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Arabic and English Phonetics: A Comparative Study

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1. Introduction

English is a West Germanic language related to Dutch, Frisian and German with a significant amount of vocabulary from French, Latin, Greek and many other languages. Approximately 341 million people speak English as a native language and a further 267 million speak it as a second language in over 104 countries including the UK, Ireland, USA, Canada, Australia, New Zealand, South Africa, American Samoa, Andorra, Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Botswana, British Indian Ocean Territory, British Virgin Islands, Brunei, Cameroon, Canada, Cayman Islands, Cook Islands and Denmark.

Arabic (العربية *al-‘arabīyah* or عربي/عربية *‘arabī*) is a name applied to the descendants of the Classical Arabic language of the 6th century AD. This includes both the literary language and the spoken Arabic varieties.

The literary language is called Modern Standard Arabic or *Literary Arabic*. It is currently the only official form of Arabic, used in most written documents as well as in formal spoken occasions, such as lectures and news broadcasts. In 1912, Moroccan Arabic was official in Morocco for some time, before Morocco joined the Arab League.

The spoken Arabic varieties are spoken in a wide arc of territory stretching across the Middle East and North Africa. The modern written language (Modern Standard Arabic) is derived from the language of the Quran (known as Classical Arabic or Quranic Arabic). The two formal varieties are grouped together as *Literary Arabic*, which is the official language of 26 states and the liturgical language of Islam. Modern Standard Arabic largely follows the grammatical standards of Quranic Arabic and uses much of the same vocabulary. Arabic has lent many words to other languages of the Islamic World, like Persian, Turkish, Bosnian, Bengali, Urdu and Hindi. Literary Arabic was a major vehicle of culture in Europe, especially in science, mathematics and philosophy. Arabic has also borrowed words from many languages, including Hebrew, Greek, Persian and Syriac in early centuries, Turkish in medieval times and contemporary European languages in modern times, mostly from English and French.

It is not easy for Arabic speakers to learn English nor is it easy for English speakers to learn Arabic. English and Arabic are from two different language families, Germanic and Semitic, respectively. Because they descend from different language families, English and Arabic have numerous differences in their individual grammars. The grammar of a language includes its phonetic attributes, and there are many phonetic differences between the English and Arabic languages.

2. English Alphabetical Verities

The English alphabet starts with the letter A and finishes with the letter Z. It is always written in the same order. This order is called "alphabetical order".

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Table: 1

3. Arabic Alphabetical Verities

The **Arabic alphabet** (Arabic: عَرَبِيَّةٌ أَبْجَدِيَّةٌ 'abjadiyyah 'arabiyyah) or **Arabic abjad** is the Arabic script as it is codified for writing the Arabic language. It is written from right to left, in a cursive style, and includes 28 letters

أ	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ص	ض	ط	ظ	ع	غ	ف	ق	ك	ل	م	ن	ه	و	ي
'	b	t	t	j	h	k	d	d	r	z	s	s	h	ṣ	ṭ	ẓ	ʿ	g	f	q	k	l	m	n	h	w	y

Table: 2

4. Literary Arabic

As in other Semitic languages, Arabic has a complex and unusual morphology (i.e. method of constructing words from a basic root). Arabic has a nonconcatenative "root-and-pattern" morphology: A root consists of a set of bare consonants (usually three), which are fitted into a discontinuous pattern to form words

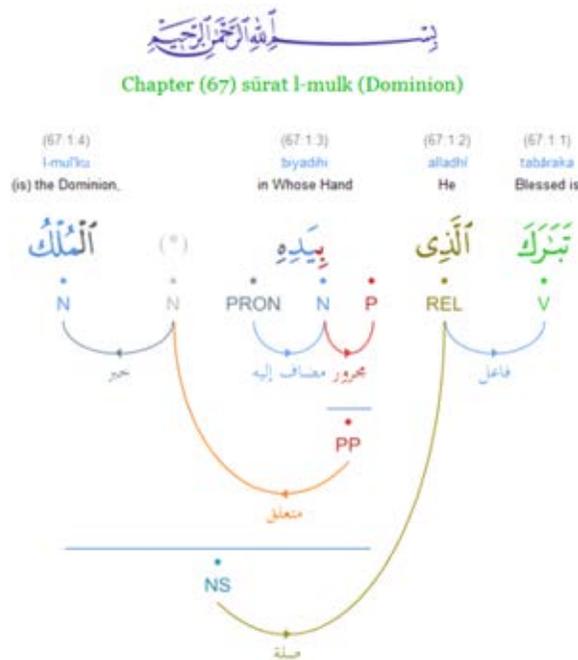


Fig. : 1(Visualization of Arabic grammar from the Quranic Arabic Corpus Arabic)

