

## **ASPECTS OF THE LEXICAL PHONOLOGY OF MODERN STANDARD ARABIC**

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### **ABSTRACT**

This research paper aims at describing the various lexical phonological processes involved in the formation and articulation of words in the Modern Standard Arabic variety spoken in Cairo, Egypt. The description is done within the framework of the Lexical Phonology theory. The main objective of this study is to investigate and verify the extent to which the various principles of the Lexical Phonology theory are applicable to the modern standard variety of Arabic, more specifically the principle of rule ordering and the principle of stress neutral and stress non-neutral affixes. The discussion revolves around both consonantal and vowel processes involved in the formation of words at the lexical level. It concludes by showing that notwithstanding its weaknesses, the Lexical Phonology theory is a useful tool in the description of the lexical phonology of the Modern Standard Arabic.

### **1.0 Introduction**

This study describes the lexical phonology of the Arabic variety often referred to as Modern Standard Arabic (MSA). The objectives of the study are: to account for the presence of strata in the MSA lexicon, explain the role of morphology in determining the phonological structure of MSA words and examine the validity of the principle of rule ordering as well as the principle of stress-neutral and stress non-neutral affixes in accounting for the various phonological processes that take place in the grammar of MSA.

Arabic is a Semitic language spoken by between 350-400 million speakers around the world. It has several dialects spoken as mother tongue in all the Arabic speaking countries, but MSA is the standard variety. Owing to the significance of Arabic as an international language, the United Nations, in 1974, designated Modern Standard Arabic (MSA) to be its sixth official language used in all its proceedings.

Lexical Phonology (LP) is a phonological theory that is used to describe the nature of the relationship between the phonology and morphology in the processes of forming the words of a language. Initially referred to as Lexical Morphology and Phonology (LMP), it is currently known

as Lexical Phonology (LP) for ease of reference. Its main claim is that though phonology and morphology are considered separate components of a language, they are nevertheless bi-directionally interacting components in a grammar. According to the LP theory, the lexicon consists of ordered lexical strata which function as the domains of application of phonological and morphological rules. These rules are assigned to particular strata or levels in both morphology and phonology, and this assignment allows words to be built up in stages so that some morphological rules of affixation apply early in a derivation, and are then followed by phonological rules. The LP theory deals with phonological processes in a language which pertain to the word and so, it is considered synonymous to 'word phonology'. As such, it may be contrasted with 'post-lexical phonology' or 'phrasal phonology', which deals with the processes that apply across word boundaries in the domain of larger constituents such as phrases. The main principles of the LP theory are: the principle of strata, the principle of ordering of affixes, the principle of rule ordering, the Bracket Erasure Convention (BEC) and the principle of neutral and non-neutral affixes. This paper will limit itself to the discussion of the principles of rule ordering and stress neutral and non-neutral affixes.

## **2.0 Research Methodology**

The method used to collect data for this study involved recording data from discussion programs aired on an Egyptian T.V Channel, Cairo University 1 as well as from audio lessons recorded under the Egyptian 'Arabic By Radio' program. All the data was recorded on an audio-tape recorder and transcribed for analysis in line with the objectives of this study. In the course of analyzing the data, we focused mainly on areas that highlighted the pertinent phonological and morphological processes involved in the formation of MSA words. We, to a large extent, relied on our intuition as competent speakers of MSA to analyze and verify data. We noted that the data collected revealed several consonant and vowel processes in the articulation of various lexical items of MSA which we then analyzed based on the arguments advanced by proponents of the LP theory. The data is reproduced here as Appendices A-D.

## **3.0 Results and Discussion**

As earlier stated, the processes of word derivation and inflection involve assigning rules to strata in both phonology and morphology. These rules are ordered in a particular way, which can be explained by the principle of rule ordering. Furthermore, the principle of stress neutral and stress non-neutral affixes explains the role of affixes in determining the position of stress in derived words and therefore provides evidence for the role of morphology in the phonological structure of words. In the following sections, we discuss the main tenets of the principle of rule ordering, and the principle of stress neutral and non-neutral affixes and proceed to test the validity of the two principles on data drawn from MSA.

### **3.1 The Principle of Rule Ordering**

The LP theory claims that the rules of morphology and phonology apply cyclically where the rules first apply to the root, then outward to the affixes closest to the root and then further outward to the outermost layers of the affixes. Phonological rules apply from the underlying forms through the lexical forms and are classified into two: those that require word internal morphological information to apply and therefore apply in the lexicon as part of the word formation process, as well as those that apply after the word formation process has been completed. The distinction in the application

of rules gives rise to three levels of word representation, namely: the underlying representation (UR), the lexical representation (LR) and the phonetic representation (PR). The underlying representation refers to the phonological representation of morphemes in the set of lexical entries, while the lexical representation is the phonological representation of words in the set of lexical entries whereas the phonetic representation refers to the output of all the phonological rules, given in universal notation. (Mohan, 1982:3), uses the process of deriving the word *presidentiality* to illustrate the principle of rule ordering as shown in the table below.

**Table 1: Lexical Rule Application in the LP Model** (Adapted from Mohan, 1982:3 with minor changes)

S/No.	Underlying Representation (UR)	Rule Application	Phonetic Representation (PR)
1	/prezi:d/		[prezi:d]
2	[[prezi:d]+ent]	suffixation	[prezi:dent]
3	[[prezi:d]+ent]	Laxing	[prezident]
4	[[[prezid]+ent]+y]	suffixation	[prezidenty]
5	[[[prezid]+ent]+y]	t → s/____ i	[prezidensi]
6	[[[[ prezid]+ens]+y] +æ]	suffixation	[prezidensyæ]
7	[[[[[prezid]+enf]+y]+æ]	s → ʃ	[prezidenʃyæ]
8	[[[[[[prezid]+enf]+y]+æ]+iti]	suffixation	[prezidenʃyælitɪ]

The table above shows that the underived morpheme [prezi:d] at the underlying level undergoes a morphological rule of suffixation to give rise to the word [prezi:dent]. The process of suffixation is then immediately followed by a phonological rule of laxing which leads to the word [prezident]. The lexical term [prezi:dent] then goes through another morphological process of suffixation which leads to the formation of the word [prezidenty]. The /t/ in [prezidenty] then becomes /s/ before /i/, which is a phonological rule that is then followed by suffixation of /æ/. The suffixation rule is then

followed by a phonological process where /s/ becomes /ʃ/ to form the word [prezidenʃyæl], which is followed by suffixation to form [prezidenʃyæli].

