

Word-Stress in Arabic: A Phonological Study From A Generative Perspective

*Lecturer
Adil A. Al-Thamery,
College of Arts.
Basrah University*

*A.ss Lecturer
Majid Abdulatif Ibrahim
College of Arts
Basrah University*

Introduction

Word-stress in Arabic can be fruitfully studied in terms of generative phonology and new insights might be given. The present paper is concerned with examining word-stress in Standard Arabic (henceforth, Arabic) from a generative point of view. It also aims at scrutinizing some traditional rules and how far successful they are in relation to generative phonology (henceforth, GP).

This paper falls into two parts: the first is theoretical wherein the definition and nature of key terms are presented; the second is practical in which some aspects of word-stress in Arabic are generatively discussed and GP rules are formulated.

2.Theoretical Considerations

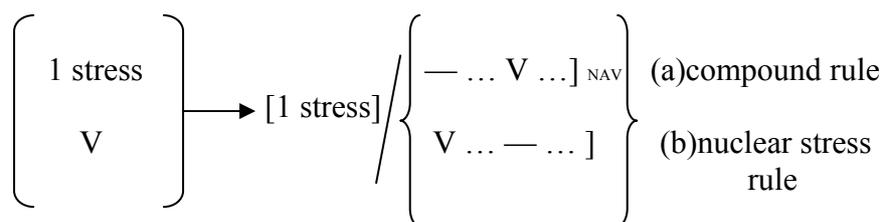
2.1. Generative Phonology

GP is a theory of the sound structure of language. The theoretical framework of GP owes a great deal to *The Sound Pattern of English* (henceforth, SPE) in which Chomsky and Halle set forth the theory and the application to English (Schane, 1973:xv).

GP is a developing set of approaches not a monolithic theory. It was originally developed as the phonological aspect of what was

intended as a unified theory of grammar whose syntactic side was first brought in prominence in Chomsky's *Syntactic Structures*. Two important strands of the earlier theory can be traced (however, from a technical basis): a binary feature-theory (originally Jakobsonian) and a neo—Bloomfieldian process of morphophonemics. Thus, one can describe GP as a theory of morphophonemic structure.

The principle of the transformational cycle is basic in GP. Chomsky and Halle (1968:18) apply this principle to English stress contours and offer the following rule for the compound and nuclear stress:



However, In SPE, the theory is based on another principle, i.e. partial rule-ordering. This principle means that a certain ordering of rules perform more naturally than some other one taking into consideration that in this more natural order a rule may apply in a different environment rather than in an extrinsic order (Chomsky and Halle, 1968:vii).

2.2. The Syllable

Phonetically, the syllable consists of a centre which has little or no obstruction to airflow and sounds comparatively loud before and after this centre (Roach, 1994:102). However, the syllable, phonologically speaking, consists of the onset and the core (rhyme); the core, in turn, is composed of the peak and coda. Syllables can be classified into open and closed ones. Open syllables end in a vowel (CV), while closed syllables are arrested by a consonant (CVC). Accordingly, a CV syllable has a core with zero coda and CVC one has a core with V peak and C coda (Hyman, 1975:188).

The way of breaking a word into syllables is language specific. The structure of English syllables, for instance, depends on sonority. Vowels are more sonorant than consonants. Therefore, vowels are the nuclei of syllables and the surrounding consonants are the margins (Brosnahan and Malemberg, 1970:141). Lass (1984:260) argues that the syllable is a prime descriptive unit, particularly in the stress-assignment rules. The following list gives the patterns of English syllables:

Syllable pattern	Orthographical transcription	Phonemic transcription
V	or	/ ɔ: /
CV	see	/ si: /
VC	ill	/ ɪl /
CVC	but	/ bʌt /
CCV	free	/ fri: /
VCC	old	/ əʊld /
CCVC	stick	/ stɪk /
CCCVC	street	/ stri:t /
CCCVCC	streets	/ stri:ts /
CCCVCCC	strengths	/ streŋθs /
CVCC	laughed	/ la:ft /
CCVCC	treats	/ tri:ts /
CVCCC	depths	/ depθs /

After Singh and Singh (1977:190)

The syllable is analyzed according to the contrastive components that are contained in its structure. Each syllable has a main part standing out and having prominence. Arabic has three short vowels with their long counterparts that always form syllable nuclei. Consonants are marginal phonemes in syllables. The number of syllables in an Arabic utterance is identical to the number of the vowels in that utterance. Either the initiation or the termination of a syllable represents the marginal phonemes. The initiation is always single consonants whereas the termination is always a single consonant, two consonants or zero consonant (Al- Ani, 1970:86).

There are five types of syllable structure in Arabic; two of them are open and three are closed (Anis, 1961:113). The following table includes syllable types in Arabic:

<u>Syllable Pattern</u>	<u>Orthographical Transcription</u>	<u>Phonemic Transcription</u>
CVV	في	/ fii /
CVC	سن	/ sin /
CVVCVC	راهب	/ raahib /
CVVC	باب	/ baab /
CVCC	نهر	/ nahr /

The first four syllable patterns occur initially, medially and finally; the fifth occurs only finally or in isolation.

