Phonemic consonant sounds in modern standard Arabic

Mohammad Yahya Ali Bani Salameh

Department of Languages and Translation, College of Duba, University of Tabuk, Saudi Arabia

***Abstract*---**Consonants are vital to the phonetic pattern of Modern Standard Arabic (MSA). There are 28 consonants throughout MSA, and they are divided into groups based on where and how they are articulated. The examination of consonants throughout MSA is the focus of this work. This report's underpinning is the clarification of the phonetic principles underlying sound categorization. This shows the main limitation, which is primarily the use of phonetic instead of phonology descriptions of sounds. The Standard Arabic (SA) consonant sounds are included after this categorization effort, in addition to an operative word to every consonant. Location, style of articulation, and tone are the requirements for definition. Findings showed that numerous Arabic sounds have increasingly deviated from the norm while using alphabets as the textual symbols for reproducing the real pronunciation of the phonemes. With respect to this specific version the research extended even beyond the phonetic aspect of Arabic consonant, addressing a number of relevant problems, such as the dispersion of Arabic consonant, the varieties of Arabic consonants, as well as the phonetic specification of Arabic consonants.

***Keywords*---**consonant, Modern Standard Arabic (MSA), phonetic pattern, pronunciation, vowels.

Introduction

One of the most significant languages spoken worldwide is Arabic. Arabic language prominence has increased along with the Arab world's rising influence on international events. The prestige of the Arab nations in the arena of global trade and business has also increased the significance of Arabic. With 27 sub-languages, Arabic is regarded as a universal language. These tongues are widely prevalent throughout the Arab world. In the Islamic world, standard Arabic is extensively studied and utilized. Some of the Afro-Asiatic languages spoken by

millions of people include Arabic, Hausa, Amharic, Somali, and Oromo, while others are on the verge of extinction [1].

Around "350 million people in North, West, Central, and East Africa", as well as in the Middle East, as well as in scattered communities in Europe, the United States, and the Caucasus speak a language that belongs to the Afro-asiatic language family. Afro-asiatic languages make up the fourth largest linguistic phylum. The Semitic language family includes a number of important languages, one of which being Arabic. Arabic is spoken in both Asia and Africa and has over 300 million native speakers. "Back consonants," "front consonants," "liquid consonants," and "labial consonants" are the four categories used to classify semitic vowels and consonants. There are 36 phonemes in the standard Arabic language; six of them are vowels, two of these are diphthongs, and the remaining 28 are consonants [2]. Even when written by hand, the Arabic script only shows a cursive form and is written from right to left.

MSA is the form of the Arabic language that is used the most often nowadays in nations where Arabic is spoken. The similarities between MSA and classical (or Quranic) Arabic are striking. In actuality, a good number of Arabs use both terms interchangeably. In general, the two varieties of Arabic are rather similar to one another. When the Quran was written, the words and phrases that are used in MSA did not exist. MSA employs modern and current terms and phrases [3]. In addition to pronouncing words, grouping words, and eliciting a distinct context between words than in Quranic Arabic, MSA does all of these things. Classical Arabic is used more frequently in literature and writing, but MSA is more commonly spoken. It would be more useful to learn MSA. The goal of this study is to explore a number of connected topics, such as the distribution of Arabic consonants and their kinds, types of Arabic consonants, and phonetic descriptions of Arabic consonants.

Literature review

Consonants

Consonants, which are speech sounds generated by a partial or total restriction of the airflow by contraction of the vocal apparatus. In contrast to vowels which are voiced sounds in which a constant stream of air is expelled from the mouth without blockage. Contrarily, consonants are categorized by the organs that articulate them. Depending on how they are coherant, it is also possible to integrate vocal cord movement consonants become voiced or voiceless depending on how they are spoken [4]. Arabic has six vowels, three of which are short and three of which are long and 28 consonants, along with two semi-vowels. Based on the consonant that comes before them, the vowels take on distinct allophones. In written form, short vowels are often not reproduced, however they can be denoted by diacritics. A limited number of them have no foreign language or other language comparable consonants, but the majority do. The transliteration signs used in this article are as follows:

- 26 consonants: *b t d k ʒ q l m n f θ ð s ʂ z ʃ x ɣ ḥ h r ç ɫ đ ∂ ʔ*
- 2 semi-vowels: *w j*

- 6 vowels: ɪ *i* ə *a* ʊ *u*

The uvular, pharyngeal, and pharyngealized "emphatic" sounds are extremely abundant in Arabic. /ṣ/ص/ ,đ/ ض/,ɬ/ط/ and /ẓ/ظ/ are typically regarded as the strong consonants. The uvular, pharyngeal, and pharyngeal zed "emphatic" sounds are extremely abundant in Arabic. Figure 1 illustrates Arabic phonetic symbols.

