Deglottalization in Jordanian Arabic: Syntax-Prosody Interface

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ABSTRACT

Deglottalization occurs when a word starts with the definite article hamzatu l-waSl 'connective glottal stop' and in some noun and verb cases. In this paper, we address deglottalization in Jordanian Arabic (JA) from the standpoint of syntax-prosody interface. We study the mapping of syntactic phrases onto phonological ones. We argue that JA marks left edges of phonological phrases in the case of deglottalization. We discuss the role of epenthesis in easing the transition between words when the first ends with a closed syllable. We also maintain that Arabic resorts to compensating the deleted syllables so as to preserve the structure of syllables before the application of the rule; the syllable produced after deglottalization has the same structure as that of the definite article before the application of deglottalization.

Keywords: Arabic, Syntax-Prosody Interface, Edge Marking, Deglottalization, Phonology.

1. Introduction

Arabic is a highly morphologically rich language that is characterized by incorporation and by inflectional suffixes. On the phrase level, it has a number of various phonological processes that facilitate the speaker's task when pronouncing words within phrases. These processes take the form of deletion, insertion, assimilation, liaison and deglottalization (Anderson, 1986). In some cases, such processes result in enchainement since a word-final consonant is realized as the onset of the next syllable(1). Here, we will focus on deglottalization, the deletion of a glottal stop with subsequent resyllabification, assimilation and enchainement (Abdel-Ghani, 2010:162). We study the conditions where deglottalization applies and how the syntactic phrases map onto phonological ones. We further discuss the bearings of such processes on syllable structure and on rhythm in general.

The significance of this study lies in two points: all studies of deglottalization have addressed the topic from a purely phonological or morphological perspective. Here, we approach the topic from a syntactic-prosodic angle. Moreover, rather than focusing on Standard Arabic (SA), we study one of its dialects, JA. Nonetheless, we compare and contrast our findings about JA to SA when the rule applies.

The paper proceeds as follows: some related works are presented in section 2. The next section deals with the phonological environment of deglottalization and its mapping onto syntactic construction. Section 4 discusses epenthesis when a word ends with a closed syllable. Section 5 discusses the preservation of syllable structure after deglottalization. Section 6 concludes.

2. Literature Review

Arabic and North-West Semitic languages share some linguistics features such as the formation of the masculine plural suffix, the internal passive, a definite article which developed out of the same demonstrative element before language separation, and the diminutive (Versteegh, 1997: 17 quoted in Watson, 2002).

The glottal stop, known as hamza in Arabic, is attested in all phonological positions in Arabic: word-initially, as in ʔamar ‘he ordered/ comanded’; intervocally, as in taʃaʔul ‘optimism’; pre-consonantally, as in dʒaʔsh ‘toughness/strength’; postconsonantally, as in dʒuzʔ ‘part’; and post-vocally, as in samaʔ ‘sky’. Watson (2002:18) pinpoints that the glottal stop has been replaced by...
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compensatory lengthening of the vowel in pre-consonantal position, as in Cairene Arabic (and we assume in JA and most Arabic dialects as well): raʔs ‘head’ > ra:s and diʔb ‘wolf’ > di:b.

Watson (2002:61) states that in Arabic dialects, the definite article (usually pronounced as il- or al-) forms a syntactic unit with the following noun or adjective, but is phonologically encliticized to the preceding phonological word\(^2\). Moreover, the anticipatory assimilation of /l/ to a coronal obstruent occurs only where /l/ belongs to the definite article (Ibid 123, 217):

\[(1) /il + TamaTim/ \rightarrow iT-TamTim \quad ‘the tomatoes’\(^{13}\)
/il + Darb/ \rightarrow iD-Darb \quad ‘(the) hitting’
/il + sitt/ \rightarrow is-sitt \quad ‘the woman’
/il + shams/ \rightarrow ish-shams \quad ‘the sun’\]

The assimilation of -l is a lexical process since /l/ within any other morpheme fails to assimilate to a following coronal obstruent:

\[(2) /iltiha:b/ \quad \ast \quad itiha:b \quad ‘swelling/ inflammation’
/iltafat/ \quad \ast \quad ittafat \quad ‘he turned round’\]

