Deletion of Segments in Jussive Verbs: Generative Phonology View

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Abstract—The objectives: this research is meant to find correct phonological solutions to the deleted and reduced segments at the underlying level of jussive verbs in Modern Standard Arabic. The methodology: to account for any phonological change in jussive, the researcher refers to Chomsky's and Halle's (1968) theoretical views on Generative Phonology. The results: the lax vowels [u & a] are deleted in jussive verbs if they are followed either by a consonant in one environment and the lax vowel [a] in another. The vowels [a, û & i] are reduced if followed by a consonant and the lax vowel [a] of the definite article al ‘the’. The conclusions: it is evident that the deletion and reduction of segments are not only syntactically motivated due to the occurrence of a jussive entity in the structure but also phonologically because there are certain specific environments in which such process take place.

Index Terms—vowels, consonants, deletion, reduction, lax, tense

I. INTRODUCTION

Deletion is a universal phonological process in which a vowel or consonant is dropped from an entity regardless of its class. The relevant literature shows that there were a number of Arab linguists who gave the issue a great significance. For instance, Maghalish (2007) argued that jussive is a kind of mood restricted in its occurrence to the verb of the imperfective in a structure. The deletion of a vowel or/and consonant from the end of the jussive verb marks this structure; the same vowel is used as a finite tense marker in Arabic syntax in the indicative form before being dropped when preceded by a jussive particle. The indicative verb becomes jussive in three situations: (i) al-sukān ‘vowelless consonant or quiescence’, as in [la tadhhab-Ø ila al-madrasati ‘do not go to school’]. The verb tadhhab carries the jussive marker zero as it is preceded by the negative item la ‘not’. It carries the form yadhhabu ‘goes’ in the indicative before being used in mood. In other words, the short vowel [u] is the present tense marker. (ii) h-‘adhf h-‘arf al-‘izzih min ākhirih ‘elision of a short vowel from the end of the imperative verb’ as in [wu- la tams]-Ø fi al-ard-Ø marah-Ø and walk not on the earth with conceit and arrogance’. In this case, the verb tamsi ‘walk’ is in jussive mood and is reduced vowel [i]. The verb carries the form of tamshi ‘walks’ in the indicative before being used in mood (c.f. Honorific Qur'an, p. 373, verse, 37). (iii) h-‘adhf al-nin min ākhirih ‘the deletion of the alveolar nasal [n] from the end of the imperative verb’ as in ['aw làm yaraw-Ø ‘anna nasīq al-māa ‘ila al-ardü-i al-jurż ‘have they not seen how We drive water to the dry land’] (c.f. Honorific Qur'an, p. 558, verse, 27). In this situation, the verb yaraw ‘see’ bears the zero markers since the nasal [n] and [u] are omitted. It is evident that the verb carries the form yarāwma ‘see’ in which /h/ and /l/ are overt before being in jussive mood. The elision of the structure [na] normally occurs if any of al-‘afāl al-khamsih ‘five vowels’ is used. They follow the conjunction forms of (1) yaf alāma ‘they do’, (2) taf alāma ‘you pl do’, (3) taf alāma ‘you both do’. (4) yaf alāma ‘they both do’ and (5) taf alāma ‘you feminine singular do’ (, p. 78).

In the international literature, Schane (1973) focused on deletion of segments and stated that a consonant is omitted in an environment due to feature changing. For instance, the word- final consonants, in French, are deleted when the following word begins with another consonant or a liquid as in [petit tableau ‘a small picture’] which becomes [petit tablo] and [petit livre ‘A small book’] becomes [petit livre]. However, they are retained when the following word begins with a vowel as in [petit ami ‘a small friend’] remains [petit ami] and a glide as in [petit oiseau ‘a small bird’] remains [petit waso]. Not only a consonant but also a vowel is omitted if the vowel of the definite article le or la ‘the’ is followed by another vowel in a word boundary as in [le ami ‘the boy’] which becomes [l ami] (c.f. p. 52-53). He also argued that certain English morphemes terminating a vowel drop before a suffix beginning with a vowel as in [Mexico] which become [Mexican] which is derived from [Mexico + an] in which the vowel [o] is deleted. In another example, the vowel [o] is dropped if the suffix is initiated by a vowel as in [cello + ist] which becomes celloist (p. 53).

