

ENGLISH ACCENTUATION AND VOWEL QUALITY AS PRONOUNCED BY ARABS: A PEDAGOGIC STATEMENT

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1. Introduction

Theoretically, this is a contrastive study of some prosodic features of English and Arabic, having to do with accentuation and vowel quality. On the practical side, the study is undertaken with a view to revealing some phonological problems encountered by Arab learners of English as a foreign language. The study may also have implications for English students of Arabic as a foreign language.

Unless trained to do otherwise, Arabic speakers in Syria, Jordan and Palestine will, for example, pronounce the English word 'specific' /spə'sɪfɪk/ as in (1):

(1) /^ˈspasɪfɪk/

(where /a/ is an almost open, front, short vowel, and the accent /^ˈ/ marks the syllable with the main stress). As shown in the transcription at (1), not only is the main stress placed on the wrong syllable, but, in addition, the vowel quality in the first syllable is rendered by the Arabic speaker as /a/, which is an almost open, front, short, vowel, instead of the appropriate schwa /ə/ as in /spə'sɪfɪk/¹.

Similarly, English 'memorable' /^ˈmɛmərəbl/ is typically mispronounced (by these Arabs) as /mi'murabl/ where the main stress is wrongly assigned to the second syllable, and all the vowel qualities are characteristically Arabic. Thus, a rather close, front, short vowel /i/ replaces the mid, front, short vowel /e/ in the first syllable. Similarly, a rather close, back, short, rounded vowel /u/ and an open, back, short vowel /ɑ/ are respectively substituted for the schwa in the second and third syllables. Moreover, instead of syllabic /l/ in the last syllable, a rather close, front, short vowel is inserted before the /l/. All of these phonological modifications, in-

¹ Minor phonetic differences between English /i/ (nearly half-close, front, short, spread vowel) and Arabic /i/ (nearly close, front, spread vowel) may for practical purposes be disregarded. Similarly, one may ignore phonetic differences between English /u/ (nearly half-close, back, short, rounded vowel) and Arabic /u/ (nearly close, back, short, rounded vowel).

cluding the attendant changes in syllabic structure can be accounted for in terms of interference from the established habits of Arabic pronunciation, as will be shown below.

2. Accent assignment

In certain languages, accent assignment is very regular, i.e. the accent is invariably associated with a particular syllable in the word. In Swahili and Polish, for instance, the penultimate syllable in the word is inherently accented. However, neither in English, nor in Arabic does the accent inherently occur on a certain syllable of the word. Compare the following examples:

(2) a. English:

'specify	CCVCVCO \bar{V}	(O \bar{V} indicates a long vowel, diphthongs are considered as long vowels).
spe'cific	CCVCVCVC	
specific'ation	CCVCVCVCO \bar{V} CVC	

b. Arabic

'katab*	CVCVC	'he wrote'
ka'tabna	CVCVCCV	'they (fem.) wrote'
katab'naahu	CVCVCCO \bar{V} CV	'we wrote it'

As these English and Arabic examples illustrate, even in words deriving from the same base/root there are no inherently accented syllables. The accent *seems* to select a different syllable each time the syllabic (and morphemic) constituency of the word is changed. But this is a premature observation – closer examination reveals that the facts are much more complex. Consider:

(3) a. English

'specify	'specified	'specifying	'specifiable
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b. Arabic

'katab(a)	'katabat	'katabah	'katabaa
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The examples at (3) (in contrast with those at (2)) show that the accent correlates with the same syllable regardless of the different syllabic and morphemic structure of these particular forms.

The question is whether accent assignment in English and Arabic words is subject to storable rules. This question will be addressed next.

2.1. Accent assignment in English

Evidently, accent assignment at the word level in English has been shown to be storable in terms of phonological rules. Thus, Chomsky and Halle (1968:69-77) have worked out rules for main stress assignment in English verbs, nouns and adjectives. For example, they have proposed, as a first approximation, the following main stress rules for English verbs (op. cit.:70):

$$(4) \quad V \rightarrow [1 \text{ stress}] / \left\{ \begin{array}{l} \left[\text{--- } C_0 \left[\begin{array}{c} -\text{tense} \\ V \end{array} \right] C_0^1 \right] \quad (i) \\ \left[\left[\begin{array}{c} +\text{tense} \end{array} \right] \right] C_0 \\ \left[\text{--- } C_2 \right] \end{array} \right\} \quad (ii)$$

This rule is interpreted as follows:

'Assign main stress to

- (i) the penultimate vowel if the last vowel in the string under consideration is non-tense and is followed by no more than a single consonant;²
- (ii) the last vowel in the string under consideration if this vowel is tense² or if it is followed by more than one consonant.'