Phonetic symbol	Arabic letter	Three-term Lable
ṣ	ص	Voiceless velarised alveolar fricative
Ð	ذ	Voiced inter-dental fricative
f	ف	Voiceless labio-dental fricative
m	م	Voiced bilabial nasal
q	ق	Voiceless uvular plosive
k	ك	Voiceless velar plosive
t	ت	Voiceless denti-alveolar plosive
b	ب	Voiced bilabial plosive
d	د	Voiced denti-alveolar plosive
3	ج	Voiced palate-alveolar affricate
l	ل	Voiced alveolar lateral
n	ن	Voiced alveolar nasal
θ	ث	Voiceless inter-dental fricative
s	س	Voiceless alveolar fricative

Figure 1. Arabic phonetic symbols

Place of articulation

Both foreign languages and Arabic share a few consonants among their respective alphabets. The following consonants are general: *d, b, t, j, f, z, h, l, m, n, w, r, and y*. Foreign languages and Arabic language share eighteen consonants. There are a few variations between these frequent consonants, albeit they are not necessarily the same. The Arabic sound t is dental as opposed to alveolar in foreign language. The Arabic sound /d/ is pronounced dentally, whereas the foreign language sound /d/ is alveolar. In foreign languages, the sound /h/ only appears in the starting and middle places; instance are horse and behalf. Final /h/ sounds in Arabic are heard in words like "denote" (/dəlaləh/). Both the active and passive articulators are referred to as the place of articulation [5]. There are multiple fundamental active articulators that make up a consonant site of articulation; it reveals the position of the vocal tract front-to-back constriction.

Bilabial

Expressions are made when the top and lower lips go close to or contact. Bilabial stops are /p/,/b/, and /m/ but in Arabic /p/sound does not speak, for instance: /p/− pit /pɪt/ in foreign language/b/− bit /bɪt/ in foreign language,بالغ / balɪɣ/ "Adult" in Arabic /m/ - meet /mit/ in English, مدرسة /mədrɪsəh/ "School" in Arabic بالغ.
Dental arches that connect the upper teeth to the lower lip. The English /f/ and /v/fricatives of the bile, for instance: /f/-fan in English, فئة/ fIʔh/"class" in Arabic/v/- van in English but it is not in Arabic.

Dental

Tongue is coherant when the upper teeth are touched by the tongue tip or blade. English language/*θ*/ *and* /ð/ are dental fricatives.There are several ways to generate these sounds; the tongue tip can go rather close to the back of the upper teeth, but it shouldn't be pressed against them strongly enough to completely block airflow . Even with the tongue tip projecting between the upper teeth and the tongue blade touching the bottom of the teeth, there is still sufficient room for a raging airflow to break free. This kind of /*θ*/ *and* /ð/ is often called inter-dentalin Arabic. Instance:مثّل/mIθl/ "Sam",مذياع/ *məðyaʕ*/ "Radio".

Alveolar

Alveolar ridge, an articulator which is just below the upper teeth, is touched when the tongue tip or blade is coherant. At this point of articulation, the airflow is totally blocked to produce the English language stops /t/, /d/, and /n/. In Arabic /t/, /d/ are called denti-alveolar e.g., /t/ -اتصال/ɪttɪ ṣal/ "call", /d/-تقدم/təqəddʊm/ "advance". /s/ and /z/ are comes under in fricatives/s/سرير/ *sərir*/ "bed", /z/ موزة /mauzəh/ "banana",, /n/ (alveolar nasal) /n/ناعم/naʕIm/ "Soft" /r/(alveolar trill) /r / رمل /rəml/ "Sand" and /l/ (alveolar lateral) /l/ لا /la:/ "no" .

Palato-alveolar

/ʃ/ش and /ʒ/ج are coherant when the body of the tongue is elevated toward the palate and the tongue blade is positioned behind the alveolar ridge.

Velarised alveolar

/ṣ/ ص in Arabic, the top front teeth are in close proximity to the alveolar ridge when the tongue is coherant. As a result, This characteristic should be highlighted since it reveals the speaker's quasi status. An instance in Arabic is/rəqṣ/رقص"Dance".

Velarised denti-alveolar

/ŧ/ ط /∂/,ظ, and/đ/ ض are spoken substantially differently by non-native speakers, who do not always pronounce the sounds properly and accurately.

Palatal

The hard palate is approached or touched when the tongue is coherant. As the tongue body of the English language sound /j/ reaches the hard palate, it does so only slightly so as to affect the airflow through agitation. An instance is: /j/ي/ ḥəyah/ حياة" Life".

Labio-velar

Coherant using vocal folds as well as the lips و / w/ دوساأ/ ʔswəd /"Black".

Velar

The soft palate, also known as the velum, is touched when the tongue's body is coherant. In foreign language /*k*/, /*g*/, *and* /ŋ/ are stops. Instance of velar consonants / k /- كتاب/kItab/ "book", / ŋ /- not in Arabic.