Kiparsky (2003:3) states that phrase-initial onset CC-clusters are allowed in some dialects, which accordingly allow the pan-Arabic process that deletes high vowels in open syllables to reduce even initial CiC- to CC-. The resulting clusters are often broken up by a prosthetic vowel (which in turn is phonetically preceded by a glottal stop, in satisfaction of Arabic’s undominated ranking of Onset).

\[(3) (ʔ)slaaH \quad ‘plowshare’
(ʔ)klaab, \quad ‘dogs’
(ʔ)Hmaar \quad ‘donkey’\]

2.1 The nature of Hamzatu l-waSl

Deglottalization, referred to as hamzatu l-waSl ‘connective glottal stop’ has been addressed by Arab linguists and was discussed along with hamzatu l-qaTY ‘(disconnective) glottal stop’ (Ibn Jinni, 1954; Bishr, 1969; Abdoh, 1979; Al-Farahidi, 1980; Al-Farra’, 1982; Al-Ani, 1983; Ibn Ya’eesh, 1983; As-Sayuti, 1985; Sebawaih, 1987; Baraka, 1988; Rabba’, 2000; Abdel-Ghani, 2010):


The sentence in (4a) exemplifies hamzatu l-waSl since the Hamza unit of the definite article (the glottal stop plus the following vowel) is deleted without affecting the meaning of the word. The remaining l- functions as the definite article and the word is construed as definite. In (4b), on the other hand, the Hamza cannot be deleted since its deletion is banned semantically and prosodically. This is referred to as hamzatu l-qaTY.

Many traditional Arab linguists agreed that hamzatu l-waSl tends to be a glottal stop sound, which is added to a consonant cluster in the onset (Ibn Jinni, 1954; Ibn Ya’eesh, 1983; As-sayuti, 1985; and Sebawaih, 1987). In his famous book al-ʕain ‘the sound ʕ’, the traditional Arab linguist Al-Farahidi (1980) pointed out that hamzatu l-waSl is a glottal stop, which is added to word onsets to make easy the pronunciation of the consonant cluster. Hamzatu l-waSl has a purely phonological function that aims to avoid starting a word with a consonant cluster since Arabic has a constraint that bans complex onsets (Rabba’, 2000). Al-Mubarrid (1994) describes it as a pure glottal stop, whereas Al-Farra’ (1982) considers it as a slightly pronounced glottal stop. As for contemporary Arab linguists, Bishr (1969:142-143) and Hassan (1979, 1986:176-177) hold that it is a pure vowel, which is not part of the Arabic words; however, it is inserted due to a constraint that bans complex onsets in order to facilitate the pronunciation of the consonant cluster. Baraka (1988) argues that hamzatu l-waSl is in fact a combination of a consonant and a vowel since Arabic bans VC syllables.

Watson (2002:18-19) noticed that in many Arabic dialects, weakening of the glottal stop extends beyond word medial and word-final positions such that stems which were historically glottal stop initial are now vowel-initial in all but utterance-initial position. However, in careful speech vowel-initial words are realized with an
initial glottal stop not only in utterance-initial position, but also following the definite article and otherwise in phonological word–initial position. Examples from Cairene include: ʕamalt ʔeh ‘what did you do?’, and il-ʔabb ‘the father’. In these cases, the glottal stop is analyzed as prosthetic, and is distinguished from the lexical glottal stop which has been maintained in the reflexes of a few original glottal stop–initial content words.