The authors themselves admit (ibid) that the above rule, which is typical of other stress assignment rules pertaining to nouns and adjectives, 'is unduly cumbersome.' They proceed to simplify it in the following manner:

$$(5) \quad V \rightarrow [1 \text{ stress}] / \left[\begin{array}{l} C_0 \left[\begin{array}{c} -\text{tense} \\ V \end{array} \right] C_0^1 \quad (i) \\ C_0 \end{array} \right] \quad (ii)$$

But even this more elegant version of the rule (ignoring, for the time being, exceptions and irregularities) is no less cumbersome for the ordinary teacher, let alone learner of English as a foreign language. It just is not practical and can hardly be said to facilitate the task of the foreign teacher/learner of English. It is almost certain that Chomsky and Halle had not been concerned with the pedagogical aspect of such rules. Their work, according to Goyvaerts and Pullum (1975:1) 'brings to phonology... a method for the empirical investigation of the

² A tense vowel, according to Chomsky and Halle (op. cit.:68-69) is one that is 'executed deliberately so that the articulating organs actually attain their various target configurations. In contrast with lax/non-tense vowels, a tense vowel is more intense, of longer duration, and articulated with a greater deviation of the vocal cavity from its neutral (rest) position.' Tense vowels include long vowels, diphthongs and triphthongs.

sound systems of natural languages as opposed to a method for rearranging the data of a corpus..., but it applies this method to arrive at phonological representations so remarkably abstract that their empirical status is seriously in doubt.'

As McCawley (1975:145) says, *The Sound Pattern of English (SPE)*, '... is an interim report on work in progress'... which expounds and presents detailed justification of a system of rules and underlying forms for English phonology... and a general theory of phonology which provides the framework for the analysis of English.' McCawley (ibid) argues that many of the conclusions of *SPE* are wrong; nonetheless, he suggests that the value of *SPE* lies particularly in the kinds of questions which the authors ask, the kinds of answers they propose and justify.

Be that as it may, the point which needs to be underlined here is that the system of rules expounded and presented in *SPE* for main stress placement in English words is too abstract and far too complex to offer any practical help to the foreign teacher/learner of English. Teachers and learners of English as a foreign language draw more comfort from less abstract generalizations and observations about main stress placement as those illustrated at (6) a., b., c., d., and e. below.

(6) a. English disyllabic verbs tend to have the main stress on the second syllable if the vowel in that syllable is tense, or if it ends with a consonant cluster, e.g.

allow ə'lau
depart dr'pa:t
pretend prɪ'tend

b. English disyllabic nouns tend to have the main stress on the *first* syllable if the vowel in the *second* syllable is non-tense, e.g.

pencil 'pensəl
drawer drɔ:wə
carpet 'kɑ:pɪt

Otherwise, the second syllable usually carries the main stress, e.g.

belief br'li:f
applause ə'plɔ:z

c. English nouns ending in the derivational morpheme -fən have the main stress on the penultimate syllable, e.g. prepa'ration, ex'pansion, sus'picion.

d. English adjectivals ending in the derivational morpheme -ɪk have the main stress on the penultimate syllable, e.g. spe'cific, pro'lific, ter'rific.

e. English *compounds* which are made up of two words, e.g. *green house*, *White House*, *high chair*, usually have the main stress on the first word of the compound (and a secondary stress marked with a subscript , on the second word), i.e. 'green ,house, 'White ,House, 'high ,chair, 'cheque-, ,book, 'shell-, ,fish.

English language teaching textbooks, and English pronunciation handbooks/manuals, as well as some dictionaries address these practical pedagogic issues, and

often come up with valuable tips for the teachers and learners of English as a foreign language. (cf. Prator and Robinett 1972:17-24; Mitchell and El-Hassan 1989:18-24; Roach 1983:75-85). It is these kinds of books that simplify the learner's task and provide him with much needed insight into the most common patterns of accentuation in the English language.