Uvular

A sound that is produced by using the uvula and the bottom of the tongue. e.g., /q/قطة/ qətəh/ "cat", /ɣ/ غبي /ɣəbi/ "idiot" and /x/ inأخ/ ʔx/ "brother".

Pharyngeal

/ḥ/ ح and /ʕ/ ع articulating sounds with the pharynx and the back of the tongue, for instance: /ḥ/محرك/ m ʊ ḥərrIk/ "Engine" and /ʕ/ عنزة /ʕnzəb/"goat".

Glottal

The glottis is the space between the two vocal chords. The /h/ sound has a tiny aperture that can create some turbulence in the airstream as it passes the vocal chords. The letter "*h*" is commonly referred to as a glottal fricative because of this. An instance for glottal /h/موزة / *mauzəh*/ "banana".

Manners of Articulation
Stops

The airflow through the mouth is entirely stopped by a stop consonant. For the consonants, the tongue point gets in touch with the alveolar process. /*t*/, /*d*/, *and* /*n*/, /*m*/, which stops the airflow there [6, 7]. This indicates that there is absolutely no airflow during the length of the halt in /*t*/ *and* /*d*/. Airflow via the mouth is absent in the /n/ sound, while airflow through the nose is still present. We may divide this into two categories:

- Nasal stops, such as /n/ and /m/, need airflow via the nose, and
- Oral stops, such as /b/, /t/, /d/, /k/, /q/, /ɫ/, /đ/ and /ʔ/ really don't.

Nasal stops are sometimes referred to as nasals. In English language, three nasal consonants are present, such as /m, n, and /ŋ/, but Arabic has just two nasals. م /m/ (*bilabial*) and ن /n/ (alveolar)e.g., كلم/ məlık / "king", معان/ *naʕIm*/ "soft". Figure 2 depicts illustrates nasals stop.
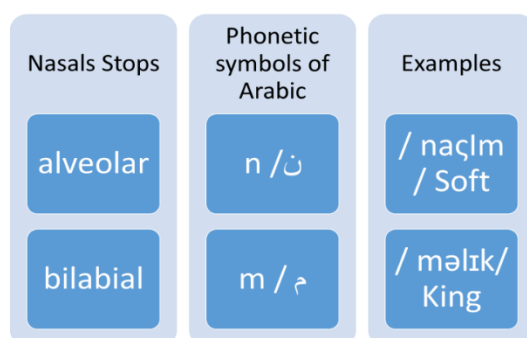
Figure 2. Arabic nasal stops

Plosives are another name for the oral stops that we use. Voiced or silent oral stops are also possible. Voiced nasal stops are nearly usually used. Although a wordless nasal stop is technically possible, foreign language does not make use of this sound. Representation of Arabic oral stops are depicted in Figure 3. Figure 4 shows the stops in the use of sounds like (b, t, d, and k) and Figure 5 shows the stops in the use of sounds like (q, ṭ, ḍ and ʔ).
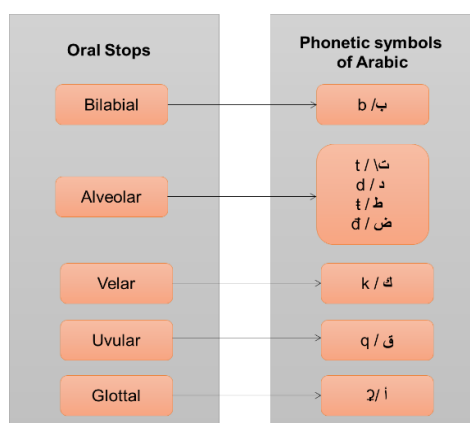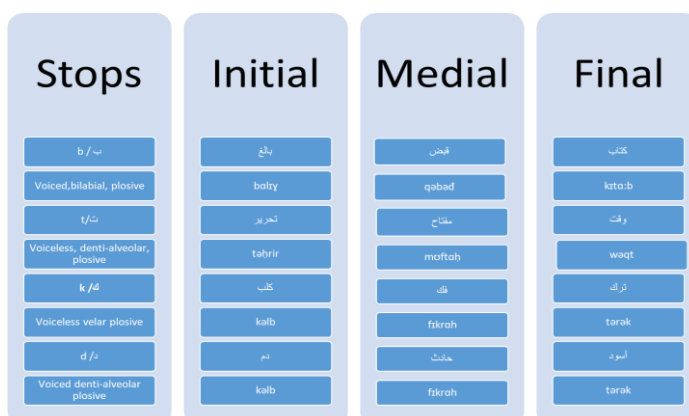

Figure 3. Representation of Arabic oral stops

Figure 4. Stops consonants (b, t, d, and k)