Abdoh (1979:54-56), Omar (1985:256), and Khalil (1988:78), on the other hand, consider hamzatu l-waSl as a combination of a vowel and a consonant, which in turn indicates that Arabic can allow VC syllables although this is rare compared to syllables that start with a consonant sound. On the other hand, Al-Ani (1983:38) pinpoints that new acoustic studies claim that all Arabic vowels are glottalized at the beginning of words. This in turn indicates that VC syllables in Arabic, if existent, would be glottalized. In other words, they would have a CVC syllable where the first C stands for the glottal stop. Since we are concerned with the syntax-prosody interface in the first place, finding out the real nature of hamzatu l-waSl goes beyond the scope of this study. However, we will follow Arab linguists who believe that Hamzatu l-waSl is a CV unit for two reasons: first, the phonotactics of Arabic do not allow onsetless syllables and therefore all syllables must have an onset. Second, there is, in fact, some evidence for the presence of a vowel sound after Hamzatu l-waSl. This vowel can be pronounced /i/ as in ʕstihwa:d ‘possession’ or /u/ as in ʔuktub ‘write (2ms imperative)’. Bearing in mind that the melody tier in Arabic consists of infixal vowels and applies to the consonantal tier, the vowel that precedes the stem must have come with a glottal stop. Taking the two reasons into account, Hamzatu l-waSl must be a CV unit.

2.2 A Way out for Onsetless Syllables

As mentioned above, the constraint on Arabic syllable structure requires that no prosodic word may begin with a consonant cluster. On the other hand, the Arabic syllable structure bans onsetless syllables (Watson, 2002:232-234). To solve the two issues, a hamza unit (glottal stop + a vowel) is inserted and the outcome is a VC1C2 syllable. Such a syllable, then, undergoes resyllabification so that the second consonant provides an onset to the following syllable as shown in (5).

\[(5)\] a. \#C1C2 \#?VC1C2____.  

b. \#?VC1C2 \#[?VC]_{1}[C2____].

Banning complex onsets, Arabic adds a glottal stop plus a vowel (hamzatu l-waSl unit) as framed in (5a). The addition of this unit results in breaking the consonant cluster: the first consonant is resyllabified as the coda of the syllable that includes hamzatu l-waSl unit, and the second consonant becomes the onset of the next syllable (5b), hence both syllables conform to Arabic phonotactics.

3. Phonological environment and syntactic construction

Generally, Hamzatu l-waSl must be employed in two environments: first, it must apply to the definite article as in the following examples:

\[(6)\] a. [np[ns] Ɂel-mudi:r] → [beit e l-mudi:r] CSN house epn the-director/manager 'the director's/ manager's house'

b. [np[ns] Ɂel-beɪt] [Ɂel-kbi:r] → [(Ɂe)l-beɪt le-kbi:r] N+Adj the-house epn the-big 'the big house'


As seen from the examples above, deglottalization obligatorily applies in the construct state nominal (CSN) [np N1+N2] in (6a), in the [np N+adj] in (6b) and in the [vp VP NP] sentence in (6c) assuming that all these syntactic structures are produced in a single Intonational Phrase (IP). In general, the definite article always undergoes deglottalization as long as it is preceded by some other material within the same IP even if it preceded by a different XP as seen in (6c). This applies to both SA and JA. However, the rule optionally applies to the leftmost word in (6b). In other words, it is only the leftmost word...
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of the IP that may not undergo deglottalization since it is not preceded by any other material.\(^5\)

Second, *Hamzatu l-waSl* must also apply to nouns and verbs in the following cases provided that they are preceded by some other material (See Ibn Jinni, 1954; Sibawaih, 1988; and Ibn Al-Sarraj, 1988; among others):

(7) a. certain nouns such as *ʔibn* 'son, *ʔithnein* 'two', *ʔism* 'name, noun'.
   b. some verbs and their roots:
      i. The imperative form of verbs that consist of three, five or six consonants such as *ʔara* 'read', *ʔadʒahid* 'work hard', and *ʔstaqil* 'get independent' respectively.
      ii. The past form of verbs that consist of five or six consonants such as *ʔadʒhaad* 'worked hard' and *ʔstaqil* 'became independent' respectively.
      iii. roots of verbs that consist of five or six consonants such as *ʔadʒhaad* 'working hard', *ʔstaqil* 'independence' respectively.\(^6\)

An example of that is:

(8) /bi-ʔism Allah/ → [bsm Allah]
   "By the name of Allah (the Lord)"

Then the obligatory application of the deglottalization rule in the definite article and in nouns and verbs can be captured as follows:

(9) *Hamzatu l-waSl* deglottalization: *Hamzatu l-waSl* unit must undergo deglottalization in all prosodic words except in the prosodic word immediately following the left edge of an IP.