Fromkin (1983) confirmed that the velar voiced consonant [g] is deleted when it occurs before a final nasal consonant as in ‘sign’ [sain]. This is applied to a number of words in English such as resign, phlegm, diaphragm, paradigm, design…etc. Likewise, delete a word final /h/ when it occurs after an /n/ as in ‘bomb’ /bamb/ but phonetically it is /bâm/. This is applied to words such as tamb, crumb and bomb (p. 133). A vowel may also be reduced in certain environments due to phonetic and phonological or syntactic reasons; for instance, in English a vowel reduction involves the weakening of unstressed vowels to schwa. It displays morphological as well as syntactic alternations between a stressed full vowel and unstressed reduced schwa; for instance, the high long vowel [i] in...
**DELETION OF VOWEL SEGMENTS**

The objectives of this research are to find correct solutions to the reasons behind deletion and/or reduction of vowel segments at the end of the verb in the jussive form that makes it entirely different from indicative. To solve the above issues, the following questions are being asked.

1. What is the exact segment that succumbed to deletion or any other phonological change?
2. What are the environments in which a vowel is deleted?
3. What are the environments in which the nasal components [na] are deleted?
4. What are the environments in which a vowel is reduced?
5. How do the distinctive features help the researcher posit correct phonological rules to differentiate between segments in various environments?

**IV. THEORETICAL VIEWS OF GENERATIVE PHONOLOGY**

The researcher refers to Chomsky’s and Halle’s views on generative phonology to account for each segmental change and test the environments in which the change took place and differentiate between them by using the distinctive features of the generative phonological theory at the underlying as well as the surface levels; thus certain phonological rules are to be posited to govern the change and specify each environment. Chomsky and Halle (1968) posited specific distinctive features to distinguish vowels from consonants on one hand and vowels from each other on the other whenever a vowel is deleted and/or reduced. They involve (i) features of the major class, (ii) body of tongue and (iii) sonorant/ non-sonorant (obstruent) (iv) syllabic/ non-syllabic. Such features are discussed in detail as follows:

**A. Major Class Features**

The distinction between vowels and consonants is not only related to articulatory mechanism but also to voicing. Thus, the production of vowels did not involve any major contact between articulators as compared to consonants. In such situations, the airstreams are not obstructed at any point in the vocal tract; however, in the production of consonants, a major constriction at some point along the vocal tract was always there. As known, all vowels in English are voiced; whereas, in case of consonants some of them are [+voiced] and others are [-voiced]. To account for other differences between segments, let us look to the analysis below:

1. **Vocalic – non-vocalic**

   These two features are used to describe sounds produced with an oral cavity in which the most radical constriction does not exceed that found in the high vowels [i] and [u] and with vocal cords that are positioned so as to allow spontaneous voicing as vocalic; however, non- vocalic sounds one or both of these conditions are not met.

2. **Consonantal - non-consonantal**
These two features are used to distinguish between vowels and consonants as two primary classes. Consonantal sounds are produced with a radical obstruction in the midsagittal region of the vocal tract; while, non- consonantal sounds are produced without such an obstruction. The former includes liquids; nasal and non- nasal consonants while the latter includes voiced vowels, voiceless vowels, glides [w, j] and [h, ?].

3. Sonorant – non-sonorant (obstruent)

These two features are introduced to distinguish sounds that allow spontaneous voicing from sounds that do not respectively. The sonorant segments are vowels, glides, liquids and nasals while the non- sonorant are fricatives and affricates. A refinement of these features is described as syllabic and vocoid (vowel-like in nature); hence, glides are characterized as non-syllabic and vocoid. Thus, the articulatory similarity between vowels and glides is captured by the distribution in the position of syllable nuclei. Consonants are described as contoids and vowels as vocoids while the same distinction

4. syllabic/ non-syllabic

They are used basically to differentiated between vowels and glides; however, it operates in the case of consonants. Vowels are syllabic but glides are not; furthermore, nasals and liquids are syllabic but obstructed consonants are non- syllabic ones. It must be mentioned that [± syllabic] is a different type of feature since it refers to the possibility of occurrence (distribution) of a sound in a given position (context) – i.e. syllable nucleus.

B. Cavity Features

There are certain features to distinguish consonants from each other.