### 3.2 The Principle of Stress Neutral and Stress Non-neutral affixes

This principle is used to explain the effect of affixes on the position of stress in the derivation of a word. Affixes are categorized as neutral or non-neutral depending on their effect on the position of primary stress in a word. A *neutral affix* is one with no phonological effect on the base to which it is attached because it does not cause a change in the position of primary stress. In English, the affixes, *-ness*, and *-less* are examples of neutral affixes. When added to a base, they yield forms such as: 'abstract+ness → 'abstractness, 'home+less → 'homeless

A *non-neutral affix*, on the other hand, has a phonological effect on the word base since it causes a shift in the position of the primary stress in the word to which it is added. Examples of non-neutral affixes in English include: *-ic*, *-ee*, which, when added to a base, result in forms such as: *stratégie+ic* → *stratégic*, *emplóy+ee* → *employée*. (Katamba, 1989:273) refers to affixes such as *-ic* as *pre-accenting suffixes* because, when added to a word base, they make the syllable immediately before them to be stressed. In contrast, affixes such as *-ic* and *ee* are referred to as *auto-stressed suffixes*, because they attract stress on themselves.

### 3.3 The Principle of Rule Ordering in MSA

The processes of deriving and inflecting words in MSA involve the phenomenon of rule ordering proposed in the LP theory. This phenomenon may be illustrated using the derivation of the word: [mudarrisu:nahum] which involves several rules captured in the data below:

- (i) [mudarrisu:nahum] 'their teachers' (pl. masc.)

#### Lexical level

S/No.	Underlying Representation	Rule Application	Phonetic Representation	Gloss
1.	[daras]	Underived lexical item (no process involved)	[daras]	'he studied'
2.	[[darras]+v]	Affixation, gemination and BEC	[darras]	'he taught'
3.	[mu+[darras]]	Prefixation and BEC	[mudarras]	-
4.	[mudarras]	Vowel substitution a→i/mu+C__C and BEC	[mudarris]	'teacher' masc.
5.	[[mudarris]+u:na]	Suffixation of -u:na	[mudarrisu:na]	'teachers' masc.
6.	[[mudarrisu:na]+hum]	Suffixation of -hum and BEC	[mudarrisu:nahum]	'their teachers' pl.masc.

### 3.4 The Principle of Stress Neutral and Non-neutral Affixes in MSA

The discussion below addresses affixes at both Levels 1 and 2 of morphology and phonology and is intended to help us understand the resultant phonological structure of a word at the end of the application of morphological and phonological rules.

#### 3.4.1 Affixes in the Derivation of the triconsonantal Active Participle (AP)

Let us examine the data below:

(1)	Verb base	px+Verb base	LR	→	PR	
(i)	[dárnas] 'he taught'	[mu+[dárnas]]	[mudárnas]	→	[mudárnis]	'teacher' masc.
(ii)	[rá:qab] observed'	[mu+[rá:qab]]	[murá:qab]	→	[murá:qib]	'he 'Observer' masc.

In the data above, the AP is derived by affixing the prefix *mu-* to the verb stem. We can deduce that the prefix *mu-* is a neutral affix because it causes no stress shift in the derived new word as is evident in the fact that the primary stress in the verb base is marked on the penultimate syllable and remains on the penultimate syllable in the derived AP.

In other instances, the neutral affix attracts stress to itself. The data below illustrates an example of an auto-stressed affix in MSA:

(2)	Verb base	px+Verb base	LR	→	PR	Gloss
(i)	[ʔársal]	[mu+[ʔársal]]	[muʔársal]	→	[múrsil]	'sender' masc.
(ii)	[ʔínʕazal]	[mu+[ʔínʕazal]]	[muʔínʕazal]	→	[múnʕazil]	'isolated person' masc.

The affix *mu-* in the examples above may be considered a neutral affix because it does not cause a change in the position of the primary stress. It also attracts stress to itself and so, according to (Katamba, 1989:273), it may be referred to as an *auto-stressed affix*.

#### 3.4.2 Affixes in the Derivation of Nouns of Place

Let us consider the following examples:

(3)	Verb base	px+Verb base+sfx	LR	→	PR	Gloss
(i)	[kátab]	[ma+[kátab]]	[makátab]	→	[máktab]	'office'
(ii)	[sádʒad]	[ma+[sádʒad]]	[masádʒad]	→	[másdʒid]	'mosque'
(iii)	[kátab]	[[ma+[kátab]]+at]	[makátabat]	→	[máktabat]	'library'
(iv)	[dárnas]	[[ma+[dárnas]]+at]	[madárasat]	→	[mádrasat]	'school'

The data above presents an interesting scenario. The derivational morpheme *ma-* functions both as a neutral and non-neutral affix. In examples (i) and (ii), it is neutral because it does not cause a shift in the position of the stress where stress remains on the penultimate syllable. Also, the morpheme attracts stress to itself. In examples (iii) and (iv) *ma-* acts as a non-neutral affix because it causes a shift in the position of stress from the penultimate position of the verb base to the antepenultimate position of the derived noun of place. One possible explanation for this scenario is that in (iii) and

(iv), another suffix *-at* has been introduced. This is where the veracity of the LPs principle of neutral and non-neutral affixes comes into question.