**Dispensing with Hamzatu l-waSl**

It is worth mentioning that if there is a way to get to the onset consonant cluster in fluent speech, *Hamzatu l-waSl* is deleted because the reason for adding it has already gone (Al-Andalusi, 1998:476). In Arabic dialects, this takes place when the first word ends with an open syllable. As a result, the vowel of that syllable replaces *Hamzatu l-waSl* unit in the second word and breaks its consonant cluster: In other words, the vowel of that syllable is used as nucleus for the syllable of enchainment to connect the two words as the abstraction in (10) and the JA examples in (11) show.

(10) a.[C\(_1\)V\(_2\)C\(_3\)C\(_4\)] → [C\(_1\)V\(_2\)C\(_3\)C\(_4\)]
    (11) a. /Maʔ-u ʔshtira:k/ → [ma.ʃuʃ.tu.ra:k] with-him subscription 'He has a subscription.'
    b. /Hiba ʔstalmat li-kta:b/ → [Hib. bas.tal.mat li-ta:ab] Hiba received the book 'Hiba received the book.'
    c. /bi-ʔstsmra:r/ → [bs.tm.ra:r] with-continuity 'continuously'

Note that when *Hamzatu l-waSl* is preceded by a long vowel, the *Hamza* unit is dropped and the long vowel undergoes shortening and becomes the nucleus of the linking syllable. The reason for such vowel reduction is to avoid having a superheavy syllable CVVC phrase-medially which is banned by Arabic phonotactics. Consequently, a new CVC syllable is created. Consider:

(12) a. /fi: ʔel-beit/ → [fil.beit] /*[fil.l.beit]
    in-the-house
    b. /MaHa: ʔisms-h/ → [ma.Has.muh]/*[ma.Has.muh]
    erase:prf:3sm name-his
    'He erased his name.'
    open:impr:3mpl the-books
    'Open the books!'

**4. Epenthesis**

The idea of having the last vowel of the first word as a nucleus of the linking syllable of *Hamzatu l-waSl* in JA has syntactic origins in SA. A word in SA must have a vowel inflectional suffix which forms the linking nucleus with the first syllable of the following word. Due to the lack of inflectional suffixes, JA resorts to using the last vowel of the first word to link the two words when the first word ends with an open syllable. If, however, it ends with a closed syllable, JA inserts an (e).\(^7\) This vowel
functions as a linker for enchainement and the two words undergo resyllabification as the abstraction in (13) and the JA example in (14) shows.\textsuperscript{(8)}

(13) \[C_{1}\#]_{\text{i}} [\#C_{2}C_{3}]_{u_{2}} \rightarrow [C_{1}eC_{2}]_{u_{1}} [C_{3}]_{u_{2}}

(14) \[?\text{ftaH} \rightarrow \text{ktaab-ak/}\]

\[?\text{fta.Hek}\cdot\text{taab-ak}] \quad \text{Open:imp:2sm}

book-your \quad \text{epn}

'Open your book'

In cases where the first word is followed by the definite article, the hamza unit is deleted and an [e] is inserted to ease the pronunciation of the two words. SA, as mentioned above, retains the inflectional suffix, which could take the nom, acc or gen case, hence appearing as (u), (a), or (i) respectively. Therefore, it also drops the hamza unit and uses these inflectional suffixes as nucleus for the syllable of enchainement instead. Compare the JA examples in (15) to their SA counterparts in (16).