1. Coronal / non-coronal: the former is used to describe sounds produced with the blade of the tongue raised from the neutral position. It includes dental, alveolar, palato-alveolar consonants; however, non-coronal is used to describe the sounds articulated with lips or with the body of the tongue in the neutral position. It includes glides, vowels, uvula and non retroflex vowels.

2. Anterior / non-anterior: the former is used to describe sounds that are produced with an obstruction that is located in front of the palato-alveolar region of the mouth; it includes labials, dentals and alveolars; but, non- anterior sound are produced without such an obstruction. It has palato-alveolar, retroflex, palatal, velar, uvular and pharyngeal.

C. Body of Tongue Features

There are certain distinctive features relating to the tongue body to define vowels; they include:

1. High- non-high

High sounds are produced by raising the body of the tongue above the level that occupies in the neutral position. It includes [i and u]. Non-high sounds are produced without such rising the body of the tongue; it involves the vowels [e, æ, a, o, ð and ŋ].

2. Low- non-Low

Low sounds are produced by lowering the body of the tongue below the level that it occupies in the neutral position; it contains [a and ɒ]. However, non-low sound are produced without such lowering the body of the tongue. It has [i, u, e, ð, o and ɒ].

3. Back-non back

Back- non back: back sounds are produced by retracting the body of the tongue form the neutral position; it consists of [a, o, ɒ and u]. Non – back sounds are produced without such retraction from the neutral position; it has [i, e, ɛ, and ɑ]. (c.f. 1968:305).

4. Rounded/un-rounded

The feature rounded/un-rounded makes a distinction between vowels pronounced with either rounded as in [u, o, ɒ and ɑ] and spread lips as in [I, e, ɛ and ɑ].

The above relevant features will be used to check the environment in which a consonant and vowel is deleted or reduced in Arabic phonology of jussive verbs, in particular.

V. DELETION OF A VOWEL IN JUSSIVE VERB

Deletion is a phonological process in which a segment is omitted either initially, medially or finally. The deleted segment bears certain distinctive generative features and is represented by the symbol [Ø] in the structure and for which a phonological rule is posited. As far as the jussive structure level, in Arabic, is concerned, a segment is to be deleted from the end of a verb if it is in the jussive form or else the structure is ungrammatical at the syntactic as well as phonetic level. Syntactically, Arabic has a number of jussive entities of different natures; if any one of them precedes the verb of imperative, certain phonetic articulatory change of segments has to happen. The entities are represented by: (i) lam ‘not’, (ii) lamma ‘not’, (iii) li ‘let’, (iv) la ‘not’, (vii) ‘in’ if’, (viii) man ‘who’, (ix) ma ‘whatever’, (x) mahma ‘whatever’, (xi) aiyana ‘when’, (xii), h∂aithuma ‘whenever’, (xiii) kaifama ‘however’, (xiv) ‘aina ‘where’ and (xv) ‘mna ‘wherever’. As the effect maximally occurs to vowels, the researcher is enforced to mention the quality of them in Arabic. There are the high front tense vowel [I], the high front lax vowel [i], the high back tense vowel [u], the low front tense vowel [a] and the low front lax vowel [æ]. Arabic, like any other languages in the world, accepts the deletion of a vowel in a final position; to account for this issue, the researcher provides the instances in (1).
Indicative Sentence
1a. ya - drus - u caliyyun/ wahTdun
   3rd, sg, masc. study pres. Ali Wahid

'Ali/ or Wahid studies'

Jussive Sentence
1b. lam ya - Ø caliyyun/ wahTdun
   not 3rd, sg, masc. study juss. Ali Wahid

'Ali/ or Wahid does not study'

1c. * lam ya - u caliyy - un wahTdun
   not 3rd, sg, masc. study pres. Ali nom Wahid

'Ali/ or Wahid does not study'

(1a) illustrates that the verb yadrus-u 'he studies' is in the indicative form; thus, it carries the present marker [u] attached to it. However, if the verb is made jussive mood by adding the negative entity lam 'not' to the initial position of the sentence, the vowel [u] must be dropped as in (1b) or else the sentence is ungrammatical as in (1c). The deletion of [u] in (1b), is captured by the phonological rule (1d).

1d. The rule (1d) reads as that the vowel [u] must be deleted if is followed by a consonant (C) or a semi-vowel. It is evident that if this rule is applied to (1a), it will not be applied because there is no phonological process is evolved.