Figure 5. Stop Arabic consonants (q, ŧ, đ and ʔ)

Stops	Initial	Medial	Final
ʔ /ʔ	ألن	مثاخ	ماء
Voiceless epiglottal plosive	ʔðn	motaʔxlr	maʕ
đ / ض	ضخم	خضار	أرض
Voiced velarised denti-alveolar plosive	đəxm	xɒđar	ʔrđ
ʈ / ظ	ظلاج	لطيف	فقط
Voiceless velarised denti-alveolar plosive	tazaʒ	latif	faqat
q /ڨ	قمر	رقم	تطابق
Voiceless uvular plosive	qəmər	rəqm	tətabɪq

Fricatives

The articulators engaged in the constriction approach come near sufficient to one another in a fricative consonant to create an airstream that is turbulent. English language fricatives include $/f/,/v/,/\theta/,/ð/,/s/,/z/,/ʃ/,/ʒ/$ and $/h/$, while Arabic fricatives are $/f/,/\theta/,/ð/,/s/,/ṣ/,/z/,/ʃ/,/x/,/ɣ/,/ḥ/$ and $/h/$. Figure 6 shows the fricatives in Arabic words.

Fricatives	Initial	Medial	Final
h	فريد ə f rid	دافئ dafə	لطيف latif
θ	-	مثل mɪθl	حادث hadɪθ
ð	ضروري Đaruri	موضوع Mauđuʕ	قبض gəbəđ
s	سكين Sikkin	أسود ʔswəd	لمس Ləms
h	حذف Hədaf	لاحظ Lahaz	فكر Fɪkrɒh
ħ	حادثة Hɒdɪɐ	تحرير Tahrir	مفتح moftɒh
ɣ	غبي ɣəbi	صياغة şlyayah	بالغ bɒlɣ
x	خطر x t r	مشوي məʃwi	-
ʃ	شار ʃarɪb	وزن wəzən	فخر f xr
z	زبدة zɒbdah	اص ʔşfar	-
ş	صف şəfər	نظر nəðr	أصيبص ʔşɪş
ð	طرف ðɐrf		حظ hɐð

Figure 6. Fricatives in Arabic words

Approximant

Approximants are speech sounds that are produced by reducing but not completely shutting the vocal tract, but by positioning an articulator, such as the tongue, near to that other component of the vocal folds. These speech sounds include glides and liquids. Even while the vocal tract is still in its neutral position, the articulators are still closer to one another, the air travelling between them is less turbulent because of their distance from one another. The closest English language equivalents are $/w/,/j/,/r/,$ and $/l/$, while the approximants of Arabic are $/w/$ and $/j/$. Figure 7 illustrates the Arabic approximants.

Figure 7. Illustrates of Arabic approximants

Affricates

Affricates are consonants that start out as stops and end up as fricatives; they are complex speech sounds that combines a fricative and a stop in the same place [8]. Two affricates are in English language such as /tʃ/ *and* /dʒ/. while the Arabic has only one affricate ج /ʒ/ which is supplied in the start, midrange, and final word places: جاء /ʒaʔ/ "Come", إجازة /ɪʒazəh/ "vacation", طازج /ɬazəʒ/ "fresh".

Oblique

The formation of oblique is brought on by breath moving down one or both sides of the tongue. The tongue tip hits the alveolar ridge (or perhaps the upper teeth) when the consonant /l/ *in* /lif/ leaf is coherant, however this does not cause a halt. The side of the tongue has retracted and moved to the left side a hole, allowing air to continue to flow during the /l/ sound. Instance of the Arabic lateral ل /l/ and *Trill* ر /r/ sounds are provided in the start, medial, and final positions in words. Figure 8 illustrates lateral and trill in the initial, medial and final stages.
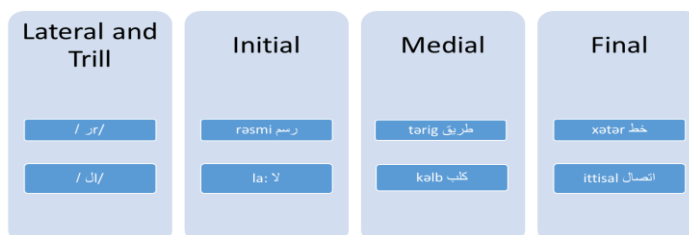

Figure 8. Illustrates of Arabic lateral and trill

MSA and Classic Arabic

Some of the ways in which the phonemic inventories of CA and MSA differ are discussed below. The grapheme represents a sound that is orthographically distinct from the sound expressed by the grapheme (ض). These terms will be used interchangeably to refer to the same grapheme in MSA, which is articulated as the emphatic voiced dental stop [dd], phonetically [d]. This grapheme, however, is described as indicating a vocal emphatic fricative whose point of articulation occurs between the molars and the palate by the 8th-century medieval grammarian, and is pointed out as possessing no non-emphatic equivalent.