(15) a. /bet \?el-wazi:r/ \rightarrow [bet.\text{tel.}\text{wa.zi:r}] \quad \text{JA}

house \quad \text{the-minister}

'The minister's house'

b. /Shuft-t \quad bet \?IntiSa:r \rightarrow … bet.\text{ten.}\text{ti.Sa:r}] \quad \text{JA}

see:prf-1s \quad \text{house} \quad \text{Inti Sar}

'I saw Intisar's house.'

c. /Marre\text{-}i \quad \text{Sa-bet} \ ?el-wazi:r/ \rightarrow \quad [\ldots bet.\text{tel.}\text{wa.zi:r}] \quad \text{JA}

stop:prf-1s on-house \quad \text{the-minister}

'I stopped by the minister's house.'

(16) a. /bat\text{-}u \ ?al-wazi:r/ \rightarrow [bat.\text{tu.l.}\text{wa.zi:r}] \quad \text{SA}

house-nom \quad \text{the-minister}

'The minister's house'

b. /Ra\text{-}ay-tu \quad \text{bat-a} \ ?IntiSa:r/ \rightarrow \ldots bat.\text{tan.}\text{ti.Sa:r}] \quad \text{SA}

see:prf-1s \quad \text{house-acc} \quad \text{the-minister}

'I saw Intisar's house.'

c. /Marar-tu \quad \text{bi-bat-ti} \ ?al-wazi:r/ \rightarrow \quad [\ldots bat.\text{tu.l.}\text{wa.zi:r}] \quad \text{SA}

stop:prf-1s by-house-gen \quad \text{the-minister}

'I stopped by the minister's house.'

Thus, in addition to the grammatical function of case, the inflectional suffix in SA has a prosodic function: it triggers resyllabification and enchainement and hence facilitates the transition from a word to the next in a prosodic phrase. JA as well as other Arabic dialects, by contrast, lost case inflectional suffixes and thus most words end with closed syllables. As a result, these dialects resort to the epenthesis of a vowel (e), when needed, to compensate for those inflectional suffixes on the one hand, and to ease the transition to the next word on the other hand. Epenthesis, then, enables speakers to move smoothly across word boundaries.

It should be noted that in the case of closed syllables, (e) insertion in JA could take place in two positions: the first is between the last syllable of the first word and the first syllable of the second word. This is achieved by the deletion of the hamzatu l-\text{waSl} unit and the epenthesis of (e) as in (6a, 6c). This process is accompanied by resyllabification and enchainement. The second also involves the deletion of the hamzatu l-\text{waSl} unit, but, instead, epenthesis takes place after the l of the definite article as in l\text{e}kbi:r 'the big' in (6b) (repeated down as (17)). In this case no enchainement takes place and each word retains its prosodic boundaries. The reason for the insertion of (e) after \text{l-} is that the second word has a complex onset. If epenthesis takes place between the two words, this will result in a two-consonant onset phrase-medially. JA does not tolerate such complex onsets unless it is in a phrase initial position. However, if epenthesis takes place within the second word, it will result in a CVC syllable, which follows the phonotactics of JA:\textsuperscript{(9)}

(17) \[?\text{el-bent} \ ?el-kbi:r/ \rightarrow \quad [?\text{el.bent.}\text{lek.bir}] /*[?\text{el.bent.tel.}\text{kbi:r]}

the-house \quad \text{the-big}

'The big house'

5. Preserving Syllable Structure

Arabic is a rhythmic language which is constructed on morphological patterns composed of skeletal and melody tiers (McCarthy, 1979b). The reason behind the insertion of (e) and resyllabification is, then, to create new syllables that match the deleted ones rhythmically. Thus, in order to preserve the rhythm of phrases, the syllable produced after deglottalization has the same structure as the definite article syllable structure regardless of whether the
syllable that precedes the definite article was closed (CVC, CV:C) or open (CV) as in (18a-c). The new syllable conforms prosodically and rhythmically with the deleted one.

(18)  a. /Ka.ta.bat Ɂel.wa:dʒɪb/ → [ka.ta.bat.wa:jɪb]  
write:prf:3sf the-homework JA  
'She did the homework.'
  b. /Mash.ru:ʕ ɁɪntɪSa:r/ → [mash.ru:ʃɛn.tɪSa:r]  
project IntiSar JA  
'IntiSar's project'
  c. /Ɂɪs.ta.shi:Ɂel.qa:.Di/ → [Ɂɪs.ta.shi:Ɂel.qa:.Di]  
consult:imp:2sf the-judge JA  
'Consult with the judge!'