2.3. Stress

Stress is a suprasegmental feature of utterances that can be applied to individual vowels and consonants, and to syllables. Jones (1967:245) defines stress as “ the degree of force with which a sound or a syllable is uttered”. This definition is clearly made in physiological terms since he points out a strong force of utterance that means an energetic action of all articulatory organs. Ladefoged (1975:222) offers a similar definition: the stressed sounds are produced with more muscular efforts, i.e. pushing out air from the lungs by more muscular contraction caused by the movement of the rib cage. Moreover, he (ibid.) states that “stressed syllables are those on which the speaker expends more muscular energy”.

Schane (1973:14) argues that stress is one of the prosodic elements associated with syllables and most often with particular vowels. On the other side, Singh and Singh (1977:170) comment that stress refers to the most prominent part of a syllable or a word; such a prominence is the result of extra breath force.

Chomsky and Halle (1968:224) agree with the articulatory approaches to stress stating that a considerable muscular effort lengthens the period during which the articulatory organs maintain appropriate configuration. The relationship between stress and loudness is discussed by Brosnhan and Malemberg (1970:156) and they conclude that:

the linguistic nature of stress clearly involves more than the single dimension of perceived loudness, though loudness may be its most important component, the majority of cases, a number of other cues are also present, in varying proportions, in current speech.

Gimson (1989:24) prefers the use of the term “ prominence to cover these general listeners–impressions of variations in the perceptibility of sounds”.

According to Roach (1994:63), stress is dependent on the use of more muscular energy than is used for unstressed syllables whereas all stressed syllables have one feature in common – ‘prominence’ from the perceptual viewpoint. There are four different factors responsible for making a syllable prominent – pitch, length, loudness and vowel quality.

3. Word–Stress in Arabic in Terms of GP

In Arabic word–stress and its placement is predictable because if we take the structural patterns of the word, then rules can be formulated so as to pinpoint the syllable on which stress falls. Word–stress, therefore, is non–phonemic in Arabic (see Al–Ani, 1970; Odisho, 1976; Omar,1985). Arabic stress does not produce a distinction in meaning. Most linguists and orientalists, nevertheless, have distinguished three degrees of non–phonemic stress: primary, secondary and weak. Erwin (1963:40), for instance, stating a general rule of word–stress placement in Arabic, maintains that:

stress falls on the long syllable nearest to the end of the word. In the absence of a long syllable, the stress falls on the first syllable and on the third syllable from the end in words of three or more syllables.

Moreover, Mitchell (1975:76) extensively discusses accentuation and other phonological phenomena related to syllable structure in classical Arabic and in several modern dialects. His approach is prosodic. To him, a final syllable of the word is stressed if it is long, i.e. VVC(C) or VCC. He does not consider VV# as a long vowel, e.g.

/ darabt / I hit
/ ?a9maal / jobs

If the pre-final syllable is closed, that is of CVC, or CVVC it will be stressed, e.g.

/ katabta / You wrote
/ haa aani / these two

But if the pre-final syllable is open, i.e. of the form CV, then either that syllable or the syllable preceding it is stressed, e.g.

/ kaataba / he corresponded with
/ qattalat / she murdered
/ katabataa / they (feminine) wrote
/ faɖʒaratuhumaa / their (dual) tree

These rules are formulated in terms of generative phonology as follows:

$$\left[\begin{array}{c} +\text{voc} \\ -\text{cons} \end{array} \right] \longrightarrow [+acc]/ \left\{ \begin{array}{l} \text{(a) } \left\{ \begin{array}{l} \# C - C_0 \# \\ - C_2 \# \end{array} \right\} \\ \text{(b) } - C_2 VC^1 \# \\ \text{(c) } \left\{ \begin{array}{l} C_2 \\ \# C \end{array} \right\} (VCVC)_0 - (CV) CV(C) \# \end{array} \right\}$$

After Langendoen (1968:102)

However, Erwin's rule (stated above) may be modified to account for word-stress in Arabic to read:

A main stress falls on the vowel that occurs before the last two morae in the word, where a mora is V or CC. If a word has less than three morae, the first vowel in the word is stressed.

The stress rule then should follow a rule that shortens a long vowel VV occurring finally in a word:

1. $V_2 \longrightarrow \emptyset / V_1 - \#$ (where $V_1 = V_2$)
2. $V \longrightarrow [+stress] /$
 - (a) $- X$ (where X contains # two morae)
 - (b) $\# (C)C - Y [- stress]$

The restriction that Y does not contain stress is necessary so that words, which have received stress by rule 2(a), will not be stressed again by rule 2(b). The following examples illustrate the rules:

- /katabna/ we wrote
 /katabna/ \longrightarrow katab+na rule 1
 \longrightarrow katab+na rule 2(a)
- /yadun/ a hand
 /yadun/ \longrightarrow yad+un rule2(b)
- /kitaabun/ a book
 /kitaabun/ \longrightarrow kitaab+un rule2(a)

