Arabic Phonology

The Study of Phonology

As we have seen, varieties of Arabic have historically been classified into `'Alfu.s.hA` and `'Al`AmmIya`, the formal (or "pure") and colloquial types.
The most common `'Alfu.s.hA` variety of today, Modern Standard Arabic, is of course not the native language of any section of the population. It therefore derives its notions of correctness in pronunciation from its predecessor, Classical Arabic, which has not been spoken for centuries. Thus for this we rely on descriptions by early Arab grammarians and philologists.

This is problematic because, while the early studies of Arabic phonology were extremely detailed as far as phonemes are concerned, fall short in non-phonemic matters, like stress and intonation.[1]

The first scholar to systematically study Arabic phonology was Al-Khalil, in his work `kitAb 'Al`Ayn`. This was carried on by his disciple Sibawayhi, in his monumental work `'AlkitAb`. Some contributions (in particular, the details of the vowel system) were later made in Ibn Jinni's `'Al_hasA'is`.[2]

The Inventory

Modern Standard Arabic has a relatively rich consonant inventory, consisting of 28 sounds, and a restricted vowel inventory with 3 phonemes.[3]

Variation across dialectal phonology has persisted from the early Islamic period, evidenced by Sibawayhi's descriptions. In his `kitAb`, he lists six "good" (`musta.hsAna`) and seven "bad" (`.gayr musta.hsAna`) variations.[4]

Consonants

We have noted above that there are 28 consonant phonemes in MSA. These can be seen in Figure 1 (the phonemes in brackets are dialectal variations).

A distinctive feature of Arabic is the high percentage (8 out of 28) of "guttural" (velar and postvelar) consonants in its inventory. In addition to plain velar and postvelar consonants, there are "emphatic" variants of four front consonants (a common feature across Semitic languages), which in Arabic are realised as

[1] Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004. (pages 56-7)

[2] Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018 (page 11); Owens, Jonathan. *The Oxford handbook of Arabic linguistics.* Oxford University Press, 2013. (page 38)

[3] Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004 (page 57); Owens, Jonathan. *The Oxford handbook of Arabic linguistics.* Oxford University Press, 2013. (page 39)

[4] Owens, Jonathan. *The Oxford handbook of Arabic linguistics.* Oxford University Press, 2013. (pages 38, 45)

Place of articulation		Manner of articulation					
		Plosive	Fricative		Affricate	Liquid	Nasal
labial		b	w				m
labiodental			f				
dental	plain	t d	s	z		l	
	emphatic	ṭ ḍ	ṣ	(ẓ)			
interdental	plain		θ	ð			
	emphatic			ḍ̣			
alveolar			š	(ž)	j	r	n
palatal				y			
velar		k (g)	x	ġ			
uvular		q					
pharyngeal			ḥ	ʿ			
glottal		ʔ	h				

Figure 1: The Consonant Inventory of Arabic

"pharyngealised" consonants. These sounds are characterised by three processes in articulation:

- the retraction of the tongue tip
- the raising of the back part of the tongue towards the velum
- the constriction of the pharynx caused by (2).[5]

These emphatic consonants are described as *mutbaq* ("covered" or "enclosed"), as opposed to *munfatih* ("open").[6]

The consonants were called `'usUl` or "primary" by Al-Khalil, and were classified by him into "plain" (`si.hA.h`) and "hollow" (`'a^gwaf`). The plain consonant phonemes were further grouped into articulatory areas (Figure 2).[7]

These consonants form the inventory of both MSA and CLA, with the following three points of difference:

- `.d`, which in MSA is an emphatic voiced dental stop, but which Sibawayhi describes as having no non-emphatic counterpart;
- `.t`, which in MSA is an emphatic unvoiced dental stop, but which Sibawayhi describes as the emphatic version of /d/;

[5]Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004 (page 57)

[6]Owens, Jonathan. *The Oxford handbook of Arabic linguistics.* Oxford University Press, 2013. (page 55)

[7]Owens, Jonathan. *The Oxford handbook of Arabic linguistics.* Oxford University Press, 2013. (page 38)

Table 2.1 Classification of classical Arabic consonants according to Al-Khalīl (d. 786) in *Kitāb al-'Ayn* (The book of the 'Ayn)

Phonemes	**Plain**									**Hollow**
Region	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	
Letter-sound	ع ح ه	غ خ	ق ك	ض ج ش	ز ص س	ت د ط	ذ ث ظ	ر ل ن	ف ب م	ا و ي
Description	guttural	guttural	uvular	arched	apical	alveolar	interdental	apical	labial	vocalic
	حلقية	حلقية	لهوية	شجرية	أسلية	نطعية	لثوية	ذولقية	شفوية	هوائية
IPA	ʕ ħ h	x ɣ	q k	ǯ ʃ dˤ	sˤ s z	tˤ d t	dˤ θ ð	r l n	f b m	a: ʔ w j

Figure 2: Al-Khalil's Classification of Consonants

- q, which in MSA is an unvoiced uvular stop, but which Sibawayhi describes as voiced.[8]

Vowels

Arabic's vowel system is considerably reduced, consisting of only three phonemes: /i/, /u/ and /a/.
In addition, there is a length-based distinction, *i.e.*, /i:/, /u:/ and /a:/ are distinct from the above three.[9]

The qualities of the three vowels are:

- /i/ is a close front vowel, pronounced with lips spread
- /u/ is a close back vowel, pronounced with lips rounded
- /a/ is an open vowel.