In (18a), *Hamzatu l-waSl* unit is dropped and an (e) is inserted between the two words. In such a case, (e) blocks consonant clustering and forms a syllable *tel* that has the same CVC structure as the definite article *Ɂel* before deglottalization. The same applies to (18b) where again, *Hamzatu l-waSl* unit has been dropped. The resulting syllable has a CVC structure exactly as the definite article syllable structure before deglottalization. (18c) is no exception.

The syllable structure of the definite article is preserved in SA as well. *Hamzatu l-waSl* unit is also dropped and the inflectional suffix at the end of the first word is used as the nucleus of the syllable of enchainêment:

(19)  a. /Katab-tu Ɂel.wa:dʒɪb-a/ → [ka.tab.tu.wa:dʒɪb]a  
write:prf-1s/2sm/ 2sf the-homework-acc JA  
'I/ You (m/f) did the homework.'
  b. /Katab -ta Ɂel.wa:dʒɪb-a/ → [ka.tab.ta.wa:dʒɪb]a  
write:prf-1s/2sm/ 2sf the-homework-acc JA  
'I/ You (m/f) did the homework.'
  c. /Katab-t Ɂel.wa:dʒɪb-a/ → [ka.tab.t.wa:dʒɪb]a  
write:prf-1s/2sm/ 2sf the-homework-acc JA  
'I/ You (m/f) did the homework.'

JA has dropped the inflectional suffixes except for the feminine marker (ɪ). Therefore, an (e) is inserted to compensate the inflectional suffix in (19) on the one hand and to preserve the structure of *Hamzatu l-waSl* before enchainêment on the other hand. Even the feminine marker (ɪ) is neutralized in JA and pronounced as an (e). Thus, the -tu/ -ta/ -ti standing for 1s/2sm/ 2sf in SA in (19) above are, more or less, uttered the same in JA:

(20) /Katab-t Ɂel.wa:dʒɪb/ →  
write:prf-1s/2sm/ 2sf the-homework  
'I/ You (M/F) did the homework.'

In sum, the definite article deglottalization is structure preserving: the syllable that is produced after deglottalization has the same structure as that of the definite article before deglottalization. Interestingly, the options of not preserving the syllable structure of the deleted definite article do not exist since they violates the phonotactics of Arabic:

(21) /Katab-t Ɂel.waadʒɪb/ →  
a. [ka.tab.tɪl.waadʒɪb]  
b. [ka.tab.tɁel.waadʒɪb]  
c. [ka.tab.tɁel.waadʒɪb]  
write:prf-1s/2sm/ 2sf the-homework JA  
'I/ You (M/F) did the homework.'

The tri-consonant onset *tlw* in (21a) is not permissible. The coda *ɪ* in (21b) does not occur in Arabic, and the onset *el* cannot occur because all syllables must have onsets. Finally, in (21c), it is impossible to have a CV syllable word- finally that is followed by a CCV syllable in the next word without breaking the consonant cluster with subsequent resyllabification and enchainêment.

From a prosodic point of view, deglottalization with enchainêment, applies in SA and JA when the word under question is produced within the same *IP* as the previous word. This has long been stated by the traditional Arab linguist Al-Andalusi (1998:553): "*Hamzatu l-waSl* is dropped if preceded by other material but not if preceded by a pause." In the latter case, *Hamzatu l-waSl* becomes *Hamzatu qaTʕ* 'disconnective glottal stop' (a glottal stop) as in the JA examples in (22c,d).

(22)  a. (taʃa:Ɂe Ɂraʔe Ɂ-maktu:b hone)ɪp  
come:imp:2sm epn read:imp:2sm  
epn the-written here  
'Come and read what is written here!'
  b. (taʃa:Ɂe Ɂ-walad hone)ɪp  
come:imp:2sm epn the-boy here
'Come the boy is here!'
c. (taʕaːl) (eqraɁ e l-maktuːb hone) come:imp:2sm read:imp:2sm epn the-written here
'Come! read what is written here.'
d. (taʕaːl ) (ʕel-walad hone) come:imp:2sm the-boy here
'Come! the boy is here.'