If a verb of jussive carries the plural form in a verbal sentence, Arabic accepts the deletion of the same vowel [u], the nasal consonant [n] and its conjoint i.e. the vowel [a] (i.e. the plural marker). This phenomenon happens if the verb in which the structure [una] preceded by any jussive item. The example (2) is a specimen of the environment.

Indicative Sentence
2a. ya- sm u una r- rijālu
   3rd, pl, masc. go high pres. pl det men

'The men enjoy high positions'

Jussive Sentence
2b. li ya- sm - 0 u Ø r- rijālu
   let 3rd, pl, masc. go high juss. pl det men

'Let the men enjoy high positions'

2c. *li ya- sm - 0 u na r- rijālu
   let 3rd, pl, masc. go high juss. pl det men

'Let the men enjoy high positions'

(2a) illustrates the actual overt markers of tense [u] and plural [una] of the indicative form of the verb yamsu 'enjoy high position'. (2b) illustrates that the tense marker [u] deleted due to the overt pre-occurrence of the jussive permissive entity li 'let'. However, the remnant parts of the plural marker i.e. [na] are to be deleted as they are followed by the assimilated liquid [r] as a specimen of a number of assimilated segments such [l, r, n, f, ð, s, sː, z, ðː, d, dː, t, tː, t] that have the features [+coronal, +anterior]. These phonological phenomena in (2b) are captured by the phonological rules (2d) and (2e) respectively.

2d. The rule (2d) is read as that the vowel [u] is deleted if it is followed by [a] and the nasal [n].

2e. The rule (2e) is read as that the vowel [u] is deleted if it is followed by a consonant (C) or a semi-vowel.

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(2e) is read as that the components [na] are omitted if they are followed by a consonant in boundary. These two phonological rules of (2d) and (2e) cannot be conjoined as they talk about a vowel and the nasal [n].

Likewise, in (3a), Arabic accepts the short vowel [a] and the parts of the plural markers [na] to be deleted from the verb yas’a ‘seek’ when the verb bears the plural form and is used in jussive form as in (3).

Indicative Sentence

3a. ya -s^c -a -wna r - rija1u ila l -khairi

3rd, sg.masc. seek pres pl det men for det charity

'The men seek for charity'

Jussive Sentence

3b. lamma ya -s^c -Ø -w -Ø r - rija1u ila l -khairi

did not 3rd, sg.masc. seek juss. pl det men for det charity

'The men did not seek for charity'

(3a) is an indicative sentence in which the present tense is visible with the marker [a] to which the plural marker [wma] is also added. Once the negative jussive polarity item lamma ‘not’ occurs before the verb, the vowel [a] of the present tense and the second part of the plural marker [na] are to be deleted as in (3b). Such phonological changes are shown in the phonological rules (3c) and (3d) respectively. It is evident that jussive cannot have visible tense though it is a finite structure which is similar to subjunctive structures in Arabic syntax.

3c. [+vocalic] [Ø] [Ø] [-vocalic -consonantal]

3d. [+nasal & +vocalic] [Ø] [Ø] [C] [Ø]

(3c) and (3d) cannot be conjoined as one rule as they have different segments. In other words, there is the nasal [n] that has different distinctive features which are irrelevant to vowels. In short, it is obvious that the deletion of the segments [u], [a], [n] and [w] is not only syntactically motivated but also phonologically manifested: this is due to the fact that the structure is changed to jussive which is entirely different from indicative in two features: (i) the overt occurrence of a jussive entity, (ii) the deletion of the tense marker and the second part of the plural markers [na] without changing the finiteness of the structure. There are some other verbs of the category that are treated in the same manner once they are preceded by any jussive entity; they are listed in (4).

4. i. yas’a ‘to seek good act’
   ii. yarqa ‘to go high’
   iii. yan’a ‘to go aside’
   iv. yaqn’a ‘to condole’
   v. yabqa ‘to stay’
   vi. yin’a ‘to condole’

In short, once a jussive entity precedes the verb in the imperfective form, the short vowels [u], [a] and the plural conjoins [na] must be omitted for syntactic as well as phonetic reasons.

