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The Need for a Mono-Polysystemic Approach

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Abstract: The objectives of this study are the following: (i) to highlight the importance of taking into account not only paradigmatic relations and contrasts characteristic of a monosytemic approach, but also the syntagmatic relations which distinguish the prosodic approach. (ii) to make explicit the advantages of adopting the prosodic approach when describing the Arabic prosodic features of "emphasis". (iii) to point out the advantages of the distinctive feature approach when dealing with phonological analysis of natural speech. (iv) to draw pedagogic conclusions concerning L2 learning processes as a result of adopting a mono-and/or a polysytemic approach.

Key words: advantages, prosodic approach, L2 learning template, phonatictic restrictions

1. Introduction

The Arabic sound system is generally agreed to consist of 28 consonant phonemes and of six phonologically distinctive vocalic elements. The six monophthongs are traditionally divided into two classes: one comprising the three relatively long vowels [i:, a:, u:] and one consisting of three relatively short vowels [i:, a, and u] (Katamba 1989, p. 27; Mitchell & El-Hassan, 1989, p. 121). However; considering the phonological development of the language, two other units are added, viz. [e:] and [o:] which are reminiscent of the classical standard Arabic diphthongs [ai] and [au]. Phonological contrast is not only dependent on vowel duration as might be assumed but on complex features attributed to "anticipatory" coarticulation, in which a given vowel is affected by upcoming sounds and/or by preservative (or "carryover") coarticulation, in which a given vowel sound is affected by the consonants preceding it cf./ta:b/:/Ta:b/ "repented", "recovered", /sad/:/Sad/ "dam", "repelled", in which the medial vocalic elements are not only distinguished by duration but also by complex features attributed to the "emphatic" non-emphatic' features of the consonantal environment (/T/:/t/; and /s/:/S/. In a polysystemic approach, Prosodic Analysis reveals that certain features characteristic of the Arabic prosodic patterns recur as properties of a whole syllable or part thereof larger than a minimal consonantal or vocalic segment (Mitchell,1961); account for phonological contrasts in terms of a Monosystemic Approach criteria would be inadequate, since the emphasis would be placed on the recognition of inventories of phonemes, i.e., on paradigmatic aspects of relationship to the effective exclusion of syntagmatic considerations.

In Arabic CV(V)C syllables, anticipation of an upcoming "emphatic" consonant is highly context — sensitive. The anticipation of an upcoming "emphatic" consonant alters the place of articulation of the consonant and changes the vowel formant frequency. For English speakers learning Arabic, the obstacle is that "emphatic" consonants have no counterparts in English. For Arab students learning English, the difficulty is the realization of

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English obstruent, in the environment of back vowels, as “emphatics”.

Phonological theory has traditionally analyzed “emphasis” as a distinctive feature of the vowel system and as a redundant feature of the consonant system, or conversely; “emphasis” is considered as the property of the consonant system and as a redundant feature of the vowel system (cf Lehn, 1963, pp. 39-1, 30-3). If evidence is found for affiliating “emphasis” to both consonant and vowel, then segmental phonological models may require revision. The results of the study may also provide empirical support on the question of segmentation, which is considered crucial in the field of speech technology. One needs to know whether “emphasis” is segmented as part of the vowel or as part of the consonant; or whether it is best processed in units larger than segments, according to a diaphone or syllabic model.

2. Objectives

(1) to highlight the importance of taking into account not only paradigmatic relations and contrasts characteristic of a monosytemic approach, but also the syntagmatic relations which distinguish the prosodic approach.

(2) to make explicit the advantages of adopting the prosodic approach when describing the Arabic prosodic features of “emphasis”.

(3) to point out the advantages of the distinctive feature approach when dealing with phonological analysis of natural speech.

(4) to draw pedagogic conclusions concerning L2 learning processes asa result of adopting a mono-and/or a polysytemic approach.

3. Method

For the investigation of the effect of the minimal prosodic unit (the syllable) on L2 CV sequences which have /D/:/d/, /T/:/t/, /S/:/s/, /ð/:/ð̲/, /z/:/z̲/ as part of their internal structure, samples of conversational exchanges for some native speakers of adult/child Jordanian Arabic were recorded over a two month period. In the treatment of prosodic features of stress, consonant cluster, syllable nuclei, syllable types, reference is particularly made to four year old exchanges because, at this early stage, the Arabic native language is the only system upon which the learner can draw.