Accordingly, the rule of deglottalization can be formulated as:

(23) a. Apply deglottalization unless Hamzatu l-waSl
and the previous word belong to two different IPs, i.e. Hamzatu l-waSl is in a post- pausal position.
b. Hamzatu l-waSl is deglottalized except in the prosodic word immediately following the left edge of an IP.

The rule in (23a) suggests that the scope of application of Hamza l-waSl deglottalization is a sentence or a clause, which generally equates to an IP on the phonological level. (23b) indicates that JA and SA mark the left edge of phonological phrases since Hamzatu l-waSl must apply except in the prosodic word immediately preceding the left edge of an IP.

A final remark is in order here: there are some cases in JA where the definite article is added to a noun that starts with Hamzatu l-waSl. In this case, deglottalization must apply either to the definite article, to Hamzatu l-waSl of the noun itself, or even to both of them simultaneously as long as the output does not include a consonant cluster. Deglottalization may, thus, apply before the definite article or after it. In the former case, deglottalization applies only between the two words. Only Hamzatu l-waSl in the definite article undergoes deglottalization whereas Hamzatu l-waSl, which comes after the definite article, is pronounced as Hamzatu qaTY (a glottal stop). The whole phrase undergoes resyllabification and enchainêment where the l- of the definite article of the second word is resyllabified with the first word (24a). Second, deglottalization can apply to the definite article Hamza and to the Hamza of the second word. This is permissible since all outcome syllables have simple onsets (24b). Finally, the definite article Hamza could be retained as Hamzatu qaTY and deglottalization applies only to the second Hamza as shown in (24c). Ultimately, deglottalization must apply in one place or more as long as the prosodic word under question contains the definite article plus Hamzatu l-waSl.

(24) /qaaʕa-t ʔel-ʔestqbaːl/
a. [qaaʕa tel. ʔes.tq.baːl]
b. [qaaʕat. le.tq.baːl]
c. [qaaʕat. ʔe.tq.baːl]
hall the-reception
'The reception hall'

Notice that whereas deglottalization in (24a) applies between the two words, it applies within the second word in (24b-c). The most natural way to utter the phrase above is (24b). (24a) is also quite common. By contrast, (24c) is the least common. The reason is perhaps that deglottalization in (24a-b) is structure preserving: the resulting syllables have the same structure as the definite article and as the next Hamza syllable (i.e. CVC), whereas in (24c) the resulting syllable (CV) differs from the definite article syllable structure. This destroys the rhythm of the phrase since the outcome syllable does not retain the structure of the definite article before enchainêment. In addition, it seems that deglottalization is a cyclic process: it must apply first to the outer layer (between words) before it can apply to the internal layer (within words). Looked at differently, directionality is important for the application of’deglottalization’: it must go from left to right. Therefore, (24c) is dispreferred on the basis that deglottalization applies to the internal Hamza or to the right one (labeled as b in 25) skipping the external, left, one between the two words (labeled as a in 25).
6. Conclusion

This paper tackled deglottalization in JA with some reference to SA. It was shown that deglottalization of the definite article and of *hamzatu l-waSl* in nouns and verbs takes place word-initially. We proposed that deglottalization applies on the *IP* level to all words which are not in a prepausal position. Deglottalization was, thus, proven to mark left edges of *IPs*. We also showed that deglottalization is structure preserving processes since it retains the rhythm of phrases before the application of the rule.

NOTES

(1) However, this may pose a problem for the hearers especially if they are non-native speakers of the language since they will find it difficult to break down the chunk they hear into discrete words.

(2) We refer to this phenomenon as enchainêment in this paper

(3) The transcription used in this paper is as follows: voiceless fricative pharyngeal=H, emphatic/ velarized s =S, emphatic/ velarized t=T, emphatic/ velarized d=D, glottal stop=Ɂ, voiced fricative pharyngeal=ʕ, post-alveolar affricate=ʒ, voiceless, fricative labiodental=θ, voiced, fricative labiodentals=ð, voiceless, post-alveolar fricative=sh.