### 3.4.3 Affixes in the Derivation of Adjectives from Nouns

The examples below illustrate the process of deriving adjectives from nouns in MSA.

(4)	Verb base	pfx+Verb base	LR	PR	Gloss
(i)	[mísʕr]	[[mísʕr]+ijj]	[mísʕrijj] →	[mísʕrijj]	‘Egyptian’ masc.
(ii)	[dúnja:]	[[dúnja]+wijj]	[dúnjawijj] →	[dúnjawijj]	‘earthly’ sing.masc.

In the data above, the affix *-ijj* is considered neutral in (i), while in (ii), it is regarded a non-neutral affix on account of the position of the primary stress in the derived word.

### 3.4.4 Affixes in the Inflection of Verbs for Gender

Let us consider the data below:

(5)	Verb base	Verb base+sfx	LR	PR	Gloss
(i)	[hárab]	[[hárab]+at]	[hárabat] →	[hárabat]	‘she escaped’
(ii)	[hárab]	[[hárab]+ata:]	[hárabata:] →	[hárabata:]	‘they escaped’ dual.fem
(iii)	[hárab]	[[hárab]+na]	[hárabna] →	[hárabna]	‘they escaped’ pl.fem

The examples in (5) above show that affixes *-at* and *+ata:* in (i) and (ii) respectively are non-neutral, while the affix *-na* in (iii) is a neutral affix.

### 3.4.5 Affixes in the Inflection of Nouns for Gender

Let us consider the data below:

(6)	Noun base	Noun base+sfx	LR	PR	Gloss
(i)	[ʕá:lim]	[[ʕá:lim]+at]	[ʕá:limat] →	[ʕá:limat]	‘scholar’ sing.fem.
(ii)	[ʕá:lim]	[[[ʕá:lim]+a:t]	[ʕá:lima:t] →	[ʕá:lima:t]	‘scholars’ pl.fem.

In (6) above, the affixes *-at*, and *-a:t* involved in the inflection of the noun base are considered non-neutral affixes. This is because in both cases, the position of stress shifts from the penultimate syllable to the antepenultimate syllable in the noun base and the inflected noun respectively.

### 3.4.6 Affixes in the Inflection of Nouns for Possession

Let us consider the examples below:

(7)	Verb base	Verb base+aff.	LR	PR	Gloss
(i)	[mánzil]	[[mánzil]+i:]	[mánzili:] →	[mánzili:]	‘my home’
(ii)	[mánzil]	[[[mánzil]+u]+na:]	[mánziluna:] →	[mánziluna:]	‘our home’
(iii)	[máanzil]	[[[mánzil]+u]+kunna]	[mánzilukunna] →	[mánzilukunna]	‘your home’ pl. fem.

The data in (7) above illustrates that the affixes *-i:*, and *-na:* are considered non-neutral, while the affix *-kunna* is regarded as neutral.

### 3.5 Lexical Phonological Processes in MSA

This section focuses only on the lexical phonological processes in MSA.

#### 3.5.1 Consonant Processes

##### 3.5.1.1 Homorganic Nasal Assimilation.

Assimilation is a phonological process in which a segment (consonant or vowel) acquires the phonetic features of another segment contiguous to it. The motivation for this process is normally to reduce the effort spent in the articulation of the two contiguous segments. This position is supported by (Katamba,1989:93) who argues that:

ensuring that segments made at the same place also agree in manner of articulation is a way of minimising articulatory effort. Instead of making two articulatory gestures, the speaker only makes one and holds it for a longer period.

It is worth noting that assimilation does not necessarily involve two contiguous segments as is the case in vowel harmony. In MSA, homorganic nasal assimilation takes place in several instances. Let us examine the following sets of data drawn from MSA:

(8)	Verb base	pfx+Verb base	LR	PR	
(i)	[nabat]	[ʔa+[nabat]]	[ʔanbat]	→	[ʔambat]
					‘he/it caused to sprout’
(ii)	[nabih]	[ʔa+[nabih]]	[ʔanbah]	→	[ʔambah]
					‘he/it notified’

The data in (8) above shows that homorganic nasal assimilation in MSA takes the following pattern: When the 3<sup>rd</sup> person singular causative marker *ʔa-* precedes a verb base with a nasal consonant /n/ at word-initial position, two changes take place: first, the vowel in the first syllable gets deleted and, second, the alveolar nasal phoneme /n/ assimilates to the point of articulation of the following consonant /b/. The deletion of the vowel /a/ and the substitution of /i/ with /a/ in (ii) above in the first syllable of the verb base may be attributed to the presence of the vowel /a/ in the inflectional prefix *ʔa-*. The deletion of the vowel /a/ paves way for the assimilation of /n/ to /b/ given that the two sounds are contiguous in a clear case of homorganic nasal assimilation.

Let us consider the data below:

(9)	Noun base	pfx+Noun base	LR	PR	Gloss
(i)	[nabaʔ]	[ʔa+[nabaʔ]]	[ʔanba:ʔ]	→	[ʔamba:ʔ] ‘news’
(ii)	[nibr]	[ʔa+[nibr]]	[ʔanba:r]	→	[ʔamba:r] ‘granaries’

The data in (9) illustrate homorganic nasal assimilation in the process of forming an irregular plural from a noun base in MSA. First, an inflectional marker *ʔa-* is prefixed to a noun base that has a nasal phoneme /n/ at word-initial position. This affixation process leads to the deletion of the vowel

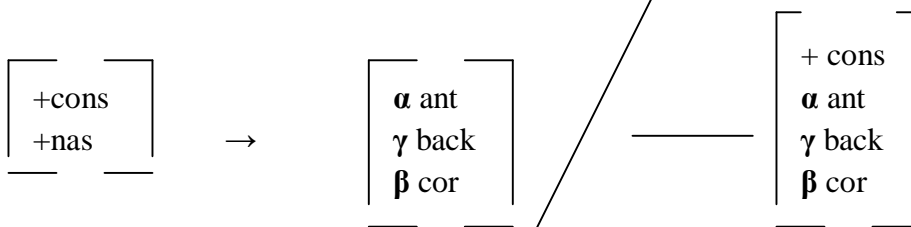
/a/ as in (i) and (ii) above as well as the vowel /i/ in (ii) above in the initial syllable. This is then followed by either the lengthening of the short vowel /a/ to /a:/ in the subsequent syllable or insertion of the same long vowel (as in ii above) where the short vowel /a/ is absent in the subsequent syllable. This is then followed by the assimilation of /n/ to /b/ given that the two are contiguous sounds.