The deletion of vowel endings (and the indefinite marker n if present) in "pause forms", e.g. /kitaab/ (pause form) vs. /kitaabun/ (context form), and jussive verbs including the imperative, e.g. /tanta ir/ 'you wait' and /?inta ir/ 'wait', follow the stress rule:

- kitaab+bun \longrightarrow kitaab+un stress rule
- \longrightarrow kitaab ending deletion rule
- tanta ir+u \longrightarrow tanta ir+u stress rule
- \longrightarrow tanta ir jussive or pause form
- \longrightarrow ?inta ir imperative

These rules may be rewritten as follows:

$$V \longrightarrow [+stress] / \left. \begin{array}{l} \text{(a) } - \left\{ \begin{array}{l} C^2 \quad V \\ \quad \quad C \end{array} \right\} CV(C) \\ \text{(b) } \# C - \quad \quad \quad [-stress] \end{array} \right\} \#$$

This is an abbreviation of the following rule:

$$V \longrightarrow [+stress] / \left\{ \begin{array}{l} -CCVCVC \\ -CCVCV \\ -CVCVC \\ -VCVC \\ -VCV \\ -CCVC \\ -CCV \\ \#CC - CVC \\ \#CC - CV \\ \#C - CVC \\ \#C - CV \\ \#C - C \\ \#C \end{array} \right\}$$

4. Conclusion

The above GP account of word-stress in Arabic does not claim perfection and of course not exhaustive. It only sheds light on the importance of approaching stress from a generative point of view. It proves that GP in its classical version (SPE) is powerful in handling word-stress in Arabic. More research would surely be required to examine the status of traditional rules put for the suprasegmental features of Arabic. A fruitful area of study is the comparison between word-stress in classical Arabic and modern dialects of Arabic; such a comparison may cast light on the unity of dialects' origins and sound changes.

Phonetic Symbols Used (After Erwin, 1963)

A) *The vowels:*

- i as in /ʔibn/ 'son'
 ii as in /diin/ 'religion'
 a as in /matbax/ 'kitchen'
 aa as in /baab/ 'door'
 u as in /sakatu/ 'they stopped talking'
 uu as in /nuur/ 'light'

B) *The consonants:*

- | | |
|--|-----------------------------------|
| b as in /bhaam/ 'thumb' | s as in /sirdaab/ 'cellar' |
| t as in /ta9baan/ 'tired' | s as in /samt/ 'silence' |
| t as in /tiin/ 'mud' | h as in /hilm/ 'dream' |
| d as in /dumuu9/ 'tears' | 9 as in /9aqil/ 'mind' |
| d as in /daabut/ 'officer' | h as in /hunaaka/ 'there' |
| k as in /qatala/ 'he killed'
place' | m as in /mahlluk/ 'your
place' |
| q as in /qamiis/ 'shirt' | n as in /nahar/ 'river' |
| ʔ as in /ʔamal/ 'hope' | r as in /rama/ 'throw' |
| f as in /faaz/ 'win' | y as in /bayyan/ 'manifesto' |
| θ as in /θaani/ 'second' | ʃ as in /ʔiftara/ 'he bought' |
| as in / iʔb/ 'wolf' | ɟ as in /ɟjamaal/ 'beauty' |
| as in / amiir/ 'conscience' | |

References

- Al-Ani, S. (1970) *Arabic Phonology*. The Hague: Mouton.
 Anis, Ibrahim (1961) *Aswat Al-Luga*. Cairo: Dar-Nada.
 Brosnhan, L. and B. Malemberg (1970) *Introduction to phonetics*.
 Cambridge: CUP
 Chomsky, N. and M. Halle (1968) *The Sound Pattern of English*. New
 York: Harper and Row.
 Eriwn, W. M. (1963) *A Short Reference Grammar of Iraqi Arabic*.
 Washington: Georgetown University Press.

- Gimson, A. C. (1989) *An Introduction to the Pronunciation of English*. London: Edward Arnold.
- Hyman, L. (1975) *Phonology: Theory and analysis*. New York: Holt, Rinehart and Winston
- Jones, D. (1967) *An Outline of English Phonetics*. Cambridge: CUP.
- Ladefoged, P. (1975) *A Course in Phonetics*. New York: Harcourt Brace.
- Langendoen, D. (1968) *The London School of Linguistics*. Cambridge: MIT.
- Lass, R. (1984) *Phonology*. Cambridge: CUP.
- Mitchell, T F (1975) *Principles of Firthian Linguistics*. London: Longman.
- Nasr, R. (1970) *The Structure of Arabic*. Beirut: Lidrairi du Liban.
- Odisho, E. (1976) "A Case in Comparative Study of Word-stress in RP English and Arabic". In *IDELTI*, NO.7, 43-55.
- Omar, A. (1985) *Dirasat Al-Swat Al-Lugawi*. Cairo: Alam Al-Kutub.
- Roach, P. (1994) *English Phonetics and Phonology: A Practical Course*. Cambridge: CUP.
- Schane, S. A. (1973) *Generative Phonology*. New Jersey: Prentice-Hall, Inc.
- Singh, S. and K. Singh (1977) *Phonetics: Principles and Practices*. Baltimore: University Park Press.