2.2. Accent assignment in Arabic

Accent assignment is much easier to handle in Arabic than in English. In fact, main stress in Arabic is predictable from the syllabic structure of the word, including the quantitative patterning of syllables and their sequence. The facts are storable in terms of concrete rules like those at (7) a., b. and c. (cf. Mitchell 1960):

(7) a. A final long syllable of the type $C\bar{V}C$ (where, as before, \bar{V} indicates a long vowel) or $CVCC$ invariably carries the main accent, regardless of the morphological constituency and grammatical category of the word. Examples are:

bus'taan (Noun) $CVC - 'C\bar{V}C$ 'orchard/garden'
ba'9iid (Adjective) $CV - 'C\bar{V}C$ 'far/distant'
ya'quul (Verb) $CV - 'C\bar{V}C$ 'he says'

b. If the last syllable is NOT long, and the penultimate is NOT of the type CV , the latter carries the main accent (in the speech habits of Levantines) as in:

'mal9ab (Noun) $'CVC - CVC$ 'play-ground'
mu'9allim (Noun/Active participle) $CV - 'CVC - CVC$ 'teacher'
yu'daafi9 (Verb) $CV - 'C\bar{V} - CVC$, 'he struggles'
ja'diidah (Adjective) $CV - 'C\bar{V} - CVC$ 'new (sing. fem.)'

c. If the ultimate syllable is NOT long, and the penultimate is of the type CV , the ante-penultimate carries the main accent (in the speech of Levantines) as in:

'madrasah (Noun) $'CVC - CV - CVC$ 'school'
ta'9allama (Verb) $CV - CVC - 'CV - CV$ 'he learned'
muta 'saabiqah (Noun/Active participle) $CV - CV - 'C\bar{V} - CV - CVC$ 'female contestant'

Langendoen (1968:102) captures the facts of main stress assignment in *Cairine Arabic* by one rule stated in generative phonological terms as follows:

$$\left[\begin{array}{l} +\text{voc} \\ -\text{cns} \end{array} \right] \rightarrow [+\text{acc}] \quad / \quad \left\{ \begin{array}{l} (a) \left\{ \begin{array}{l} \# C - C_0 \# \\ \quad \quad \quad C_2 \# \end{array} \right\} \\ (b) - C_2VC' \# \\ (c) \left\{ \begin{array}{l} C_2 \\ \#C \end{array} \right\} (VCVC)_0 - (CV)CV(C) \# \end{array} \right.$$

It must be pointed out that the rules for main stress assignment in Arabic have to be worked out separately for different regions, e.g. Cairine, Levantine, etc., but everywhere in the Arabic speaking world these rules are a function of the syllabic patterning of the word, as mentioned above. For instance, the rules given at (7) a., b. and c. pertain to Jordanian, Palestinian and Syrian Arabic, whereas Langendoen's rules are applicable to Cairine Arabic, as worked out by Mitchell (1960).

While Langendoen's is a neat and compact rule, it may pose problems for the teacher/learner of Arabic as a foreign language, not least because of the abstract form it takes. For pedagogic purposes, simpler statements of the facts of accentuation with concrete examples analogous to (7) a., b. and c. above are much more appropriate; teachers and learners of Arabic as a foreign language can interpret these, and apply them with ease and facility.

2.3. Accent in English compounds

The process of compounding, so widespread and productive in English, poses accentuation problems for the Arab learners. Consider the following examples (recall that main stress and secondary stress are marked respectively by ' and ,):

- (8) 'green ,house
(9) 'black ,currant

This pattern of accentuation is alien to Arabic, and the well established habits of Arabic pronunciation interfere in the Arab's rendering of such compounds. Arabs tend to give equal prominence (and equal rhythmic weight) to both words in the compound viz:

- (10) * 'green 'house
(11) * 'black 'currant

This is, of course, in conformity with the usual pronunciation of such syntagmatically associated pairs as:

- (12) ?ad'daaru Ibay'Daa? 'the white house/Casablanca'.

Whether the phrase ?ad'daaru Ibay'Daa? means 'the white house' or the proper noun 'Casablanca', the well-known Moroccan City, the pattern of accentuation is invariably as shown above, i.e. both words have equal prominence and rhythmic weight by virtue of the main stress assigned to the appropriate syllable in each of them. This kind of accentuation is transferred to English compounds with the attendant risk of distorting their rhythm and possibly changing their meaning. The problem is worse confounded when the Arab knows that in English there are two distinctive accentual possibilities for such syntagms as *green house*, *black bird*, namely:

- (13) a. 'green-,house vs. b. 'green 'house
(14) a. 'black-,bird vs. b. 'black 'bird

The forms at (13) a. and (14) a. are of course, compounds. The former, i.e. (13) a., denotes a structure whose roof and sides are made of glass or some transparent material, used for growing plants that need protection from the weather, the latter, i.e. (14) a. denotes a certain species of songbird. In contrast the forms at (13) b. and (14) b. are noun phrases comprising an adjective followed by a noun with a transparent meaning, i.e. 'a house which is green', and 'a bird which is black', respectively.

