is more resilient than other features such as the place and voicing. Strong evidence from the QAD supports the hypothesis of hierarchal change as presented below:
The list above provides a solid example of the mapping of English sounds into Arabic sounds. It also shows that mapping in the above list dominates the manner, which is more resilient than other features. A closer look at the first word in the input ‘chat’ makes it clear that the affricate /tʃ/ maps into the Arabic fricative /ʃ/, the only alveopalatal phoneme in the QAD. It is also clear that mapping goes further to include approximants. For example, in the word ‘Remote’ [ɹɪˈməʊt] the approximant /ɹ/ in English maps into the QAD and becomes a trill /r/. Another example of mapping in the above list is in the word ‘Spinach’ [ˈspɪnɪtʃ] in which the affricate /tʃ/ maps into the Arabic fricative /ɣ/. It is clear that epenthesis takes place here as well.

The previous discussion is summarized as follows:

<table>
<thead>
<tr>
<th>English Phoneme</th>
<th>QAD Phoneme</th>
<th>Mapped Phoneme</th>
<th>Phonological Adaptation Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>/tʃ/ → /ʃ/</td>
<td>Affricate becomes fricative [manner]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ɹ/ → /r/</td>
<td>Rhotic becomes trill [manner]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/tʃ/ → /ɣ/</td>
<td>Affricate becomes velar fricative [manner &amp; place]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/v/ → /f/</td>
<td>Velar stop becomes velar fricative [manner &amp; place]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/ɡ/ → /dʒ/</td>
<td>Velar becomes alveopalatal [place]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In contrast to the above list, a few English loanwords have been adapted in the QAD differently, regardless of the P-mapping claims. Now let us look at the following two examples:

<table>
<thead>
<tr>
<th>b. Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Valve [vælv]</td>
<td>[balf]</td>
</tr>
<tr>
<td>b. Veranda [vəˈændə]</td>
<td>[barandəh]</td>
</tr>
</tbody>
</table>

It can be inferred that that mapping here is unsystematic. In other words, instead of mapping the /v/ into the /f/, the mapping goes further than the manner to include the place of articulation. This is contrary to the P-map hypothesis which claims that manner is more resilient than place. The /v/ is voiced labiodental fricative and is mapped into the /b/ which is voiced bilabial stop. There are two rationales to account for this outcome. First, the QAD speakers have perceived the first /v/ as /b/ because of the approximants that happened to be part of the syllable. The two approximants /l/ /ɹ/ are non-geminate; therefore, the /v/ was perceived as /b/ rather than /f/. To illustrate this with a solid example, the word ‘villa’ [ˈvɪlə] is mapped into the QAD as [fil.lah] rather than [bl.lah]
because of the gemination which makes the mapping of /v/ into its voiceless counterpart /f/ permissible. This means the later example accounts for voicing to be more highly-ranked than the place in the former example. Second, the two words were first brought to the QAD dialect by expatriates who used to be either mechanics or masons and they tended to utter them with /b/ rather than /v/. As a result, the QAD speakers did not map them into any sound (top-down) since the initial phoneme sounded as the Arabic one /b/. For this reason, they mapped the second phoneme /v/ in the word ‘valve’ into /f/ because they perceived it as /f/ rather than /b/.

6.2. Vowel Adaptation in QAD

Vowel change in loanword adaptation is a very conspicuous phenomenon. The changes include Monophthongization, diphthongization, vowel retraction, and other vowel shifts. This is illustrated in the followings:

c. Input          Output
    Bus /bʌs/       [baːs]   
    Archive /ə:karv/ [ʔarʃi:f] 
    Virus /ˈvəriəs/ [færə:s] 
    Carbon /ˈkærən/ [kəɾbu:n] 
    Doctor /ˈdɔktər/ [dəkˈtruːr] / [dɔɡˈtruːr] ‘old generation’  
    Motor /ˈmoʊtər/ [matʃuːr] 
    Jeep /dʒiːp/     [dʒeːb]   
    Cream /ˈkriːm/   [kəɾeːm]  

The above list shows how vowel sounds in English words have been changed as a result of adaptation. It is evident how the lax vowel /ʌ/ becomes a tense vowel when it precedes an emphatic sound in the word ‘bus’. In the word ‘archive’, the vowel shifts from being diphthong /aɪ/ to being monophthong /iː/. Furthermore, the lengthening of vowels is observed in loanword adaptation such as in the word ‘[matʃuːr]’. The ‘schwa’ is lengthened to meet the recipient language’s (QAD) heavy stressed syllable. One issue for consideration here is that the modification of vowels affects the tensity or laxity and also includes the height and backness of the vowel. We can see, for instance, that the high front tense vowel in the word ‘Jeep’ /iː/ becomes a mid-front tense vowel /eː/. This is also the case for the adaptation of the word ‘Cream’.

The following encapsulation summarizes the vowel adaptation process:

<table>
<thead>
<tr>
<th>Loanword Vowels</th>
<th>QAD Mapped Vowels</th>
<th>Phonological Adaptation Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ʌ/</td>
<td>/aː/</td>
<td>Lengthening [lax becomes tense]</td>
</tr>
<tr>
<td>/aɪ/</td>
<td>/iː/</td>
<td>Monophthongization [diphthong becomes monophthong]</td>
</tr>
<tr>
<td>/æ/</td>
<td>/uː/</td>
<td>Lengthening [lax becomes tense]</td>
</tr>
<tr>
<td>/aʊ/</td>
<td>/ɑː/</td>
<td>Shortening [tense becomes lax]</td>
</tr>
<tr>
<td>/oʊ/</td>
<td>/ɑː/</td>
<td>Monophthongization [diphthong becomes monophthong]</td>
</tr>
<tr>
<td>/i/</td>
<td>/eː/</td>
<td>Height [high vowel becomes mid]</td>
</tr>
</tbody>
</table>
This discussion takes us to the stress pattern of the QAD which follows Standard Arabic and depends on the syllable weight as well as the morphological conjugation. As such, if the word is superheavy, the stress falls within the final syllable, whereas it falls on the penultimate syllable if the syllable is heavy. Hence, the QAD stress is quantity-based and presented from right to left within trochaic feet. Stress in the QAD will be addressed in a separate paper in order to provide a more in-depth investigation.

7. Conclusion
Notwithstanding that the concept of loanword adaptation is very broad, a brief review of the concept was presented in this paper with the goal to identify and discuss how foreign phonemes (English here) are mapped into the QAD. The analysis of data demonstrated clearly that the recipient language (QAD) plays a crucial role in the adaptation of foreign words. The QAD speakers, for instance, mapped a number of phonemes for several reasons; one of which was to ease their utterance of difficult clusters which are not part of the QAD syllable system. Moreover, the lack of certain phonemes in the QAD inventory system motivated the speakers of this dialect to map them into the closest phoneme in their system. This is excepting some phonemes which, in all likelihood, were perceived inaccurately. The results obtained from the current study suggest that the phonological adaptation of foreign sounds is a systematic rather than a random process. This is also the case for the Arabic language and the emphatic sounds, and for how they are articulated and affected by the adaptation of English loanwords and vice versa.

Dr. Khedir Almoayidi is an assistant professor of linguistics at the English Department, Alqunfudhah university college, Umm Alqura University, Saudi Arabia. He is interested in phonetics & phonology; speech perception & production; speech comprehensibility and intelligibility. https://orcid.org/my-orcid?orcid=0000-0002-3284-078X

References