4. The Effect of Adjacent Consonants on V-V

Prosodic features such as “frontness”/“backness” or “clearness”/“darkness” are characteristic of the whole syllable or word. For example, the vocalic melody pattern in /buZbuT/ is characterized by the feature of “backness” whose domain is the whole word. The “dark” or “emphatic” features are not localized in the “emphatic” consonants /Z/ and /T/ but their effect involves the initial bilabial consonant which is articulated with greater muscular tension. Morphologically, other related words are derived by modifying the consonantal root – Z-b-T internally and not simply by concatenation of affixes and roots. The resulting vocalic pattern “frontness” vs. backness’ assign the word to a particular derivational class (McCarthy, 1990, pp. 8, 202–282).

Root Tier **Z b T*(ZabaT)*** “it’s all right”
| | |
Skeletal Tier C V C V C

||
Vocalic Mel. Tier **aa**

R –Tier **b Z b T (buZbuT)** "it'll be all right"
|||
Sk-Tier C V C V C V
|||
V-Tier u uu
R-Tier **m Zb T *(maZbu:T)*** "it's all right"
||||
Sk-Tier C V CC V C
||
V-Tier **a** u

R-Tier Z **a B I T (Za:biT)** "it's all right"
|||
Sk-Tier C V C VC
||
V-Tier a i

Features of "emphasis" span the internal structure of all syllabic elements: the nucleus being realized as back open (low) /a /or /a:/, the onset which is realized phonetically by lateral expansion of the whole body of tongue during the articulation of /Z/, a dark denti-alveolar sulcal voiced fricative, /T/ a voiceless denti-alveolar "emphatic" plosive and /m/ an "emphatic" bilabial nasal. In contrast with "backness", there are certain patterns which are distinguished by vocalic melody of "frontness", whereby the nucleus of the syllable is dominated by a front vowel:

R-Tier θ b t (θabat) "it was fixed"
|||
Sk-Tier C VC VC
||
V-Tier a a
θ bbt (θabbat) "he fixed"
|||
C VCCVC
||
aa
mθ bbt (mθabbat) "it was fixed"
||||
Sk-TierC C CC C
V-Tier V V
||
aa

In the domain of ***"clearness" or "darkness"***, the constraints on consonant — vowel-consonant (C-V-C) are known intuitively, based on the Arab learner's knowledge of the permissible syllable internal structure of the Arabic language. The Arab learner of English tends to transfer features of the whole prosodic template of the Arabic "banyan" during the production of English utterances.

Once these patterns are acquired, they become as independent lexical items that have their specific prosodic features and their own entry in an Arab learner's mental dictionary. Consider the following sample morphological

patterns:

(1) (i)Infix(es)	Input Base	Output (**r**oot)	Word –class	Semantic Info
a-a	T-b-x	***Tabax***	verb	“he cooked”
a-a:-b	T-b-x	***Tabba:x***	noun	“a person who cooks”
a-u:	T-b-x	*maTbu:x*	verbal noun	“being cooked”
a-a	T-b-x	***Tabxa***	noun	“the meal”
a-i:	T-b-x	*Tabi:x*	noun	“cooking”

(ii)suffix(es):

-a:t	T-b-x	***Tabxa:t***	noun/fem.pl.	“recipes”
-i:n	T-b-x	*Tabbaxi:*n	noun/masc.pl.	“cooks”

(iii) prefixes:

-m	T-b-x	***maTbax***	noun	“kitchen”
-m+a:	T-b-x	maTa:bix	noun/pl.	“kitchen”

(2) (i)infixes	Input Base	Output (root)	word-class	Semantic Info
a-a	H-s-d	*Hasa**d***	noun	“envy”
a-u:	H-s-d	*Hasu:d*	noun	“one who envies”
a-s-a:	H-s-d	***Hassa:d***	occupational noun	“one who envies”(ii(((ii):(suffix/es):
-i:n	H-s-d	*Hassadi:n*	noun(pl.asc.)	“those who envy”
-a:t	H-s-d	***Hassada:t***	noun (pl.fem.)	
(iii) prefixes:				
-bj	H-s-d	bjiHsid	verb(imperfect)	“he envies”