It is also useful to note that homorganic nasal assimilation can also take place without being preceded by a morphological process as illustrated in the data below:

(10)	LR	→	PR	Gloss
(i)	[ʔunbu:b]	→	[ʔumbu:b]	‘pipe’
(ii)	[ʔunbu:ʃ]	→	[ʔumbu:ʃ]	‘excavation’
(iii)	[ðanb]	→	[ðamb]	‘sin’

The data in (10) above illustrates that homorganic nasal assimilation also takes place in the absence of affixation. This takes place in noun bases in the singular form which have the alveolar nasal phoneme /n/ at word medial position and followed by the voiced bilabial stop /b/.

Phonological processes are usually captured in rules that illustrate the processes in a more simplified way. As such, the processes shown by the data above can be captured in a rule schematized as follows:



The rule above shows agreement between the alveolar nasal consonant and the following consonant in terms of the following features: anterior, coronal and back. Homorganic nasal assimilation is a natural process which is made possible by the physiological properties of the vocal tract. The derivation may be illustrated as follows:

**[ʔamba:ʔ]**

S/No.	UR	Rule Application	PR	Gloss
1.	[nabaʔ]	Undersived lexical item (no process involved)	[nabaʔ]	‘information’
2.	[ʔa+[nabaʔ]]	prefixation of /ʔa/ and BEC	[ʔanabaʔ]	-
3.	[ʔanabaʔ]	deletion of /a/	[ʔanbaʔ]	-.
4.	[[ʔanbaʔ]+N]	lengthening of /a/ to /a:/	[ʔanba:ʔ]	-
5.	[ʔanba:ʔ]	Assimilation of /n/ to /b/	[ʔamba:ʔ]	‘news’



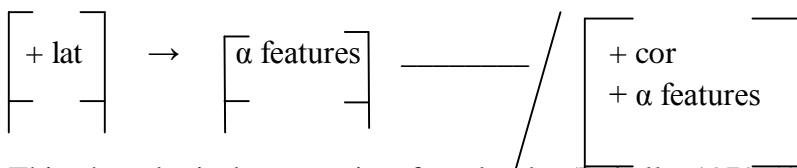
### 3.5.1.2 The l-Assimilation.

In MSA, the process of forming a definite noun involves prefixing the definite inflectional morpheme *ʔal-* to an indefinite noun. This morphological process leads to a phonological process we choose to refer to as the ‘l-assimilation’.

Let us examine the data below:

(11)	Noun base	pfx+Noun base	LR	PR	Gloss
(i)	[tura:b]	[ʔal+[tura:b]]	[ʔaltura:b]→	[ʔattura:b]	‘the sand’
(ii)	[dajn]	[ʔal+[dajn]]	[ʔaldajn] →	[ʔaddajn]	‘the debt’

In (11) above, the lateral consonant /l/ of the inflectional marker *ʔal-* assimilates totally to the following coronal consonant. This process normally takes place when the morpheme *ʔal-* precedes the following consonants in MSA: /t, θ, d, ð, r, z, s, ʃ, s<sup>ʕ</sup>, ɖ<sup>ʕ</sup>, ɟ<sup>ʕ</sup>, ð<sup>ʕ</sup>, l, n/. Further, this assimilation leads to a morphological rule of gemination of the assimilating consonant. These rules can be explained as being natural rules which aim at facilitating speech production. We can write a rule notation for the processes above as follows:



This phonological process is referred to by (Bakalla, 1979:513) as lateral assimilation. With regards to the rule ordering principle of the LP theory suggested by (Mohan, 1982:3), the process of l-assimilation in MSA may be captured as follows:

[ʔattamr]				
S/No.	UR	Rule Application	PR	Gloss
1.	[tamr]	Undersived lexical item (no process involved)	[tamr]	‘dates’ (food)
2.	[ʔal+[tamr]]	prefixation of <i>ʔal-</i> and BEC	[ʔaltamr]	-
3.	[ʔaltamr]	assimilation of /l/ to /t/, gemination of /t/	[ʔattamr]	‘the dates’

### 3.5.1.3 Consonant Devoicing

This is a phonological process where the specification for the feature voice of a segment gets carried over to an adjacent segment. (Katamba, 1989:88) refers to this process as voice assimilation and says that a voiceless consonant acquires a certain amount of voicing when it occurs between two (voiced) vowels. The opposite is also true where a voiced consonant or vowel gets devoiced when it occurs between voiceless consonants.

In MSA, devoicing may be illustrated using the data below:

(12)	LR		PR	Gloss
(i)	[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arr]	→	[ʔit <sub>ḥ</sub> t <sub>ḥ</sub> arr]	‘he/it was compelled’
(ii)	[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arab]	→	[ʔit <sub>ḥ</sub> t <sub>ḥ</sub> arab]	‘it was tumultous’

The examples in (12) above show that the voiced pharyngealized alveolar stop /d<sub>ḥ</sub>/ changes to a voiceless pharyngealized alveolar stop /t<sub>ḥ</sub>/ on account of the former preceding the latter. The difference in the segments involves the state of glottis where /d<sub>ḥ</sub>/ is [+voice] while /t<sub>ḥ</sub>/ is [-voice].