A few attempts have been made by various researchers to determine the phonetic value of this grapheme, despite the fact that no one can say for definite what the real phonetic of this grapheme was when it was used in CA. The grapheme (ض) has been described as having a lateral or lateralized position of articulation, according to these experts, with the exception of the last phrase. In addition, there is evidence in some of the older manuscripts that indicates that the sound represented by the symbol (ض) was originally a fricative that had a point of articulation [9, 10].

A similarity metric was presented, and the distributional pattern of (ض) is compatible with a coronal emphatic possessing the properties $[-anterior, +continuant, +voice]^i$. This decision was made based on the introduction of the similarity metric. The fourth sound, which is represented orthographically as a (ط), is the topic of the second difference that can be found between the phonemic inventory of MSA and CA. In MSA, this letter is articulated as a voiceless dental emphatic stop. Nonetheless, it is referred to as a voiced dental emphatic stop, and it is made abundantly apparent that it is the emphatic counterpart of (د), the latter of which possesses the phonetic quality of [d].

As a result, CA (ط) is represented phonetically as [ḍ]. Nonetheless, says that the marginal pronunciation of this letter is "similar to (ت)/(t]", which appears to be the same as or very equivalent to the articulation of (ط) in MSA ([t]). The articulation of the grapheme, which separates the two systems, is the third distinction. It has the phonetic value of [G] in CA because it is spoken in MSA as a voiceless uvular stop, or [q]. The phonemes of MSA and CA are thought to be the same other than for these three variances.

Arabic language phonology

Standard Arabic is largely a VSO language, which has relatively loose word order and is the "third-most common word structure" in the world. The verbiage is pro-drop. Non-concatenative morphemes make up the language, therefore unlike English, one cannot combine phonetic symbols after the root one next to it to create new words. The Afro-Asiatic language family includes the Semitic language of Arabic. The best way to describe MSA is as a "continuum of variants" that includes more than thirty distinct contemporary tongues of Arabic in addition to the standardized version. MSA is frequently used in writing, print media like magazines and newspapers, as well as in formal talks and reading the news. Six vowels and twenty-eight consonant phonemes make up the twenty-eight phonemes of MSA. Every phoneme contrasts "emphatic(uvularized)" consonants with non-emphatic consonants. Several of these phonemes have throughout time migrated into tongues as a result of linguistic interaction and development, and new phonemes have entered the language as a result of borrowing.

Phonological processes

The following is an explanation of several phonological procedures used by the Arabic language. Definite article assimilation, affrication, lenition, [q] vs. [ʁ] alternation, pharyngealization, and lenition will all be covered [11, 12].

Definite article assimilation

The assimilation of the definite article /l −/ to a subsequent [+*coronal*] consonant is a phenomenon that is well-known in Arabic. The illustrations from MSA are shown in the figure.
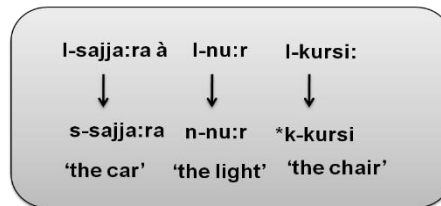

Figure 9. MSA instance

The "affricate [ʤ]", which hasnot assimilated to the definite article and consequently rules out the items listed in the second column below, constitutes an exception to this generalization in both CA and MSA. The history of this section is usually considered to be the source of the pattern described above. That is to say, it is believed that 'CA/MSA [ʤ]" evolved from "proto-Semitic [*g]", a segment that had a [dorsal] feature rather than a [coronal] characteristic. Many people do, in fact, operate under the assumption that "CA/MSA [ʤ]" is only the surface representation of an underlying /g/.
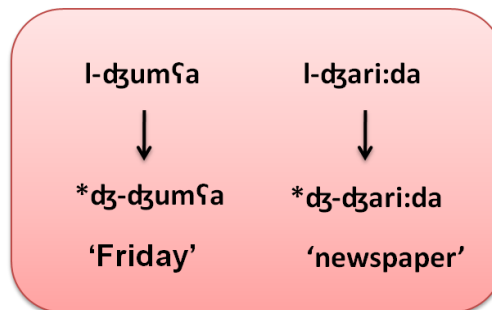

Figure 10. Instance for ʤ

Pharyngealization

Pharyngealization is a phonological phenomenon in which some segments "(marked as emphatics, pharyngealized, velarized, or uvularized)" impose a backing impact on surrounding syllables and supporting as well as lowering effects on vowels in their neighborhood. Some consonants, known as emphatic consonants, have two places of articulation. For Arabic emphatics, the central objective of articulating takes place in the front section of the vocal tract, whereas the secondary site of articulation is a restriction in the upper pharynx. The development of the trait known as "retracted tongue root" (+RTR) from the strong segment to its adjoining segments is an instance of the pharyngealization process.