(3) (i)infixes	Input Base (root)	Output	word class	Semantic info
a-a	**H-S-d**	***HaSad***	verb (imperfect)	“he reaped”
a-S-a:d	**H-S-d**	**HaSSa:d**	noun	“one who reaps”
a-i:	**H-S-d**	**HaSi:d(e)**	noun	“harvest”
(ii) Suffixes:				
-i:n/-a:t	H-S-D	HaSSadi:n	noun.masc.pl/fem	
(ii) prefixes:				
bj-	H-S-d	bjuHSud	verb	'he reaps'
-at	H-S-d	HaSdat	verb(imp.)	'she reaped
-u	H-S-d	HaSadu	verb (imp./pl)	'they reaped'

5. Relevance of a Monosystemic Approach

5.1 L2 Learnability

The rules regulating the positions in which various sounds may occur in a word and the combinations of sounds that are permissible can best be handled by a monosytemic approach. For instance, there are phonatactic restrictions on the combination of "dark"/"clear"[l] in various positions in a word in spoken Arabic. The occurrence of Arabic "clear"[l] is subject to restrictions imposed by the non-occurrence of "emphatic" or "dark" consonants in the immediate neighbourhood of the sound. The occurrence of "dark" [l], on the other hand is governed by the occurrence of another adjacent "dark" or "emphatic" consonant.

From the analysis of the conversational exchanges, we find that the prosodic features of the Arabic morphological patterns have a considerable effect on L2 Arabic pronunciation. To facilitate the task of L2 pronunciation, English sounds are modified to make them similar to L1 sounds. The process is *bidirectional:* a sound becomes "clear" or "dark" according to whether the sound that precedes is "clear" or "dark" or whether it is influenced by the sound that follows it. Here are some of the commonest coarticulatory processes found in L2:

Arab learners of English are still learning English with spoken input that is modelled on spoken Arabic sound patterns. Words may be perceived by L2 learners as much in terms of their ***orthographic*** shape as their ***phonological*** shape, whereby the learner makes a mental image that connects L2 words with L1 words that have some formal sound association with typical Arabic word templates. For example, if the target word is "***photograph***", the learner is highlylikely to associate its soundpattern with the Arabic sound pattern CV-CVC-CVVC 'maHallaat"shops', /maTabba:t/ "bumps", etc., in which the ultimate, not the antepenultimate syllable, is stressed and during the production of which the Arabic canonical vowels are realized, vis /'futugra:fs/ instead of English /'foutəgræfs/. Two main articulatory processes are envisaged: "Clearness" and "darkness" when English words are first encountered, they are processed and organized in the mind of an L2 learner in the same way as he does in the first language. The general shape of the incoming word is crucial. The learner recognizes the first or the last syllable and takes note of how many syllables it contains, the general constituent structure, where the stress falls in terms of L1 stress rules and what sort of vowels should be filled in the slots, so to speak. If the general shape of an L2 word has been matched with a stored Arabic template that is more less equivalent to an L2 template in terms of the bipartite phonological contrast: "darkness"/"clearness", L2 output patterns are realized as "clear" or "dark". Co articulation operates bidirectional. For example, when Arab learners perceive phonological similarities between words that have the same stress pattern, they are encouraged to learn such words first. Cf.

RP	JE
re'mand	ka'ma:n
re'form	jo'me:n
re'tain	?ah'le:n, /sahle:n/ba9'de:n
reply	wa'rai/ ma'9ai

The phonatactic rules which apply to English l sounds are different. English "dark" l occurs in word-final or in pre-consonantal positions, e.g., *smell, bull, cuddle, fulfil.*

5.2 L1 Acquisition Processes

The sound patterns of L1 and the phonatactic combinations they allow can only be accounted for by reference to a distinctive feature approach. For example, substitution, i.e., the replacement of one sound by an

alternative similar to the target sound to be produced or assimilation, i.e., the modification of one or more features of sound. The following examples from the corpus of material representing a four year Arab child conversational exchange illustrate the common substitution processes fronting (the moving forward of a sound place of articulation, friction(the replacement of an affricate by a corresponding fricative, gliding) the replacement of a liquid or pharyngeal by a glide:

1. Fronting:

Arabic Phoneme	Sound Replacement	Examples	Translation
/k/	[t]	/kbiir / → [tbiir] /kunt / → [tunt] /kaff/ → [taff] /ilkura/→ [ittura] /hunaak/ → [hunaat] /kul/ →[tul] ?isi /bikaffi/ → [bitaffi] /kursi/→ [tursi] /ke :f/ [te :f] /baktub/ [battub] /dukkaan/ [tuttaan]	'big' 'I was' 'slap' 'he ball' 'there' 'evey thing' 'enough' 'chair' 'shop'
/s/, /S/	[/θ]	/kasarha/ →ka/θarha /Xala/S/→Xalaθ /ha/s/sa/ → ha/θθa /ilbaa[/S] → ilbaa/θ	'He broke it' 'enough' 'the bus' 'now' 'the bus'
/ʃ/	[s]	/ ʃ /ibi ʃ / → [sibi[s] / ʃu/→ [su]	'chips' 'what'
		/ biʃʃanteh/ → [bissanteh] → / ʃams/ → [sams] /hi ʃaam/ → [hisaam] /ʃaawirma/ → [saawirmah] /baxarbi ʃ/ [bxarbis]	'in the bag'
		/zGiir/ → [zGiir]	'small'
1. Friction:			
/d3/	[z] [ð]	/maradʒiiH/→ [maraziiH] /fardʒiini/ / [farðiini] /?aridʒ / [?ariið]	'see-saws''
2. Gliding	a:		
ʕ	a:	/ta ʕa:li/ [ta:li	
/r/	[l]	/mariiD/→ [maliD]	'ill'

6. Advantages of a Polysytemic Approach

The advantages of a prosodic approach in the presentation of syntagmatic features are apparent when parts of phonetic features are referable to *prosodies* which characterize more than one segment in domain. These features regularly appear as complex unitary combinations between which paradigmatic commutation is recognizable. They regularly extend over more than one segment and associate with appropriate consonants and vowels alike.

Adopting a monsystemic approach may obscure important syntagmatic features which are *by default* essential for the establishment of *prosodic* contrasts in the phonological system of the language. For example, the elements /t, d, s, l, r, ð/, though they may be said to be similar between the two languages in terms of phonetic features rarely if ever have the same function in the phonological systems or subsystems of the language.

References

Barakat Melissa and Francois Pellegrino (1999). *Investigating Dialectal Differences via Vowel System Modeling: Application to Arabic*, San Francisco: ICPhS99, pp. 145–148.

Firth J. B. (1964). "The techniques of semantics", *Linguistics OUP*.

Hokett C. F. (1955). "Manual of phonology", *International Journal of American Linguistics*, Baltimore: Waverly Press.

Katamba F. (1989). *An Introduction to Phonology*, Harlow, Essex: Longman.

Kent Raymond D. and Moll (1972). "Tongue body articulation during vowel and diphthong gestures", *Folia Phoniatrica*, Vol. 24, pp. 278–300.

Lehn W. (1963). "Emphasis in Cairo Arabic", *Language*, Vol. 39, No. 1, pp. 30–33.

McCarthy John J. and Prince Alan (1993). "Foot and word in prosodic morphology", *Natural Language and Linguistic Theory*, Vol. 8, pp. 202–282.

MacNeilage Peter F. (1970). "Motorcontrol of serial ordering of speech", *Psychological Review*, Vol. 77, pp. 182-196.

MacNeilage Peter F. (1969). "On the motor control of Co articulation in CVC monosyllables", *J. of the Acoustical Society of America*, Vol. 45, pp. 1227–1233.

Mitchell T. and El-Hassan S. (1989). *English Pronunciation for Arabic Speakers*, Harlow, Essex: Longman.

Mitchell T. F. (1961). *Prominence and Syllabication in Arabic*, BSOAS 23.

Stetson R. H. (1951). *Motor Phonetics*, Amsterdam: North-Holland\ Publishing Co.

West Paula (1999). *The Extent of Co articulation of English Liquids an Acoustic and Articulatory Study*, San Francisco: ICPh 99, 1901–1904.

Zeroual Chaker (1999). *A Fiberscope and Acoustic Study of "Guttural" and Emphatic Consonants of Moroccan Arabic*, San Francisco: ICPh99.