However, their realisation often depends on the dialect and the context.[10]

Syllable Structure

There are mainly six types of syllables: `Cv`, `Cv:`, `CvC`, `Cv:C`, `CvCC` and `Cv:CC`. Note that the onset can only consist of a single consonant.[11]

Processes

There are a number of phonological processes (synchronic) that occur; some are restricted to a limited number of dialects, while the others are present across

[8]Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018 (pages 12-3)
[9]Owens, Jonathan. *The Oxford handbook of Arabic linguistics.* Oxford University Press, 2013. (page 38)
[10]Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004 (page 60)
[11]Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004 (page 61)

all.

One example of a process not present in all dialects is affrication, which is a feature of Gulf Arabic. In the presence of front vowels, velar stops (/g/ and /k/) change into the corresponding alveolar affricates (/dz/ and /ts/).[12]

Another example of a (more widespread) phonological process is pharyngealisation. As we have seen above, some consonants have emphatic or pharyngealised versions; these sounds cause their surroundings to be pronounced with a more retracted tongue root. This process occurs in Levantine, Gulf and Yemeni Arabic.
However, there are differences in the way the `[+RTR]` feature spreads. For example, the number of segments, the direction of spreading and the segments which can block the spreading are some conditions which vary across dialects.[13]

An important process that occurs across all dialects of Arabic is the assimilation of the definite article /l-/. When the noun starts with a coronal consonant, the /l/ of the definite article assimilates to this. Examples of this include *n-noor* ("the light"), *sh-shams* ("the sun"), etc.
However, an exception to this is the affricate /dz/. It is hypothesised that this is because /dz/ is the reflex of Proto-Semitic /g/, which is not a coronal phoneme.[14]

Levantine Arabic

There are numerous features distinguishing Levantine phonology from that of MSA. We will consider three well-known ones: the reflexes of the interdental fricatives (`_t`, `_d` and `.z`), the voiced alveolo-palatal affricate `^g`, and the voiceless uvular stop `q`.

Interdental Fricatives

This is a feature shared by the Levantine (except Jordanian), Hejazi, Egyptian and Maghrebi dialects of Arabic. The three interdental fricatives (voiceless and voiced plain, and voiced pharyngealised) are pronounced as the corresponding dental stops. This, in fact, is perceived as a characteristic of sedentary dialects across the Arab world, and is not shared by the bedouin varietes, even in the Levant.

It is possible that this sound change is due to the Aramaic substrate present in this region, although this is not considered likely by some.[15]

[12]Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018 (page 22)
[13]Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018 (page 24)
[14]Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018 (page 25)
[15]Holes, Clive, ed. *Arabic historical dialectology: Linguistic and sociolinguistic approaches.* Vol. 30. Oxford University Press, 2018. (page 876)

Notably, Levantine and Egyptian Arabic replace these sounds with the corresponding alveolar fricatives, in *borrowings* from MSA.[16]

An interesting sociological distinction among the three pronunciations surfaces when we consider the relative prestiges of the three sets of pronunciations:
The bedouin dialects preserve the interdental fricatives of MSA, and this pronunciation is popularly accepted as the most "correct" one.
The native urban pronunciation popular in the Levant is the dental stops listed above, which are perceived as the most informal.
The interdental fricatives used by urban speakers in loans and neologisms lie somewhere in between.

Nevertheless, recently settled bedouins often switch from the interdentals to the alveolars in conversation with urban speakers. Moreover, which pronunciation is to be used is often decided by the semantic and pragmatic content of the word, where some words are associated with a certain pronunciation and would not be changed regardless of the formality.[17]

Alveolar Affricate

The alveolar affricate `^g` also has a number of reflexes across the Arab world.

In the Levant, a distinction is drawn between the dialects of rural and bedouin-origin populations, and other varieties (including Levantine MSA). The former pronounces this phoneme with its reflex in "common" MSA (the affricate), while the latter as a fricate /z/.[18]

Uvular Stop

The voiceless uvular stop `q` is another phoneme which varies widely across dialects of Arabic. In the Levant itself, there are four distinct ways it is realised.

In urban varieties, it usually surfaces as either /q/ itself, or the glottal stop. In rural and bedouin dialects, /q/ and /g/ are preferred pronunciations.
In Palestine's rural regions, however, its reflexes also include /k/ and /ts/. Jordanian dialects also realise it as /g/.[19]

Here, too, we can note some sociolinguistic phenomena. It has been claimed that the /g/ realisation of this phoneme has become associated with "masculinity", and the glottal realisation with "femininity", causing men of all backgrounds to

[16]Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018 (page 14)

[17]Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004. (page 72-3)

[18]Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004 (page 75); Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018. (page 15)

[19]Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004 (page 73); Benmamoun, Elabbas, and Reem Bassiouney, eds. *The Routledge handbook of Arabic linguistics.* Routledge, 2018. (page 15)

adopt the former and women of all backgrounds to adopt the latter.
In addition, the /k/ and /ts/ pronunciations have, it appears, become stigmatised as "rural" and are fading in the speech of younger speakers.[20]

[20]Holes, Clive. *Modern Arabic: Structures, functions, and varieties.* Georgetown University Press, 2004 (page 73)