Neither of these accentual patterns, the compound and the noun phrase, has an equivalent in Arabic and, as mentioned earlier, the Arab will tend to associate main stress with each of the two words in the syntagm, thereby giving them equal rhythmic weight and consequently distorting the meaning.

The Arab will need a great deal of practice to (i) perceive and (ii) produce these significant distinctions. The task is by no means easy, it requires patience and endurance. The practice must involve a selected sample of these contrasting compounds and noun phrases in the usual minimal pair framework, e.g.

- (15) 'French ,teacher vs. ,French 'teacher

Beyond the minimal pair practice, these contrastive patterns must be contextualized and presented in meaningful sentences/utterances e.g.

- (16) a. Our 'French ,teacher is Algerian
b. Rudolf is a ,French 'teacher; he teaches science.

Moreover, the Arab learner must be warned that not all syntagms of the type illustrated above can have the contrastive accentual pattern illustrated at (13), (14), (15) and (16). Some syntagms have only the compound pattern, others only the noun phrase pattern, e.g.

- (17) 'black-,mailer (but not ,black 'mailer)
(18) ,cease 'fire (but not 'cease ,fire)

The Arab will need to learn these as individual, lexical items with the concomitant accentual pattern(s) and meaning(s).

In addition, it has to be pointed out that syntagms with the compound accentual pattern are not always nominal, they can also be verbal or adjectival as in (19) and (20) (cf. Chomsky and Halle op. cit.:91)

- (19) 'trouble-,shoot (verb)
(20) 'hard-,headed (adjectival)

However, the nominal compounds, e.g. 'black-,bird, 'toy-,factory, are by far the most common and most productive group.

3. Vowel quality

Standard Arabic has three phonemically distinct short vowels, namely:

- i (nearly close, front, spread)
- a (nearly open, front, neutral)
- u (nearly close, back, rounded)

Every one of these has a long correlative, viz: /i:/, /a:/, /u:/. However, it must be added that the front vowels /a/ and /a:/ are realized as open back unrounded /ɑ/ and /ɑ:/ respectively in the so-called emphatic environments. Compare:

- tal 'hill' and tal 'he emerged'
- sa:m 'he offered a price' and sa:m 'he fasted'.

These front and back correlatives are in complementary distribution.

Now English has eleven pure (short and long) vowels, not to mention diphthongs and triphthongs. The Arab learner of English who has not received rigorous training in the pronunciation of English vowels tends to replace them with his own Arabic vowels. In other words, the three short Arabic vowels and their long correlatives have to be mapped on the eleven English vowels, a chaotic situation which shows that the problem is very serious, and underlines the importance of rigorous training and drilling.

In addition to this, accentuation and vowel quality in English are connected in such a way that a vowel in an accented syllable is always *strong* (not *weak*) and must receive its full weight. In contrast, vowels in unaccented syllables are typically (but not exclusively) reduced to the indeterminate quality of the schwa. Thus, in the word *particular*, for example, only the vowel in the accented syllable (i.e. the second syllable) is fully articulated and 'executed deliberately so that the articulating organs actually attain their various target configurations', as Chomsky and Halle (op. cit.:68) have put it; all the remaining vowels in this word exhibit the feature of weakening and are therefore reduced to a schwa or a short non-tense vowel³.

Such vowel reduction is alien to Arabic. In the Arabic of Egypt and the Levant, for instance, accented and unaccented vowels are deliberately and fully articulated. For example, all the vowels in the word

'maktabah 'library/book-shop'

are nearly open, front, short and unrounded. Similarly, the vowels in the word

ku'tubuhum 'their (masc.) books'

are nearly close, back, short and rounded. These vowels exhibit no weakening or

³ The vowel in the third syllable is attested as schwa, or alternatively as /ʊ/ (i.e. nearly half-close, slightly advanced, back, rounded, non-tense) so that the word has two pronunciations viz

pə'tɪkjələ / pə'tɪkjələ (cf. Jones 1967:354).

reduction. In other words, Arabs produce their vowels, whether accented or not, with the required raising or lowering of the tongue and jaw, rounding or spreading of the lips and all the required articulatory movements.