This phonological change results in the gemination of the voiceless pharyngealized alveolar stop /t<sub>ḥ</sub>/ in the surface representation of the derived word.

The process of devoicing takes place both before and after affixation. Whereas (20) above shows devoicing in the absence of affixation, the examples in (21) below illustrate devoicing after the prefixation of the derivational prefix *mu-* to a verb base.

(13)	Verb base	px+Verb base	LR	PR	Gloss
(i)	[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arr]	[mu+[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arr]]	[mud <sub>ḥ</sub> t <sub>ḥ</sub> arr] →	[mut <sub>ḥ</sub> t <sub>ḥ</sub> arr]	‘compelled’ sing.masc.
(ii)	[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arab]	[mu+[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arab]]	[mud <sub>ḥ</sub> t <sub>ḥ</sub> arab] →	[mut <sub>ḥ</sub> t <sub>ḥ</sub> arab]	‘tumultous’ sing.masc.

The phonological rule involved in the process of devoicing above may be schematized as follows:

$$/d/ \rightarrow [t^s] / \_\_\_\_\_\_ / t^s/$$

The rule illustrates that /d/ becomes [t<sup>s</sup>] in the environment before /t<sup>s</sup>/.

Devoicing also occurs where the 1<sup>st</sup> person subject marker /t/ is suffixed to a verb stem ending in the consonant /d/ in a sequence /dt/ with the voiced alveolar stop taking the features of the voiceless alveolar stop /t/. This again results into gemination of the voiceless alveolar stop /t/ as exemplified in the following data:

(14)	Verb base	Verb base+sfx	LR	PR	Gloss
(i)	[wadʒad]	[[wadʒad]+t]	[wadʒadt] →	[wadʒatt]	‘I found’
(ii)	[sadʒad]	[[sadʒad]+t]	[sadʒadt] →	[sadʒatt]	‘I prostrated’

In this case, a rule may be schematized as follows:

$$/d/ \rightarrow [t] / \_\_\_\_\_\_ / t/$$

which means that /d/ becomes [t] in the environment before /t/.

The data in 13-14 are examples of regressive devoicing. Based on the observations of the LP theory, the processes of devoicing described above may be captured as follows:

(a) [mut<sub>ḥ</sub>t<sub>ḥ</sub>arr]

S/No.	Verb base	Rule Application	PR	Gloss
1.	[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arr]	Undersived lexical item (no process involved)	[ʔid <sub>ḥ</sub> t <sub>ḥ</sub> arr]	‘it was compelled’

2. [mu+[ʔidʔʔarr]] prefixation of *mu-* [muʔʔʔarr] -  
syllable deletion and BEC
3. [muʔʔʔarr] assimilation of /dʔ/ to /ʔʔ/  
and gemination of /ʔʔ/ [muʔʔʔarr] ‘compelled’ sng.masc.

**(b) [wadʒatt]**

S/No.	Verb base	Rule Application	PR	Gloss
1.	[wadʒad]	Underived lexical item (no process involved)	[wadʒad]	‘he found’
2.	[[wadʒad]+t]	suffixation of /t/ and BEC	[wadʒadt]	-
3.	[wadʒadt]	assimilation of /d/ to /t/ and gemination of /t/	[wadʒatt]	‘I found’

Devoicing is a natural rule since it is an aspect of assimilation. In both (13) and (14) above, we notice that the sound /d/, which is [+voice] assimilates to /t/, which is [-voice] because of the presence of /t/ in a contiguous position to /d/. This explains the naturalness of the devoicing process.

**3.5.1.4 Prothesis**

This is a phonological process that results from the determination of a preferred syllable structure and involves the insertion of a vowel or consonant to a word stem to conform to the preferred syllable structure in order to facilitate pronunciation. In MSA, this phonological process is largely evident in words borrowed from English.

Let us consider the following examples:

(15)	Noun base	Aff+Noun base	LR	PR	Gloss
(i)	[stændəd]	[ʔi+[stændəd]]	[ʔistændəd]	> [ʔistandard]	‘standard’
(ii)	[strætədʒi]	[ʔi+[strætədʒi+jja]]	[ʔistrætədʒijja]	> [ʔistra:ti:dʒijja]	‘strategy’

In the examples in (15) above, we have used the sign > and not an arrow to show that the processes described involve borrowing from one language to another, which is a diachronic process and not synchronic. The insertion of the syllable at the word initial position of MSA words borrowed from English can be explained by the fact that the MSA syllable structure disallows word initial consonant clusters. However, the prothesis rule is not an automatic rule in MSA, and so, there are instances where it is inapplicable. The data below illustrates the non-applicability of prothesis in words borrowed from English into MSA.

(16)	Noun base	LR	PR
(i)	[kəmpyu:tə(r)]	> [kumbju:tar]	‘computer’
(ii)	/helɪkoptə/	> [hilikubtar]	‘helicopter’

**3.5.1.5 Consonant Substitution**

This is a process which occurs during borrowing and involves substituting consonants in the source language with others in the target language. This is attributed to the absence of such consonants in the target language. This phenomenon is captured in the observation made by (Antilla, 1972:123) that ‘native speakers of a language are aware of the distinctive features of their phonology. In sound substitution, the borrowers apparently make a kind of distinctive feature analysis of foreign sounds and assign them the closest native bundle’. The data below illustrate the process of consonant substitution in MSA:

(17)	Source Word		MSA Word	Gloss
(i)	[pakistan]	>	[ba:kista:n]	‘Pakistan’
(ii)	/vi:zə/	>	[fi:za:]	‘visa’
(iii)	/gælən/	>	[dʒa:lu:n]	‘gallon’