Because of this, the place of articulation of the consonants that occur within the scope of emphatics retracts, and the place of articulation of the vowels either retracts or lowers themselves. This characteristic can spread in any direction, but

the extent to which it has an effect, as well as the impact that any blocking segments have, if they exist, can differ from one variant to the next. It has been claimed that the structure of the syllables in a word is what determines the range of emphasis in IA. The impact can extend over two open syllables within a word, but it becomes blocked within a CVCC kind of syllable. It has been discovered that leftward spreading is significantly stronger than rightward spreading in Tunisian Arabic; yet, the process encompasses the entire word regardless of the direction it takes. Depending on the variation, the segment(s) that are blocking might be any one of the following [+$high$] segments: $[i, j, ʃ, ʤ, w, u]^{xxv}$. Although the leftward propagation of emphasis in GA is observed to be greater, the rightward propagation of emphasis is stated to be inhibited by [i:]. In GA, emphasis can spread in both directions (for up to six segments). Similarly, pharyngealization in YA is bidirectional, covering both the stem and the consonantal component of the phonological word. However, it is blocked by [i:] only in rightward spreading (similar to Gulf Arabic (GA)), and only if [i:] is in a different syllable than that of the emphatic segment, as illustrated in Figure 1.

biː-rabbaṭ	'he is tying'
ṭiːn	'mud'
ṭariːg	'road/way'

Figure 11. Instance of [i:]

The process is reversible in EA, and it encompasses the complete phonological word. The Arabic spoken in Morocco is similar to other varieties in that the stress can move in either direction, although it is almost always confined to the stem of the word (it does not impact the inflectional suffixes), and CV units can be either pharyngealized or plain.

[q] vs. [ʁ] alternation

The alternation between the characters [q] and [ʁ] is a somewhat uncommon one that may be seen in certain varieties of the Arabic language. As the following examples from GA indicate in Figure 12, the method may be applied flexibly in any context to elements that include cognates of MSA /ʁ/ and /q/.

GA	MSA	
qadiːm/ʁadiːm	qadiːm	'old'
qadiːr/ʁadiːr	ʁadiːr	stream'
muqarb/muʁarb	maʁrib	'sun setting time'

Figure 12. Comparison of GA and MSA

The alternation can also be present in the varieties spoken by certain of Sudan's indigenous peoples, in addition to GA. Academics are split on the question of whether the underlying representation of this alternation is the sound /q/ or both /q/ and /ʁ/simultaneously. It would appear that intervocalic locations encourage more instances of the fricative, [ʁ], which is consistent with the global propensity for stops to convert into fricatives in such contexts.

Lenition

Lenition is the process by which a sound becomes weaker, or more specifically, the process by which it requires less articulatory effort in order to produce. Lenition is a process that is recorded in several areas of the Arabian Peninsula and in some of the areas that surround it. This includes the variations of some Bedouin tribes in the Levant. In Arabic, lenition freely applies to the voiced affricate / ʤ /, which arises as [ʤ] or weakens to [j]. In certain manuscripts from the middle ages, the Tami:m tribes are mentioned specifically for their practice of this method. At the moment, it is a feature of GA as well as the tongue spoken in southern Iraq.

Affrication

Affrication is a process that occurs in Arabic; it causes the sounds /g/ and/or /k/ to change into the letters [ʤ] and [ʧ], respectively, when they are located in close proximity to the letters I and I. It is one of the qualities described in the medieval writings, and it is presently a feature of GA as well as the variations that descended from a nomadic origin in the Levant and southern Iraq. This also holds true for the Baghdadi tongue of Arabic. The results [dz] and [ts] would appear instead in some variants of the GA. Moreover, the procedure is only performed on one velar stop in certain variants of the gene.

Arabic consonant categorization

The consonants of Arabic are subdivided into groups based on their articulation points and styles. Both the passive and active articulators sites of contact are taken into account in the former scenario. According to this system, Arabic consonants are divided into the "bilabial, labiodental, interdental, alveolar, palato-alveolar, velar, uvular, glottal, and pharyngeal groups". Certain Arabic consonants have velarization in addition to their basic mode of articulation, and this fact has to be pointed out [13]. The consonants are categorized according to the mode or method in which they are articulated, which is based on the manner in which they are uttered. According to this system, the consonants of Arabic may be broken down into seven distinct groups: "stops, nasals, affricates, fricatives, laterals, and trills; semivowels; and semivowels". The voicing characteristic may be seen in Arabic as well, as the language contains both voiced and voiceless consonants.