5. English vowels

A vowel that has a single perceived auditory quality. It's essentially a tone or a 'hum'. Diphthongs are to be contrasted in this respect with so-called pure vowels, or monophthongs. It originated from Greek *monophthongos*, from *monos* 'single' + *phthongos* 'sound'. In RP there are twenty (or vowel phonemes). of the 12 monothonges ,(i) four are vowels: /i:, i, e, æ/(ii) five back vowels: / a:, o, ɔ:, u, ʊ / , and three central vowels / ^ , ɜ:, ə / .

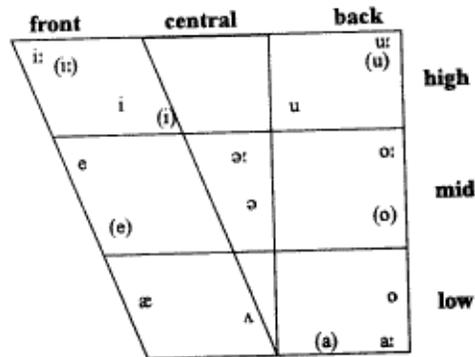


Fig. 2 Cardinal Vowels
 Adopted from Aitcheson (1992)

IPA (International Phonetic Alphabet) with example

	b_d	IPA		b_d	IPA
1	bead	i:	9	boed	oʊ
2	bid	ɪ	10	boed	u:
3	bayed	eɪ	11	bud	ʌ
4	bed	ɛ	12	bird	ɜ:
5	bad	æ	13	bide	aɪ
6	bod(y)	ɔ:	14	bowed	aʊ
7	bawd	ɔ:	15	Boyd	ɔɪ
8	budd(hist)	ʊ			

Table 3: IPA

5.1, English Diphthongs

Diphthong comes from the Greek word *diphthongs* which mean "having two sounds." Notice the *di-* for "double." So diphthongs are double vowel sounds in words like take, fear or care. If two vowels in a row are the same, as in *boot* or *beer*, then it's not a diphthong. Linguists, scholars

who study language, analyze diphthongs, which differ from language to language. Ironically, the word *diphthong* has no diphthongs.

DIPHTHONGS
/eɪ/ as in 'take'
/aɪ/ as in 'buy'
/ɔɪ/ as in 'boy'
/ɪə/ as in 'fear'
/eə/ as in 'care'
/əʊ/ as in 'go'
/ʊə/ as in 'poor'
/aʊ/ as in 'cow'

Table: 4

6. Arabic Vowels

Modern Standard Arabic has six pure vowels, with short /a i u/ and corresponding long vowels /a: i: u:/. There are also two diphthongs: /j/ and /w/.

- /a, a:/
 - retracted to [ɑ] in the environment of a neighboring /r/, /q/ or an emphatic (pharyngealized) consonant: /sˤ/, /dˤ/, /tˤ/, /ðˤ/, /lˤ/ and in a few regional standard pronunciations also /x/ and /ɣ/
 - advanced to [æ] in the environment of most consonants:
 - labial consonant(/m/, /b/ and /f/),
 - plain (non pharyngealized) coronal consonants with the exception of /r/ (/θ/, /ð/, /n/, /t/, /d/, /s/, /z/, /l/, /j/ and /d͡ʒ~g~ʒ/)
 - pharyngeal consonants (/ħ/ and /ʕ/)
 - glottal consonants(/h/ and /ʔ/)
 - /j/, /k/ and /w/
 - Across North Africa and West Asia, the open vowel /æ, a/ may have different contrasting values, being ([ɑ], [ɑ̣], ([e], [a]) or without any contrast at all: almost centralized [a].
 - In North west Africa, the (near-)open front vowel / æ]/ is raised to [e].
- /i, i:, u, u:/
 - Across North Africa and West Asia, /i/ may have other values: ([ɪ] or [i]) and /u/ may have other values: ([u] Sometimes with one value for each vowel in both short and long lengths or two different values for each short and long lengths.