In (17) above, the consonants /p,v,g/ in the English words have been replaced with /b,f,dʒ/ and conforms to the universal principle where consonants are replaced with other consonants that are phonetically similar. The consonants /p/, /v/, and /g/ are replaced with the voiced bilabial counterpart /b/, the voiceless ladio-dental fricative /f/ and the voiced post-alveolar affricate /dʒ/ respectively because of the absence of the former set of examples in Arabic in general. This phenomenon may be demonstrated from the distictive features shown below:

/p/	/b/	/f/	/v/
+cons - nas - cont + ant - cor - voice	+cons - nas - cont + ant - cor + voice	+cons - nas + cont + ant - cor - voice	+cons - nas + cont + ant - cor + voice

### 3.5.1.6 Consonant Weakening

According to (Carr, 1993:24), consonant weakening is a phonological process which refers to ‘a reduction in degree of stricture.’ Carr also refers to it as lenition. On his part, (Hyman, 1975:165) defines a weak segment in relation to a strong segment as follows: ‘a segment X is said to be weaker than a segment Y if Y goes through an X stage on its way to zero’. Suffice to say that the weakening phenomenon is language specific and not necessarily environment specific because segements weaken in different environments in different languages. In the articulation of some MSA words among Egyptian speakers, some consonants get weakened in a phonological symmetry across parallel classes of sounds. Let us consider the following examples:

(18)	LR		PR	Gloss
(i)	[hadi:θ]	→	[hadi:s]	‘tale’

(ii)	[θala:θa]	→	[tʰala:tʰa]	‘three’
(iii)	[wadʒad]	→	[wagad]	‘he found’
(iv)	[dʒʰabtʰ]	→	[zabtʰ]	‘exactly’
(v)	[ðʰulm]	→	[zulm]	‘oppression’

In (18) above, we notice the following consonant changes:

/θ/ → /s/, /θ/ → /tʰ/, /dʒ/ → /g/, /dʒʰ/ → /z/ and /ðʰ/ → /z/.

Based on the various scales of phonological strength for consonants proposed (Hyman 1975:166-167), it may be stated that in (18) above, the segments in the left column are stronger than those in the right column. Consequently, as part of the process of reducing the effort spent on consonant articulation, Egyptian speakers of MSA tend to articulate the weaker consonants instead of the stronger ones in certain environments. We may state these processes in the following manner:

$$\begin{array}{l} \theta \rightarrow s \quad / \text{---} \# \\ \theta \rightarrow t^h \quad / \text{---} V \\ d\text{ʒ} \rightarrow g \quad / V \text{---} V \end{array}$$

These changes may be explained as follows: Sounds /θ/ and /s/ are phonetically close with the exception of the feature [strid] where /θ/ is [-strid] while /s/ is [+strid]. Further, /θ/ and /tʰ/ are phonetically close with the exception of the feature [cont], where /θ/ is [+cont] while /tʰ/ is [-cont]. Sounds /dʒ/ and /g/ are phonetically close in respect of all other features with the exception of the feature [strid] where /dʒ/ is [+strid] while /g/ is [-strid]. /dʒʰ/ and /z/ differ only in the feature [continuant] where /dʒʰ/ is [-cont] while /z/ is [+cont] whereas /ðʰ/ and /z/ are phonetically close with respect to all other features except that /ðʰ/ is [-low] but /z/ is [+low].

### 3.5.1.7 Syllable Deletion

This is a morphologically sensitive process that involves the deletion of a word-initial syllable upon affixation of the derivational affix *mu-* to a verb base in the causative form to derive an active participle. These processes are illustrated in the data below:

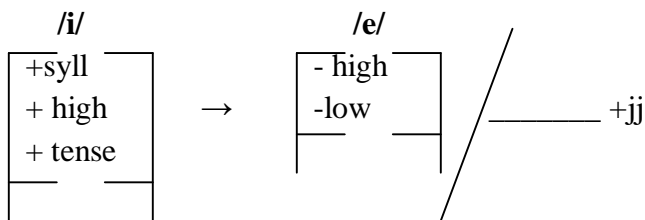
(19)	Verb base	px+Verb base	LR	PR	Gloss
(i)	[ʔaslam]	[mu+[ʔaslam]]	[muʔaslam] →	[muslim]	‘a muslim’ masc.



underlying /i/ is followed by a double consonant /jj/, it surfaces as /e/. This process of vowel lowering is evident in the following data:

(22)	LR		PR		Gloss
(i)	[ʕaliɟɟ]	→	[ʕaleɟɟ]		‘Ali’
(ii)	[nabiɟɟ]	→	[nabeɟɟ]		‘prophet’

From a phonological point of view, the lowering of the vowel /i/ to /e/ in the final articulation may be attributed to the presence of the low central vowel /a/ in the first syllable. The vowel lowering rule may be formulated as follows:



### 3.5.2.3 Vowel Substitution

Let us consider the examples below:

(23)	Verb base	pfx+Verb base	LR	PR	Gloss
(i)	[darras]	[mu+[darras]]	[mudarras] →	[mudarris]	‘teacher’ masc.
(ii)	[qaddam]	[mu+[qaddam]]	[muqaddam] →	[muqaddim]	‘presenter’ masc.