Harmony of consonants in MSA words

It is indeed our intention to demonstrate that pronunciation and phonological syllables produced by the vocal system are the fundamental and most

fundamental elements of language in general and of words specifically. Vocal syllables and words are generated by combining sounds in a certain order to form statements, phrases, patterns, and gestures. Thus, sounds are the main component of language. Every group conveys its ends through a collection of sounds that make up the language. Because isolated and lone sounds are nothing more than useless symbols that can only work when integrated into a certain sequence or homogenous and harmonious vocal syllables, language cannot be made of remoted and lone sounds. In general, words are made up of the concord and uniformity found among those sound groupings. So, the worth of sounds is found in their presence as groupings, or in the words from which they are made. One of the smallest linguistic units that implies meaning by itself may be the phrase, which is composed of a collection of sound units [14]. Every pronunciation unit is governed by a certain rule called hierarchical. The rule in Arabic language regulates the prefix, infix, and suffix as well as all of its levels. These strata are susceptible to the processes of change, reversal, and specific affixation, making them vocally variable and conjugationally uncertain.

The phonetic and conjugational systems of English and French words, which are fixed in their morphological roots but changeable in their suffixes and prefixes, prevent the detection of such metamorphoses. The word-forming sounds closely resemble one particular mental picture. A specific image that is a previous result of a systematic sound group immediately arises in the mind of the language user when he or she speaks or hears such a term. It is important to note that the pronunciation group creates its syllable structure prior to creating the word. As the syllable is regarded as an intermediary step between the single sound and the multi-sounded constructed word, the sounds group is likewise a vocal structure.

The communication unit is made up phonologically of various sequences of defects found and mutes, or /sa.wa.kin/, as well as other characteristics like stress, duration, and tone, or single defectives and mutes, which are grouped together in certain languages. The syllable is simply described as a combination of "consonants and vowels (CV)", to put it succinctly. This segment organizational structure fits with language [15, 16]. The syllable is physically spoken when each force on the breathing covers the lungs since it depends on breath cadence. The phrases in the AW are divided into several permutations; the lowest has a CV while the biggest has a "consonant, vowel, and consonant (CVC)". Moreover, those syllables are broken up into small, middle, and large segments, each of which can be shut or allow access.

Six types of vowels can be distinguished: the definite article (/al/), the conjunctive (/bi/), the medium closed لم/lamm/, the open medium (/ma/), the closed long (/bab/), and the doubled mute/abdd/(عبد) ('slave'). In general, Arabic seldom uses the fifth and sixth syllables. It is crucial to note that Arabic words are composed of an interplay of consonants and vowels, with the consonant taking precedence over the vowel as indicated in the following spectral form of the word /daraba/ضرب) (to hit). Even so, it doesn't rule out the likelihood of mistakes. When a word is in command form, two consonants occasionally follow one another. The result of such an unusual circumstance is that the word begins with the silent sound /sakin/. Of course, this goes against the usual Arabic rule that stipulates, "We cannot start with a silent /sakin/ nor conclude with a vowel."

As a result, anytime language users encounter this issue, they add a syllable to the beginning of the term. This extra syllable is frequently a /*hamza*/ that is generated from a vowel, which can either be a /*i/ or a /u/*. According to Alesterbathy, such a concealed *hamza* is "so concealed minute that the hearer cannot distinguish as if it were the voice of the soul." It is clear that the syllables stated above are challenging to employ in SA, although they can be used in tongues. For example, it is possible to speak سحب /*s̲habb*/ (clouds), مطر/*mtarr*/ (rain) and شرب/*s̲rabb*/ (drank) in tongues. This in turn illustrates the distinctions between the phonetic structures of standard Arabic. Hence, a vowel must be present at the beginning of an Arabic word when the first letter is mute (نس). Ibn Yaich's observation that "it is out of need and incapacity" perfectly encapsulated the notion.

Hence, within the framework of the word, the syllable represents the first instance of the synthesis of a consonant and a vowel into a single sound unit. As a result, words are made up of a collection of phonetic components arranged in a certain sequence. These phonetic elements serve as the foundation for coherent speech. We refer to the characters, syllables, and accents that make up a word as its phonetic raw resources. The amount of both consonants and vowels in each sound is fixed and cannot exceed fifty in all human languages, despite the fact that the number of human sounds in different languages or even in one distinct language is limitless. The idea that words are made up of a collection of phonetic units arranged in a particular order refers to the fact that the phonetic structure of a word is determined by the phonetic system that makes up the word as well as by the levels of distribution, hierarchies, and symmetries in which each sound occurs. This is crucial because sounds belong to distinct families that are likely to agree or disagree depending on how much they affect one another, their strength and weakness, their lightness and weight, and their attractiveness and ugliness.