- In Egypt, close vowels have different values; short initial or medial: [e], [o] ← instead of /i, u/. Unstressed final long /-a:, -i:, -u:/ are most often shortened or reduced: /-a:/ → [-æ] or [-ɑ], /-i:/ → /-i/, /-u:/ → [-o~u].

However, the actual rules governing vowel-retraction are a good deal more complex, and have relatively little in the way of an agreed-upon standard, as there are often competing notions of what constitutes a "prestige" form. Often, even highly proficient speakers will import the vowel-retraction rules from their native dialects. Thus, for example, in the Arabic of someone from Cairo emphatic consonants will affect every vowel between word boundaries, whereas certain Saudi speakers exhibit emphasis only on the vowels adjacent to an emphatic consonant. Certain speakers (most notably Levantine speakers) exhibit a degree of asymmetry in leftward vs. rightward spread of vowel-retraction.

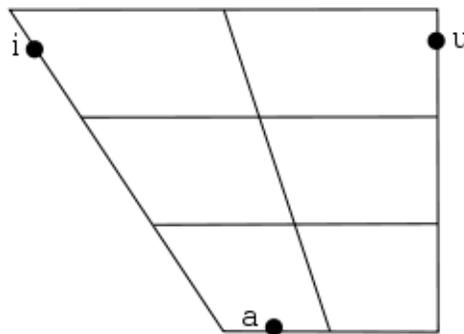


Fig.3 Vowel chart



Vowel chart representing the pronunciation of long vowels by a Palestinian speaker educated in Beirut. From The Ilwal(1990:38) (Notice that these values vary between regions across North Africa and West Asia)

Example words

	short		long	
i	عِدّ /ʕidd/	<i>promise</i>	عِيدّ /ʕi:d/	<i>feast</i>
u	عُدّ /ʕudd/	<i>come back!</i>	عُودّ /ʕu:d/	<i>lute</i>
a	عَدّ /ʕadd/	<i>counted</i>	عَادّ /ʕa:d/	<i>came back</i>
aj			عَيْنّ /ʕajn/	<i>eye</i>
aw			عَوْدّ /ʕawd/	<i>return</i>

Table: 5

The final heavy syllable of a root morpheme is stressed. However, the pronunciation of loanwords is highly dependent on the speaker's native variety.

The vowels /o/, /o:/, /e/ and /e:/ appear in varieties of Arabic and some stable loanwords or foreign names. E.g. كوكاكولا /ko(:)ka'ko:la/ ('Coca-Cola'), شوكولاتة /ʃo(:)ko(:)'la:ta/ ('chocolate'), دكتور /duk'to:r/ or /dok'to:r/ ('doctor'), جون /dʒo:n/ ('John'), توم /tom/ ('Tom'), بلجيكا /bel(d)ʒi:ka/ ('Belgium'), سكرتير /sekre'te:r/ or /seker'te:r/ ('secretary'), etc. Foreign words often have a liberal

sprinkling of long vowels, as their word shapes do not conform to standardized prescriptive pronunciations with short vowels. For short vowels /e/ and /o/, there may be no vowel letter written, as is normally done in Arabic (unless they are at the beginning of a word), or long vowel letters ي (for /e/) or و (for /o/) are used. The letters ي or و are always used to render the long vowels /e:/ and /o:/

6.1, Arabic Diphthongs

The diphthongs /aj/ and /aw/ are represented in vocalized text as follows

Diphthongs (fully vocalized text)	Name	Trans.	Value
064E 064A يَ	fathah yā'	ay	/aj/
064E 0648 وَ	fathah wāw	aw	/aw/

Table 6: Arabic Diphthongs

7. English Consonants: Voicing

"There are 21 consonant letters in the written alphabet (B, C, D, F, G, H, J, K, L, M, N, P, Q, R, S, T, V, W, X, Y, Z). Consonants have friction when they are spoken, mostly using the position of the tongue against the lips, teeth and roof of the mouth. b and p are plosives, using the lips to produce a tiny sharp sound. Phonetics texts give more details, with diagrams. Consonants may be voiced or unvoiced. The in the is voiced, but in breath is not. If the vocal cords vibrate during its production, a sound is called voiced sound; otherwise, it is called *voiceless*. Whereas all vowel sounds are *voiced*.