In (23) above, the addition of the derivational affix *mu-* to a verb base triggers the substitution of the vowel /a/ in the second syllable of the verb base to /i/. The phonological process may be captured in the following rule:

$$/a/ \rightarrow [i] / \text{mu+CVCC \_\_\_C}$$

### 3.5.2.4 Vowel Deletion

(24)	Verb base	pfx+Verb base	LR	PR	Gloss
(i)	[xaradʒ]	[ʔista+[xaradʒ]]	[ʔistaxaradʒ] →	[ʔistaxradʒ]	‘he extracted’
(ii)	[nasʕar]	[ʔista+[nasʕar]]	[ʔistanasʕar] →	[ʔistansʕar]	‘he sought aid’

The examples in (24) above illustrate that when the prefix *ʔista-* is added to a verb base, the vowel /a/ in the initial syllable of the verb base gets deleted. The deletion is motivated by the presence of the vowel /a/ in the prefix in a clear case of dissimilation. This phonological rule may be captured as follows:

$$/a/ \rightarrow \emptyset / \text{ʔista+ C \_\_\_C}$$

## 4.0 Conclusion

In this paper, we have described various lexical phonological processes in Modern Standard Arabic (MSA) using the parameters of the Lexical Phonology approach of analysis. The main objective of this study was to investigate and verify the extent to which the various principles suggested by proponents of the LP theory are applicable to MSA, more specifically the principle of rule ordering and the principle of stress neutral and stress non-neutral affixes. Our analysis has concluded that the rule ordering principle is applicable to MSA without difficulties. However, the LP distinction

between neutral and non-neutral affixes is not fully applicable to MSA. We have established this by analyzing various affixes of MSA words. We could therefore argue that, notwithstanding the weakness of the stress neutral and non-neutral principle, LP still remains a viable and useful tool in the phonological analysis of language. To be able to arrive at this general conclusion, we have analyzed the results of our data versus the postulations of the Lexical Phonology model.

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**APPENDIX A**

..... إن تداول السلطة ينظم الحياة السياسية ويحول دون التطرف يمينا ويسارا والأساس السلبى على الحياة الإقتصادية. وإلى جانب الناحية الاقتصادية والناحية السياسية التي ينشطها تداول السلطة فإن تداول السلطة في حد ذاته يؤدي إلى كشف الأخطاء والحيولة الفساد لأن من يحكم اليوم يعرف أنه غدا سيكون في موقع المعارضة ومن يكون في موقع المعارضة يعلم أنه في يوم ما سيكون حاكما، وبالتالي فإن مجرد وجود معارضة ترفض وتنتقد الحكومة القائمة يعتبر أحد الآليات الفعالة في منع الفساد. أيضا ضرورة تبادل السلطة يمكن أن يحول دون الافتراضات أو الفرض الذي تحل بالمجتمع بسبب وجود آلية لتحوّل أو لانتقال السلطة انتقالاتا سلميا من فريق عمل إلى فريق عمل آخر. تداول السلطة هذا الذي أصبح الحديث عنه كل يوم هو أن يذهب الحديث في القرن التاسع عشر حيث أنه لم يكن هناك تبادل السلطة وألمانيا وإيطاليا حتى 1950 لم تكن تعرف عن تداول السلطة. تداول السلطة الآن أصبح منصوص عليه في بعض الدساتير. والدستور الألماني يقول يقوم النظام السياسي الألماني على تداول السلطة بين الأحزاب السياسية. هذا النص قدم لألمانيا نظاما جيدا مكن ألمانيا من الخروج من أزمتها التي كانت تعاني منها في الحرب العالمية الثانية حيث تم تدمير بنيته التحتية كلها واستطاعت استيعاب الوحدة الألمانية سنة 1990 وُحقّق للمواطن الألماني مستوى معيشة مرتفعة يحلم به كل شخص في أنحاء العالم. كما أن القاعدة الاقتصادية والصناعية لألمانيا هي مثال يحتذى. ولذلك فإن ما ورد من الدستور الألماني من أن النظام السياسي يقوم على تداول السلطة بين الأحزاب السياسية هو نص جيد جدا لو أخذ به كثير من الدول التي تنشأ تحسين نظامها السياسية. ننتقل الآن إلى الصور الديمقراطية، يمكن تصنيف أشكال الديمقراطية من منطلق علاقة الشعب بالسلطة التي تمثلها إلى ديمقراطية مباشرة وديمقراطية نيابية وديمقراطية شبه مباشرة وديمقراطية شبه نيابية. الديمقراطية المباشرة هي التي سادت في المدن اليونانية القديمة. وفي هذه الصورة من الصور الديمقراطية يناقش الشعب أموره ويشارع مباشرة ويقرر دون وساطة الحكومة ويجتمع في ميدان عام ليقوم باتخاذ هذه القرارات. كانت هذه هي الديمقراطية في المدن اليونانية القديمة. وكانت الاجتماعات تتم بصفة دورية كل شهر تقريبا أم في فترات أكثر تقاربا. وكانت كثرة الاجتماعات مناسبة للظروف السائدة إذ كان محل الاقتصاد محدودا ومتروكا للأجانب والعبيد وهم ليسوا مواطنين وليس من حقهم الاشتراك في الحياة السياسية. وإلى جانب الشعب الذي اجتمع في شكل جمعية كان هناك مجلس مكون من خمسمائة ألف ويشبه أعضاء مجلس الوزراء أو أعضاء مجلس النواب وهؤلاء لم يكونوا منتخبون وإنما تم اختيارهم بالقرعة، وسبب اختيارهم بالقرعة أن الشعب اليوناني أو الشعوب اليونانية شعوب هذه المدن كانت تعتقد أن اختيار الآلهة أفضل من اختيار البشر، وكانت تخشى أن يؤدي اختيار الشخص إلى نوع من الدكتاتورية. وكل شخص وصلت شعبيته إلى درجة عالية كان يحاول نظام غيباده لأن يتوقع أن يؤدي هذا إلى الدكتاتورية. هذا النظام لا يمكن تطبيقه إلى في جماعات صغيرة مثل المدن اليونانية القديمة... غير أن التقدم التكنولوجي في المجتمعات الحضرية أدت إلى إعادة بعض العناصر التي يمكن أن تؤدي إلى عودة السلطة للشعب باستطلاع الرأي...