(4) Traditional Arab linguists (Ibn Ya'eesh, As-Sayuti, Sebawaih, Ibn Jinni, Al-Farahidi, Al-Andalusi, Al-Mubarrid, Al-Farra' and others) lived between 8th-11th centuries. Here we refer to the year of the revision of their works.

(5) In SA, the leftmost word does not undergo deglottalization at all.

(6) The morphological system of Arabic consists basically of a consonantal tier that mainly carries the semantic part of the word, and a melody tier which bears syntactic markings such as voice and aspect.

(7) The sound inserted is not exactly an *e*. It is almost a *ə*, but since *ə* is not part of the Arabic phonetic inventory, we will conform to *e*. Further acoustic research is needed to identify the exact features of this sound.

(8) The same happens in SA but an *i* is inserted instead as shown in the following example:

\[
\begin{align*}
\text{lam} & \quad \text{ya-f} & \quad \text{S-Sawa:b} \\
\text{neg} & \quad \text{impf-3sm-do: juss} & \quad \text{the-right} & \quad \text{epn}
\end{align*}
\]

’He did not do the right thing’

Mitchell (1993:138) points out that "the vowel system of Classical Arabic/Modern Standard Arabic is a simple one of three vowel units or phonemes – open, close front, close back – with a superposed short/long distinction applicable to all three." Perhaps traditional Arab linguists considered the vowel inserted between closed syllables at word boundaries an *i* because the vowel system in Arabic has only the six vowels Mitchell mentioned, i.e. (i, i:, a, a:, u, u:). However, the vowel inserted at word boundaries may not always have the same quality of highness and frontness as (*i*). We leave this point for further research.

(9) In SA, the epenthesis after *l* of the definite article, and within the second word, is blocked since complex onsets do not exist in the first place.

(10) There is no difference between JA and SA in this respect.
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
<th>Notes</th>
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<tr>
<td>Abdoh, D.</td>
<td>1979</td>
<td>Diraasat fi 'ilm aswaat l-lugha.</td>
<td>Mu'assasat As-sabaah Li-N-nashr Wa-t-awzee.</td>
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<tr>
<td>Al-Andalusi, A.</td>
<td>1998</td>
<td>'irtishaf ad-Darb min lisan l-Sarah.</td>
<td>Revised by Rajab Mohammed and Abdel-Tawwab Ramadan. Maktabat Al-khanji, Cairo.</td>
</tr>
<tr>
<td>Bishr, K.</td>
<td>1969</td>
<td>Diraasat fi 'ilm l-lugha.</td>
<td>Daar l-ma'aarif, Egypt.</td>
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**حذف الهمة في العربية الأردنية: التفاعل بين النحو والعروض**

أيمن ياسين، ابتسام حسين

**ملخص**

يحدث حذف الهمة عندما تبدأ كلمة بأداة التعريف (أل) وفي بعض الأسماء والأفعال. ستلاقى في هذا البحث حذف الهمة في العربية الأردنية من جهة نظر التفاعل بين النحو والعروض، وسنتناقش في هذا البحث حذف الهمة من جهة والphonologique من جهة أخرى. نعم في هذه الدراسة أن العربية الأردنية تميز الحدود البسيطة للترابط الفنونولوجي عند حذف الهمة، كما نناقش دور إضافة صوت بين الكلمات من أجل تسهيل الاختلاف بين الكلمات عند بدء الأولى بمقطع مغلق. كما أنه ندعى أن العربية تلقأ إلى تعويض المقطع المنحوت من أجل الحفاظ على بنية المقاطع قبل تطبيق القاعدة. إذ أن المقطع الناتج بعد حذف الهمة له نفس بنية أداة التعريف قبل عملية حذف الهمة.

**الكلمات الدالة:** الهمة، العربية الأردنية، النحو والعروض.

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* تاريخ قبوله 7/20/2014.