English Consonants

		bilabial	labio-dental	inter-dental	alveolar	palatal	velar	glottal
stops	voiceless	p			t		k	ʔ
	voiced	b			d		g	
affricates	voiceless					tʃ		
	voiced					dʒ		
fricatives	voiceless		f	θ	s	ʃ	h	
	voiced		v	ð	z	ʒ		
nasals		m			n		ŋ	
Liquids	lateral				l			
	flap				ɾ			
	retroflex					ɻ		
semivowels		w				y		

Table 7: English Consonants
 Adopted from Atchison (1992)

Note: /h/ phonetically, is a voiceless vowel with the quality of the voiced vowel that follows it. Phonologically, /h/ is a consonant. It is usually found before vowels(voiced) when /h/ occurs between voiced sound it is pronounced with voicing. E.g. greenhouse/gri:nhaʊs/ , a head /əhed/

Arabic Consonants

Standardized Arabic consonant phonemes

		<u>Labial</u>	<u>Interdental</u>		<u>Dental /Alveolar</u>		<u>Post-alveolar</u>	<u>Palatal</u>	<u>Velar</u>	<u>Uvular</u>	<u>Pharyngeal</u>	<u>Glottal</u>
			plain	emphatic	emphatic	plain						
<u>Nasal Plosive</u>	voiceless	<u>m</u>			<u>t</u>	<u>n</u>			k	q		ʔ
	voiced	<u>b</u>			<u>d</u>	d	ʒ~ <u>ḍ</u> .t~q					

Fricative	voiceless	f	θ		S'	s	ʃ		x~X	h	h
	voiced		ð		ðˢ~z	z			y	ħ	
Approximant						l		i	w		
Trill						r					

Table 8: Arabic Consonants

This phoneme is represented by the Arabic letter *jīm* (ج) and has many standard pronunciations. [d̥ʒ] is characteristic of north Algeria, Iraq, also in most of the Arabian peninsula but with an allophonic [ʒ] in some positions; [ʒ] occurs in most of the Levant and most North Africa; and [q] is used in most of Egypt and some regions in Yemen and Oman. Generally this corresponds with the pronunciation in the colloquial dialects. In some regions in Sudan and Yemen, as well as in some Sudanese and Yamenian dialects, it may be either [gʲ] or [t̪], representing the original pronunciation of Classical Arabic. Foreign words containing /q/ may be transcribed with ج, غ, ك, ق, ك, ك or ق, mainly depending on the regional spoken variety of Arabic or the commonly diacritic zed Arabic letter. Note also that in northern Egypt, where the Arabic letter *Jim* (ج) is normally pronounced [q], a separate phoneme /ʒ/, which may be transcribed with ج, occurs in a small number of mostly non-Arabic loanwords, e.g., /zakitta/ "jacket".

- /l/ is pronounced [ɫ] in /ʔalla:h/, the name of God, q.e. Allah, when the word follows a, ā, u or ū (after i or ī it is unrealized: *bismi l-lāh* /bismilla:h/). Some speakers velarize other occurrences of /l/ in MSA, in imitation of their spoken dialects.
- The emphatic consonant /dˢ/ was actually pronounced [d̥ʒ], or possibly [d̥ʒ]—either way, a highly unusual sound. The medieval Arabs actually termed their language *luḡatu l-dād* "the language of the Dad" (the name of the letter used for this sound), since they thought the sound was unique to their language. (In fact, it also exists in a few other minority Semitic languages, e.g., Mehri.)
- In many varieties, /ħ, ʕ/ (ح, ع) are actually epiglottal [ħ, ʕ] (despite what is reported in many earlier works).
- /x/ and /χ/ (خ, ح) are often post-velar, though velar and uvular pronunciations are also possible.
- /θ/ (ث) can be pronounced as [t̪] or even [s̪]. In some places of Maghreb it can be also pronounced as [ts̪].