VI. REDUCTION OF A VOWEL IN JUSSIVE VERBS

The only weak vowel in English is the schwa /ə/ which is known as the reduced vowel. The schwa occurs as a result of a common phonetic process called vowel reduction, a process reduces a strong vowel into the schwa, the weak vowel when the syllable containing that vowel becomes unstressed. However, this phenomenon in Arabic is entirely different in the sense that the reduced vowel is not a schwa but a lax form of the same vowel and it is not weak. The researcher may give the specimens of (5) and (6) to illustrate the reduction of [ā] to [a] when two jussive entities occur.

Indicative Sentence

5a. ta- lq ā d:i:afa- ka mustabshiran

2nd, sg.masc. meet pres. guest your happy

'You meet your guest if you are happy'

Jussive Sentence

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5b. *la ta- lq -ā daifa- ka illa mustabshiran
   not 2\text{nd}, sg,masc. meet juss. guest your unless happy
   'Do not meet your guest unless you are happy'

5c. la ta- lq -a daifa- ka illa mustabshiran
   not 2\text{nd}, sg,masc. meet juss. guest your unless you are happy
   'Do not meet your guest unless you are happy'

Indicative Sentence
6a. ya- rd -ā bi nasībi hi
   3\text{rd}, sg,masc. accept pres. with luck his
   'He accepts his luck'

Jussive Sentence
6b. *lam ya- rd -ā bi nasībi hi
   not 3\text{rd}, sg,masc. accept juss. with luck his
   'I did not accept my luck'

6c. lam ya- rd -a bi nasībi hi
   not 3\text{rd}, sg,masc. accept juss. with luck his
   'I did not accept my luck'

A look at (5a) and (6a) indicates that they are correct Arabic sentences because the tense vowel [ā] marks the imperfect verbs 

However, the same tense vowel [ā] is reduced to lax [a] if it is followed by the definite article al ‘the’ and preceded by a jussive item. The sentences (8) and (9) illustrate the point of discussion with the occurrence of two other different jussive entities.

Indicative Sentence
8a. yu- jz -ā l - waladu
   3\text{rd}, sg,masc. rewarded pres det boy
   'The boy was rewarded'

Jussive Sentence
8b. * lamma yu- jz -ā l - waladu
   not 3\text{rd}, sg,masc. rewarded juss. det boy
   'The boy was not rewarded'

8c. lamma yu- jz -a l - waladu
   not 3\text{rd}, sg,masc. rewarded juss. det boy
   'The boy was not rewarded'

Indicative Sentence
9a. ya- ns -ā tī -ṭulābu- durūs- hum
   3\text{rd}, pl,masc. forgets pres. det students lesson their
   'They did not forget their lessons'

Jussive Sentence
9b. * lam ya- ns -ā tī -ṭulābu- durūs- hum
   not 3\text{rd}, pl,masc. forget juss. det student lesson their
   'They did not forget their lessons'

9c. lam ya- ns -a tī -ṭulābu- durūs- hum
   not 3\text{rd}, pl,masc. forget juss. det student lesson their
   'They did not forget their lessons'

(8a) and (9a) are grammatical sentences because the imperfective tense marker represented by the tense vowel [ā] is not reduced. (8b) and (9b) are ungrammatical sentences because the same vowel remains tense in the occurrence of the jussive entities lamma and lam ‘not. These two sentences are made correct as in (8c) and (9c) because the vowel is reduced to [a]. the rule (10) covers the change.

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Not only [ā] but also [ū] is reduced if it is preceded by a jussive entity; for instance, _man_ 'whoever' in (11b and c) and the conditional particle _in_ 'if' in (12b and c) which are used respectively.

Indicative Sentence

11a. ya- sm -ū bi akhlāgi hi

3rd, sg,masc. go high pres with ethics his

'He enjoys high ethics'

Jussive Sentence


Whoever 3rd, sg,masc. went high juss. with ethics his he pass

'Whoever enjoys high ethics, he succeeds'

11c. man ya sm -u bi akhlāgi hi ya -njahu.

whoever 3rd, sg,masc. go high juss. with ethics his he pass

'Whoever enjoys high ethics, he succeeds'

Indicative Sentence

12a. ya- dn -ū l - waladu

3rd, sg,masc. come closer pres. det boy

'The boy comes closer'

Jussive Sentence

12b. * 'in ya- dn -ū l - waladu ya- qutūu

If 3rd, sg,masc. pass juss. det boy 3rd, sg,masc. falls

'If the boy comes closer, he falls'