In English, the schwa is by far the most common of all vowels, and it is decidedly the most difficult vowel for the Arab learner of English as a foreign language, partly because the schwa is not an Arabic vowel, and partly because of the indeterminate quality of this vowel. Faced with an English word which has a schwa, the untrained Arab will substitute for it a vowel from his mother-tongue. Thus, the word 'together' /tə'geðə/ is usually pronounced by the Arab as:

/ˈtagaðar/

where the accent is assigned to the first syllable and the vowel qualities are all wrong. This is due to the following reasons:

- a. the inability of the Arab learner (without the required training) to produce the reduced (i.e. weak) vowels in the first and last syllables, and consequently the replacement of each of these vowels by the nearly open, front, short Arabic vowel.
- b. the inability of the Arab (again without the necessary drilling) to produce the mid-front short vowel in the second syllable and the consequent substitution of the nearly open, front, short vowel for it, to.

Note also that due to the influence of the written form, the Arab produces a final post-alveolar flap /r/, where (at least in RP) such an /r/ is not pronounced.

The roots of these problems emanate from the established habits of Arabic pronunciation; Arabic does not have the schwa, nor the mid-front short vowel /e/, hence the substitutions mentioned above.

This will account for the modifications of the vowel qualities in question, but what of the misplacement of the accent? Is it due to interference from Arabic, too? The answer is in the affirmative. Accentuation is one of those prosodic features acquired during the early formative years of the Arab child, and as mentioned at 2.2., accent assignment in Arabic is part and parcel of the syllabic constituency of the word. The Arab is naturally predisposed and linguistically set to restructure the foreign word – substituting his own vowel qualities for the English ones – and subsequently assigning the accent in accordance with the predictable patterns of Arabic accentuation (cf. El-Anani 1967). Thus, for instance, having restructured the English word 'together' as /tagaðar/ CVCVCVC, an Arab from the Levant automatically places the accent on the first syllable as he would do in any Arabic word with the same syllabic structure, e.g.

'katabat ('CV - CV - CVC) 'she wrote'

'qamarun ('CV - CV - CVC) 'a moon'

'qalamuk ('CV - CV - CVC) 'your pen'

Likewise, English accuracy /ˈækjuərəsi/ or /ˈækjərəsi/ is mispronounced as /ˈak-ˈjʊrasi/, where: (1) a glottal stop /ʔ/ is introduced before the first vowel; (This is

due to the fact that in Arabic, a word always begins with a consonant. So any foreign word beginning with a vowel is pronounced with an initial glottal stop), (2) the main stress is wrongly placed on the second syllable instead of the first syllable, (3) English /æ/ in the first syllable is replaced by the nearly open, front, short vowel /a/, and (4) English schwa in the third syllable is replaced by the nearly open, front, short vowel /a/.

As in the previous example, the vowel qualities are distorted because of interference from Arabic which does not have /æ/ or /ə/. The wrong position of the main stress can also be accounted for in terms of Arabic patterns as before: the English word is construed by the Arab as having the syllabic structure CVC - CV - CV - CV, which according to the established Levantine habits of pronunciation is stressed on the ante-penultimate, in line with such examples as the following:

- mak'tabuka (CVC - CV - CV - CV-) 'your office'
 ʔal'zamahu (CVC - CV - CV - CV-) 'he forced him'
 yas'tami9u (CVC - CV - CV - CV-) 'he listens'

The problem faced by the Arab learner of English as a foreign language is worse confounded by the fact that different words of the same syllabic structure in English are not regularly accented in the Arabic fashion. For instance, consider the accentuation of the following pairs of English words with the same syllabic structure:

- a. delicacy (noun) /ˈdelɪkəsi/ (CV CV CV CV)
 severity (noun) /səˈverəti/ (CV CV CV CV)
 b. commence (verb) /kəˈmens/ (CV CVCC)
 comment (verb) /ˈkɒment/ (CV CVCC)
 c. momentum (noun) /məˈmentəm/ (CV CVC CVC)
 cerebral (adjective) /ˈserəbrəl/ (CV CVC CVC)

With regard to the pair of words at a., where the syllabic structure is (CV CV CV CV), a Levantine Arab learning English as a foreign language will accurately place the accent on "severity" (notwithstanding reshaping the vowel qualities) as the accent on this word happens to conform to the pattern of accentuation of Arabic words having the same syllabic structure. The accent on "delicacy" is, however, a problem for this learner because it is at variance with the Arabic patterning, and therefore it requires special, conscious training. For similar reasons, the Arab will accurately place the accent on, "commence" and "momentum", but not on "comment" and "cerebral". The latter require careful, deliberate drilling.