Arabic has consonants traditionally termed "emphatic" /tˢ, dˢ, sˢ, ðˢ/ (ط, ض, ص, ظ), which exhibit simultaneous pharyngealization [tˢ, dˢ, sˢ, ðˢ] as well as varying degrees of variation [tʰ, dʰ, sʰ, ðʰ], so they may be written with the "Velarized or pharyngealized" diacritic (~) as: /ṭ, ḍ, ṣ, ð̣/. This simultaneous articulation is described as "Retracted Tongue Root" by phonologists. In some transcription systems, emphasis is shown by capitalizing the letter for example, /d/ is written < D >; in others the letter is underlined or has a dot below it, for example, < ḍ >.

Vowels and consonants can be phonologically short or long. Long consonants are normally written doubled in Latin transcription (i.e. bb, dd, etc.), reflecting the presence of the Arabic

diacritic mark *šaddah*, which indicates doubled consonants. In actual pronunciation, doubled consonants are held twice as long as short consonants.

8.Sounds in Arabic only

There are sounds in Arabic which are hard for English speakers to tell apart. Let's look at what makes them different.

k-like	ق	ك	
s-like	س	ص	
h-like	ح	خ	هـ
t-like	ط	ت	
d-like	ض	د	
th-like	ذ	ظ	

Table: 9

Like "k" (ك vs. ق)

In Arabic the corresponding letter to q (ق) makes a different sound than the corresponding letter to k (ك), whereas in English they are redundant. The q is further back in the throat, while the k is as in English. Kuwait starts with a k. Qatar with a q. Listen around to the difference.

Like "h"

The most significant sound that English speakers hear in Arabic are the three corresponding letters to h. The first (هـ) is exactly equivalent to the h, and is thus very light, almost not heard at all. The noise comes from friction in the upper throat. The second (ح) comes from deep down in the throat, from actual friction from the vocal cords themselves. It sounds a little like blowing warm air on your cold hands or very fine sandpaper. The third (خ) is very rough, almost like collecting phlegm. It is very similar to the last sound in "Bach."

Like "h" but vocalized

The ayn (ع) may be difficult to hear and produce because, though a consonant in Arabic, it sounds most like the English a, as in water. It is produced like the y in you, but the constriction is made down in the throat instead of the mouth. It is a little like the sound a doctor asks to hear when looking down your throat. While saying "aaah" pull the back of your tongue back into your throat a bit, with a little squeeze. Similar to the ain is the ghayn (غ) which is a rougher version with more of the ch from "Bach", only with vocal cords vibrating. The difference between the last sound in the previous paragraph and the last sound in the first paragraph should be very clear. They are both rough, but one has no vibrating vocal cords, while the other has them.

9. Letters that come in hard and soft varieties

Arabic has hard and soft versions of s, t, d, and th (as there, not thin). Arabic speakers often refer to their language as the language of Dod (hard d) because it's so hard for foreigners to say it right. It can be easier for English speakers to think of the hard sounds as lower pitched and the soft sounds as higher pitched. What complicates matters is that for English speakers the hard s and soft s sound the same, but the vowels before and after them are affected by the consonant. To the English speaker the vowels are different and the consonant is the same. To the Arabic speaker the vowels are the same and the consonant is different. Some of this is because Arabic has very few recognized vowel sounds. An a and an e to an Arabic speaker are usually the same (this depends on dialect). It is one letter pronounced differently depending on what letter comes before or after it.

Also to note, the hard letters can be hard for even native speakers to say, and they are often changed in local colloquial Arabic to something else. For example the hard d in many areas is pronounced exactly like the z, but this is not formal proper Arabic.

The soft s, "seen" (س), is pronounced just like the English s (with mouth open, small and weak). The hard S, "sod" (ص) is with the mouth more closed, with a lower pitch, as if you were a big stalwart man. The easiest way to say it is to make the vowels before and after it lower-pitched and deeper.

The soft t, ta (ت) is just like the English t, soft and weak, and the hard T "taw" (ط) is deep and strong.

The soft d, del (د) is even softer than the English d, and the hard D, Dod (ض) is very deep and hard.