12c. 'in ya- dn -u l - waladu ya - qutūu

If 3rd, sg,masc. pass juss. det boy 3rd, sg,masc. falls

'If the boy comes closer, he falls'

(11a) and (12a) are normal indicative sentences in which the imperfective verbs are marked by the tense marker [ū]. However, (11b) and (12b) are incorrect because the jussive entities, namely, _man_ 'whoever' and _in_ 'if' are overt and the tense vowel [ū] is not reduced to lax. As, the same vowel is reduced in (11c) and (12c) in the verbs _yasmu_ 'go high' and _yadnu_ 'comes closer' respectively, the sentences are made correct. It is evident also that, in (12c), as the vowel [u] is followed by the definite _al_ 'the', [a] is deleted. In short, if the high back tense rounded vowel [ū] is preceded by a jussive entity and followed by a consonant, it is reduced to lax; however, if it is followed by the unique the definite article _al_, it is reduced ; moreover, [a] of the article is omitted. The reduction process of the tense [ū] is shown in the phonological rule (13)

13.

\[
\begin{align*}
+\text{vowel} & \quad \rightarrow \quad +\text{vowel} \\
-\text{back} & \quad \rightarrow \quad -\text{back} \\
+\text{low} & \quad \rightarrow \quad +\text{low} \\
+\text{tense} & \quad \rightarrow \quad +\text{tense} \\
\end{align*}
\]

The rule (13) indicates that the vowel [ū] is reduced to [u] whenever followed either by a consonant or the lax vowel [a] of the article _al_.

Likewise, the high front tense vowel [ī] is reduced to lax whenever the jussive verb is preceded by any jussive entity such as the specific adverbial entity _mata_ 'when' in (14c) and the polarity negative item _lam_ 'not' in (15c) respectively.

Indicative Sentence

14a ya- 't -ī fašlu al - shitā

3rd, sg,masc. come pres. season det winter

'Winter comes'

Jussive Sentence

14b. *mata ya- 't -ī fašlu al - shitā' tuzra'ū al - ashjāru

when 3rd, sg,masc. come juss. season det winter plant det trees

'When Winter came, trees planted'

14c. mata ya- 't -ī fašlu al - shitū' tuzra'ū al - ashjāru

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when 3rd, sg.masc. come juss. season det winter planted det trees  
\n'When winter came, trees planted' 

Indicative Sentence 
15a. ya- ram -ī r- rajulu shawkan fi al -ṭārīqi  
3rd, sg.masc. throw pres det man thorns on det road  
\n'He throws thorns on the road' 

Jussive Sentence  
15b. *lam ya- rm -ī r- rajulu shawkan fi al -ṭārīqi  
not 3rd, sg.masc. throw juss. det man thorns on det road  
\n'He did not throw thorns on the road' 

15c. lam ya- rm -ī r- rajulu shawkan fi al -ṭārīqi  
not 3rd, sg.masc. throw juss. det man thorns on det road  
\n'He did not throw thorns on the road' 

(14a) and (15a) are grammatical indicative sentences in which the verbs ya-li’ ‘come’ and yarmi ‘throw’ are marked by the tense vowel[1]. (14b) and (15b) read wrong as the same vowel retain the same quality. In (13c) and (14c), [i] is reduced to lax and the vowel [a] of the article al is deleted and [I] is assimilated to [r]. the reduction of the vowel is seen in (16). 

16.  

\[
\begin{array}{c|c|c}
\text{+vocalic} & \text{-back} & \text{-tense} \\
\hline
\text{+vocalic} & \text{-vocalic} & \text{-vocalic} \\
\text{-low} & \text{+low} & \\
\text{+tense} & \text{+lax} & \\
\end{array}
\]

To sum up, the tense vowels [ā], [ū] and [i] at the end of the imperfective verbs of jussive are reduced to lax if the verbs in which they occur are preceded by the given jussive entities and followed either by a consonant or particularly the lax vowel [a] of the definite article al ‘the’ as shown in the phonological rule (16); thus, the rules (7), (10), (13) and (16) are joined in one phonological rule as in (17). 