4. Conclusion

In the interest of Arab learners of English as a foreign language (and indirectly, English learners of Arabic) an attempt is made in this paper to address some phonological features having to do with accentuation and vowel quality in English and Arabic. The paper underlines some of the pronunciation problems encountered

by the Arab learner of English, and shows that these problems are attributable to interference from the established habits of mother-tongue pronunciation. Faced with an (unfamiliar) English word, the Arab learner is predisposed to impose his own vowel qualities and patterns of accentuation on the English word, thereby distorting its pronunciation and running the risk of being misunderstood.

The paper reviews patterns of accentuation in English and Arabic and shows that while accent assignment in Arabic is predictable from the syllabic pattern of the word, the facts of accent placement in English are much more complicated, being a function of several variables including, *inter alia*, syllabic structure, morphemic constituency, and grammatical category of the word. Formal phonological rules of accent placement are too abstract for the foreign learner, and the paper underscores the importance of working out some more concrete and more practical principles or generalizations which facilitate the task of the foreign learner.

Insofar as vowel quality is concerned, it is shown that the six pure vowels of standard Arabic are only a poor match for the eleven pure vowels of English, not to mention the diphthongs and triphthongs of the latter language. The sharp contrast between the vowel systems of the two languages makes the task of the Arab learner of English pronunciation extremely difficult.

To get over these difficulties, the Arab learner of English will require protracted drilling in respect English vowels and accentuation. Some pedagogically 'oriented' 'rules' or principles stated in concrete terms which are easy to interpret are necessary to give meaning and purpose to the mechanical drilling.

REFERENCES

- Chomsky, N. and Halle, M. 1968. *The sound pattern of English*. New York: Harper and Row.
 El-Anani, M. I. 1967. *The intelligibility of Jordanian English*. Unpublished M. Phil. thesis, the University of Leeds.
 Goyvaerts, D. L. and Pullum, G. (eds). 1975. *Essays on the sound pattern of English*. Ghent: E. Story-Scientia.
 Jones, D. 1967. *Everyman's English pronouncing dictionary*. 13th ed. London: J. M. Dent and Sons Ltd.
 Langendoen, D. T. 1968. *The London school of linguistics: A study of the linguistic theories of B. Malinowski and J. R. Firth*. Cambridge, Mass.: MIT.
 McCawley, J. D. 1975. Review of *The sound pattern of English*. In Goyvaerts, D. L. and Pullum, G. (eds). 1975. 145-197.
 Mitchell, T. F. 1960. "Prominence and syllabification in Arabic". *Bulletin of the School of Oriental and African Studies* 23. 369-389.
 Mitchell, T.F. and El-Hassan, S. 1989. *English pronunciation for Arabic speakers*. Harlow, Essex: Longman Group UK, Ltd.
 Prator, C. H., (Jr.) and Robinett, B. W. 1972. *Manual of American English pronunciation*. New York: Holt, Rinehart and Winston, Inc.
 Roach, P. 1983. *English phonetics and phonology: A practical course*. Cambridge: CUP.

APPENDIX 1

Brief reading conventions pertaining to some Arabic sounds:

1. Consonants:

- ʔ glottal stop.
- θ voiceless, dental, non-sulcal fricative.
- ð voiced, dental non-sulcal fricative.
- Ṣ voiceless, dento-alveolar, sulcal, emphatic fricative.
- Ḍ voiced, dento-alveolar, emphatic stop.
- Ṭ voiceless, dento-alveolar, emphatic stop.
- Ḍ voiced, dental, non-sulcal, emphatic fricative.
- š voiceless alveo-palatal, sulcal, non-emphatic fricative.
- ǰ voiced, palato-alveolar affricate.
- ħ voiceless, pharyngeal fricative.
- ʕ voiced, pharyngeal fricative.
- x voiceless, uvular fricative.
- g voiced, uvular fricative.
- q voiceless, uvular stop.

2. Vowels:

Each vowel symbol stands for a range of vocalic sounds of the type indicated. Long vowels are shown by doubled letters, e.g. /aa/ stands for a long front open vowel.

- i front, close, spread.
- a front, open, neutral.
- ā back, open, neutral.
- u back, close, rounded.