The soft dh, dhel (ذ), is just like the th in "the", and the hard DH, DHa (ظ) is deep and strong.

10. Similarities between Arabic and English

- They're two different languages.
- They also have different alphabets. The English alphabet has 26 letters while the Arabic alphabet has 28 letters.
- English is written/read from left to right while Arabic is written/read from right to left.
- Some Arabic letters/sounds are not found in English: ح خ ص ض ط ظ ع غ ق
- The English sounds /p/ and /v/ are not found in Arabic.
- The Arabic sentence may not contain a verb.

- The usual word order in English is SVO (subject then verb then object), while the usual word order in Arabic is VSO.
- Most words in Arabic have different forms for male/female and singular/plural.

Arabic letters usage in Literary Arabic with English (International Phonetic Alphabet)

Name	Translit	Value(IPA)	Contextual forms			Isolated
			Final	Medial	Initial	
'alif	' / ā	various, including /a: /	ا	ا	ا	ا
bā'	b	/b/ (sometimes /p/ in loanwords)	ب	ب	ب	ب
tā'	t	/t/	ت	ت	ت	ت
thā'	th (also t̤)	/θ /	ث	ث	ث	ث
jīm	j (also ġ, g)	[dʒ] ~ [ʒ] ~ [g]	ج	ج	ج	ج
ḥā'	ḥ	/ħ/	ح	ح	ح	ح
khā'	kh (also ḫ, k̤)	/x/	خ	خ	خ	خ
dāl	d	/d/	د	د	د	د
dhāl	dh (also ḍ)	/ð /	ذ	ذ	ذ	ذ
rā'	r	/r/	ر	ر	ر	ر
zayn / zāy	z	/z/	ز	ز	ز	ز
sīn	s	/s/	س	س	س	س
shīn	sh (also š)	/ʃ/	ش	ش	ش	ش
ṣād	ṣ	/sˤ/	ص	ص	ص	ص
ḍād	ḍ	/dˤ/	ض	ض	ض	ض
ṭā'	ṭ	/tˤ/	ط	ط	ط	ط
ẓā'	ẓ	[ðˤ] ~ [zˤ]	ظ	ظ	ظ	ظ
'ayn	'	/ʕ/	ع	ع	ع	ع
ghayn	gh (also ġ, ġ)	/y/ (sometimes /g/ in loanwords)	غ	غ	غ	غ
fā'	f	/f/ (sometimes /v/ in loanwords)	ف	ف	ف	ف

qāf	<i>q</i>	/q/ (sometimes /q/ in loanwords)	ق	ق	ق	ق
kāf	<i>k</i>	/k/ (sometimes /g/ in loanwords)	ك	ك	ك	ك
lām	<i>l</i>	/l/	ل	ل	ل	ل
mīm	<i>m</i>	/m/	م	م	م	م
nūn	<i>n</i>	/n/	ن	ن	ن	ن
hā'	<i>h</i>	/h/	ه	ه	ه	ه
wāw	<i>w / ū / aw</i>	/w/, /u:/, /aw/, sometimes /u/, /o/, and /o:/ in loanwords	و	و	و	و
yā'	<i>y / ī / ay</i>	/j/, /i:/, /aj/, sometimes /i/, /e/, and /e:/ in loanwords	ي	ي	ي	ي

Table 10: Arabic letters usage in Literary Arabic with English

11. Conclusion

As we have seen in this research, there are many differences and similarities between the sound systems of English and the sound systems of Arabic. This research explains these differences and similarities to accommodate one's language who learns English or Arabic as a second language with the correct pronunciation. This research tries to distinguish between these two systems, and it shows many things about English consonants and vowels. It gives many of information about classification of consonants and description of speech sounds of both consonants and vowels. In addition to these things, this research gives us a clear comparison between these two systems, as there are some consonants restricted to English and others restricted to Arabic. There is another comparison for vowels and diphthongs between Arabic and English Most sounds in English and Arabic correspond perfectly. We have to devote time to recognize the different sounds of hard and soft letters. And learn the alphabet. The book *Alif Baa* is one of many introductions to the Arabic alphabet. In conclusion, the purpose of this research which is to help people to pronounce sounds properly is fulfilled through this kind of comparative study between the sound systems of English and Arabic.

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