17.  

\[
\begin{array}{c|c|c}
\text{+vocalic} & \text{+vocalic} & \text{-vocalic} \\
\hline
\text{+vocalic} & \text{+vocalic} & \text{+vocalic} \\
\text{-low} & \text{+low} & \\
\text{-tense} & \text{-tense} & \\
\end{array}
\]

We may notice that the vowel reduction process is not only syntactically but also phonetically motivated because Arabic has this unique syntactic phenomenon among languages.

To sum up:  
This study has come out with new results as compared to previous studies. This fact is based on the fake results that have been achieved by the Arab phoneticians. They are constantly claiming that jussive is marked either by (1) the zero marker, (2) deletion of a vowel and (3) deletion of the nasal [n] from the end of the jussive verb. Such drawbacks took place due to the following reasons. They based their analysis merely on the surface structure representations rather than going to deeper levels; second they did not specify the real qualities of the deleted vowel. Third, they did not realize that the plural marker is composed of [n] and the vowel [a] but not merely [n]. As contrasted to the current study, the results are summarized as follows: (i) jussive is actually marked by the deletion of the lax vowels of [a] and [u] but not [i] at the underlying level and continued to be covert at the surface level; this contradicts point (1). (ii) The vowels [ā, ū & i] are reduced to become lax at the underlying level and are retained to the surface level. This point also contradicts the point (2) a head. (iii) The nasal components [na] but not merely [n] are deleted at the same underlying level as contrasted to point (3). These new results are confirmed by the posited phonological rules which cannot be applied at the surface level otherwise.

VII. CONCLUSION  
It is obvious that the segments that succumb to deletion and reduction occur merely at the end of the imperfective jussive verb at the underlying level but not of the imperfective indicative. The deleted segments are the high back round lax vowel [u] and the high front lax vowel [a]; however, the vowel [i] is not deleted. Moreover, the nasal components [na] are also deleted in the same process. It is obvious that there are different environments in which a vowel is deleted; for instance, the lax vowel [u] is deleted if the verb to which it is attached is preceded by the jussive specimen lam ‘not and followed by a consonant as in (1) and by the vowel [u] of the plural marker [una] as in (2). Not only [u] but also [a]
is deleted if the verb to which it is attached is preceded by the jussive specimen *lamma* ‘did not’ and followed by the semi-vowel [w] of the plural marker [wana] as in (3). This [w] is retained while the components [na] are to be deleted if followed by the assimilated liquid [r]. Similar assimilated segments that are treated like [r] include [l, r, n, j, z, ʃ, θ, s, ss, t, & t]. The vowel [a] is reduced if followed by a consonant as in (5c); it is also reduced if followed by the lax vowel [a] of the definite article *al* ‘the’ as in (6c, 8c & 9c) in a word boundary. It is evident that the liquid [l], in (8c), is not assimilated to [w]; however, the same segment is totally assimilated to [t] in a regressive manner in (9c). The vowel [ū] is reduced to lax if followed by a consonant as in (11c). Moreover, it is reduced if it is followed by the lax vowel [a] of the same article as in (12c). Finally the vowel [ī] reduced to lax if followed by a consonant as in (14c) and if followed by the lax vowel [a] of the same definite article as in (15c). There is also a total assimilation of the liquid [l] to [r] in a regressive style in the same sentence. The distinctive features proposed by Chomsky and Halle (1968) are of a great help to formulate new phonological rules that differentiate between segments that are deleted and reduced and govern their environments in a prices manner.

VIII. TRANSLITERATION SYMBOLS OF ARABIC CONSONANTS PHONEMES

<table>
<thead>
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<th>Arabic</th>
<th>Transliteration</th>
<th>Arabic</th>
<th>Transliteration</th>
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Notice: the researcher has a reference to the transliteration symbols while writing the Arabic phonemic segments in the text. (c.f. Oxford Journal for Islamic Studies)

IX. TRANSLITERATION SYMBOLS OF ARABIC VOWELS PHONEMES

(c.f. Oxford Journal for Islamic Studies)

X. STANDARD ARABIC PHONETIC SYMBOLS OF CONSONANTS AS PER IPA

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Table:

<table>
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<tr>
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<th>velar</th>
<th>uvular</th>
<th>pharyngeal</th>
<th>glottal</th>
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Notice: the researchers do not refer to the phonetic symbols but they used merely the transliteration ones while writing the Arabic specimens in the text. The phonetic symbols are listed only for knowledge (c.f, http://en.wikipedia.org/wiki Arabic Phonology).

References


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