Despite phonetic variances in speech, the human's ear can detect and classify these sounds into a finite number of distinct units called "phones" in the field of phonology. The telephone is only a noisy box. It is the actual sound made by the mouth. Morphemes and words with meaning are formed when phonemes are arranged in predictable ways, in accordance with established phonetic conventions. The quantity of consonants was not the only point of contention amongst old Arab grammarians; their articulation and release points were also points of contention. Some of them assumed that the 16 available slots for consonants were evenly divided among them. Hence, the Arabic word's beginning, middle, and end qualities combine to produce a harmonious blend of consonants and vowels. Because many Arab linguists are concerned with phonetic phenomena, the stress is one of the most significant phonetic qualities of Arabic words. The most significant of them were the experts of Holy Quran reading, who tackled the issue of stressed and unstressed words with great sophistication.

Conclusion

This study focuses on the analysis of consonants across MSA due to the standard pronunciation of Arabic. Clarifying the phonetic concepts governing sound classification forms the basis of this study. The use of phonological descriptions of

sounds rather than phonetic ones is the primary shortcoming, as this remark demonstrates. The SA consonant sounds are added following this classification process, along with an operational word for each consonant. The prerequisites for definition include context, articulation style and tone. Many Arabic sounds have been found to deviate from the norm on a regular basis while still employing alphabets as textual symbols to replicate how the phonemes are actually pronounced. For this, the research went even farther than the phonetic aspect of Arabic consonants, tackling a number of pertinent issues, including the dispersion of Arabic consonants as well as the variants of Arabic consonants and the phonetic specification of Arabic consonants.

References

Aissiou, M., 2020. A genetic model for acoustic and phonetic decoding of standard Arabic vowels in continuous speech. International Journal of Speech Technology, 23(2), pp.425-434.

Al-dulaimi, R.S.F.G. and Ahmed, M.S., 2022. Auditory Analysis of Segmental Phonemes in Kubeisa Iraqi Arabic with Reference to Standard English and Modern Standard Arabic. Al-Adab Journal, 2(143), pp.27-56.

Aljasser, F. and Vitevitch, M.S., 2018. A Web-based interface to calculate phonotactic probability for words and nonwords in Modern Standard Arabic. Behavior research methods, 50, pp.313-322.

Aljasser, F. and Vitevitch, M.S., 2022. A web-based interface to calculate phonological neighborhood density for words and nonwords in Modern Standard Arabic. Behavior Research Methods, pp.1-10.

Aljeradaat, H., 2020. An Optimality Theoretic account of verbal pattern-root consonant assimilation in Modern Standard Arabic. ActaLinguisticaAcademica, 67(2), pp.171-192.

Al-Wahy, A.S.A.W., 2021. Problems of romanizing word-initial glottal stops in Modern Standard Arabic. CDELT Occasional Papers in the Development of English Education, 73(1), pp.3-37.

Alzinaidi, M.H. and Latif, M.M., 2019. Diagnosing Saudi Students' English Consonant Pronunciation Errors. Arab World English Journal, 10(4), pp.180-193.

Belhassen, S.B., 2017. Phonetics features of the Modern Standard Arabic word (MSAW). International Journal of Humanities and Cultural Studies, 3(4), p.76.

Benyagoub, L. and Bouahania, B., 2020. The Behaviour of the Schwa in the Saoura Spoken Arabic: schwa epenthesis and deletion. *Traduction et Langues*, *19*(1), pp.55-73.

Birnstiel, D., 2019. Classical Arabic. In The Semitic Languages (pp. 367-402). Routledge.

Ibrahim, N.E.F.E., 2022. Classical Standard Arabic Versus Modern Standard Arabic: A theoretical Framework اللغةالعربيةالفصحمقابلاللغةالعربيةالفصحبالحديثة: إطارنظري. مجلةكليةالآداب و العلومالإنسانيةجامعةقناةالسويس, 5(43), pp.76-150.

Mohammed, M.O.S.M. and Samad, S.S., 2020. The morphological adaptations of English loanwords used in modern Standard Arabic. Journal of Emerging Technologies and Innovative Research (JETIR), 7(1), pp.245-256.

Olson, D.E. and Hayes-Harb, R., 2019. Voice onset time in Arabic and English stop consonants. Al-'Arabiyya, 52, pp.29-48.

Sindran, F., 2021. Automatic Phonetic Transcription of Standard Arabic with Applications in the NLP Domain (Doctoral dissertation, Friedrich-Alexander-Universitaet Erlangen-Nuernberg (Germany)).

Suparno, D., Illahi, A.A., Al-Qosebaty, A. and Azwar, M., 2020, December. Phonetic Relationship Between Form and Meaning of Modern Standard Arabic and Egyptian Colloquial Language on Animals Name. In 1st International Conference on Folklore, Language, Education and Exhibition (ICOFLEX 2019) (pp. 214-220). Atlantis Press.

vanPutten, M., 2020. Classical and Modern Standard Arabic. Arabic and contact-induced change, 1, p.57.