**APPENDIX B**

..... فصل المحكمة في النزاع يكون للمحكوم عليه إذا رأى وجها أن يتظل من الحكم السابق كله أن يمنح كما تكون أعلى درجة وقضاتها مشكرين من قضاة أكثر خبرة وأكثر عرضا. طريق الفصل في النزاع مرة أخرى مما يبعث في نفس المتقاضى الثقة وعدم الاحتياط للظلم وإنما يطمئن إلى أنه قد أخذ حقه وأن الحكم العادل هو الذي صدر بالنسبة له. هذا المبدأ اقتضى أن تكون هناك محاكم أول درجة وهي المحاكم التي تنتظر النزاع ابتداء ومحاكم ثاني درجة أو محاكم الدرجة الثانية وهو الذي تنتظر أخطاء حينما يفعل أو يستأنف المحكوم عليه الحكم ولذلك وجد في النظام القضائي محاكم أول درجة متمثلة في المحاكم الجزئية والمحاكم الابتدائية ومحاكم الدرجة الثانية وهي المحاكم الاستئنافية وتشمل المحاكم الابتدائية منعقدة بين الاستئنافية وتشمل محاكم الاستئناف. إذن المشرّع عبّد المحاكم الموجودة في النظام القضائي. لدينا طبقة المحاكم الجزئية، لدينا طبقة المحاكم الابتدائية، طبقة محاكم الاستئناف، لدينا محكمة النقد باعتبار ضرورة توحيد تأكد من صحة تطبيق المحاكم القانون وفي أحكامها وتوحيد تطبيق القانون وتفسير القانون أقترح أن تكون هناك محكمة مختصة بمراقبة صحة تطبيق المحاكم للقانون وهذه المحكمة هي محكمة في طبقات المحاكم ليس هناك طبقة واحدة بل تعدد الطبقات. أيضا يوجد تعدد في المحاكم في نفس الطبقة الواحدة محكمة النقد هي محكمة واحدة حتى يكون تطبيق القانون وتفسيره تطبيقا واحدا. وفيما عدا محكمة استئناف يوجد تعدد في طبقات المحاكم بالنسبة للمحاكم الجزئية توجد محاكم جزئية في كل مركز من مراكز الجمهورية. يوجد فيها محكمة جزئية من محاكم القضاء المدني.

وبالنسبة للمحاكم الابتدائية توجد محكمة ابتدائية في عاصمة كل محافظة وفي كل محافظة فيها محكمة ابتدائية وتوجد في عاصمة المحافظة بالنسبة لمحاكم الاستئناف أو محاكم الاستئناف العالي هذه المحاكم لدينا منها ثماني محاكم لدينا محكمة استئناف القاهرة، محكمة استئناف الأسكندرية، محكمة استئناف في طنطا، محكمة استئناف في المنصورة، محكمة استئناف في الإسماعيلية، محكمة استئناف في السويس، محكمة استئناف في أسيوط، محكمة استئناف في مينا. كل محكمة من هذه المحاكم الثمانية تنظر استئناف مرفوعة من الأحكام الصادرة من المحكمة الابتدائية الموجودة في دائرة هذه المحكمة.

## APPENDIX C

### الدرس التاسع والثلاثون الصيدلية

في شارعنا صيدلية، وفي شارع المدرسة صيدلية، في المدينة صيدليات كثيرة، في كل صيدلية صيدلي. الصيدلي يبيع الدواء. في الصيدلية لافتة، ميزان، معمل، سجادة، صندوق المهملات، منضدة، زجاجات دواء. نهاد تقول: الصيدلية منظمة يا نبيل. على باب الصيدلية لافتة، وعلى اللافتة اسم الصيدلية ورقم التليفون. في الصيدلية رفوف كثيرة، وفي الصيدلية ميزان، وفي الصيدلية ثلاجة، فوق الأرض سجادة، وفوق السجادة منضدة، وفوق المنضدة زهرية. في الصيدلية صيدلي ماهر، وراء الصيدلي ستارة، ووراء الستارة معمل. الصيدلي في المعمل، أمام الصيدلي ميزان، وأمام الميزان زجاجات، في الصيدلية مكتب، تحت المكتب سجادة، وتحت المكتب صندوق المهملات.

## APPENDIX D

### الدرس الخامس والأربعون خليل في مطار القاهرة

ذهب خليل مع أسرة عمه إلى مطار القاهرة، ورأى الطائرات الكبيرة، ورأى المطار الواسع الجميل. وبعد ساعتين رجعت الأسرة إلى البيت وجلس خليل يتكلم مع عمه. ماذا قال خليل لعمه؟ وماذا قال له عمه؟ سأل خليل: متى نتفرّج على برج القاهرة يا عمي؟ قال سالم: اليوم نذهب كلنا ونتفرّج على البرج، وذهب سالم وأسرته إلى برج القاهرة وتفرّجت الأسرة على القاهرة ما فوق البرج. سأل خليل: كم مترا ارتفاع البرج يا عمي؟ قال سالم: مائة وخمسون مترا. وبعد ساعة رجعت الأسرة إلى المنزل. قال خليل: أريد أن أرى الأهرام يا عمي. قال سالم: ولماذا تريد أن تراها؟ قال خليل: أنا سمعت كثيرا عن الأهرام، وأريد أن أراها. قال سالم: يوم الجمعة المقبل نزور الأهرام. وفي يوم الجمعة ذهبت الأسرة إلى الأهرام وتفرّج خليل على الأهرام وأبي الهول، ثم رجع مع الأسرة إلى البيت. بعد أيام، رجع خليل إلى القرية وجلس يتكلم مع أسرته. قال أبوه: كم يوما قضيت في القاهرة يا خليل؟ قال خليل: عشرة أيام يا أبي. شاهدت فيها المطار وجنينة الحيوان، وشاهدت الأهرام وبعض المصانع الجديدة. القاهرة مدينة جميلة يا أبي.