

The Treatment of Articulatory Phonetics in the Grammatical work of *Al-Kitāb* (CE.800): A Detailed Study

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Abstract

Al-Kitāb is the earliest comprehensive extant grammatical work of Arabic (CE. 800). Generally, it has some uniqueness in the traditional grammars of Classical languages. The treatment of language and order of description are different from other traditional grammars, *Techne grammatike* in Greek, *Panini* in Sanskrit and *Tolkappiyam* in Tamil. Most of the traditional grammars start the description of language from phonetics, but *Al-Kitāb* starts with syntax and locates the phonetics part at the end. This article mainly focuses on the articulatory treatment of Arabic sounds by Sībawayhi (Author of *Al-Kitāb*). It examines in details Sībawayhi's accurate views, observations, descriptions, and classifications of Arabic sounds.

Keywords: *Al-Kitāb*, Arabic sounds, articulatory phonetics, phonetic features, Sībawayhi

Introduction

Sībawayhi seems to have covered all possible Arabic phonetic and phonological aspects. He allots the last seven chapters (Chapters 565-571) of *Al-Kitāb* to the various phonetic features of Arabic sounds. In the chapter of articulatory phonetics (Chapter 565), he describes basic Arabic sounds in terms of articulatory phonetics, points and manners (voiced, unvoiced, stop, fricative, etc., although without using the same exact modern terms). He also provides value judgments on the allophones based on points of articulation. He describes systematically the phonetic properties of all the possible segments, preparing the ground for the investigation of what happens to these segments in context and then proceeds to deal with the phonetic investigation exhaustively in terms of point and manner of articulation.¹

¹ Al-Nassir (1993: 7).

1. The Structure of Chapter 565 (The Chapter of Articulatory phonetics)

Sībawayhi starts this chapter with a short introduction: “This is the chapter of the number of Arabic letters, their place of articulation, *maẓhūr* (shouted out loud) and *mahmūs* (whispered), the nature of *maẓhūr* and *mahmūs* and differences between these two”²

هذا باب عدد الحروف العربية، ومخارجها، ومهموسها، ومجهورها، وأحوال مجهورها ومهموسها، واختلافها.

He uses the term *ḥarf* for speech sound in this chapter. It covers the phoneme and grapheme of the sound. The term *ḥarf* is also used in *Al-Kitāb* to refer to concepts such as syllable, particle, and word. In the Qur’an it is used to mean dialect.³ Sībawayhi arranges the chapter in the following order:

1. name and order of the twenty-nine Arabic sounds
2. *furūʿ* “derivation/branches”
 - a. six favored/accepted derived sounds
 - b. seven disfavored/rejected derived sounds
3. sixteen places of articulation of the twenty-nine Arabic sounds
4. *maẓhūr* “shouted out loud”
5. *mahmūs* “whispered”
6. *ṣadīda* “tight”
7. *riḥwa* “slack”
8. *muṭbaqa* “covered”
9. *munfatiḥa* “open”
10. *munḥarif* “diverted”
11. *ḡunna* “nasal”
12. *mukarrar* “repeated”
13. vowels
 - a. *layyina* “soft”
 - b. *hāwiyy* “falling”
 - c. *madd* “prolongation”

Sībawayhi mainly describes the Arabic sounds in terms of point of articulation (*maḥraḡ/mawḍiʿ*) and manner of articulation, similarly to the description in modern linguists. He first classifies Arabic sounds in terms of points of articulation and then describes their manner of articulation.

2. Points of Articulation

In fairly detailed physiological terms, Sībawayhi uses each point/place (*mawḍiʿ* ‘مَوْضِع’) where sounds are made and which organs are used. He describes twenty-nine basic sounds of

² Sībawayhi, IV, 431.

³ Ibid., 10.

Arabic including thirteen derived sounds based on points of articulation. The following topics are covered:

1. Name and order of the twenty-nine Arabic sounds
2. Thirteen derived sounds
3. Sixteen points of articulation of the twenty-nine Arabic sounds.

2.1 The Names and Order of the Twenty-nine Basic Sounds of Arabic

Sībawayhi arranged Arabic sounds, following basically the system of his teacher, Al-Khalīl.⁴ The system is based on the points of articulation of the sounds, from larynx to lips. Sībawayhi lists the sounds in the order displayed in Table 1 and refers to them as “original letters.”

Table 1. Names and phonetic order of twenty-nine basic sounds of Arabic by Sībawayhi

Order	Name of the Sounds	Arabic Symbols	IPA Symbols	Other Used Symbols
1	hamzah	ء	ʔ	ʔ
2	ʾalif	ا	aː	ā
3	hāʿ	هـ	h	h
4	ʿayn	ع	ʕ	ʿ
5	hāʿ	ح	ħ	ḥ
6	ḡayn	غ	ɣ/ʕ	ḡ
7	hāʿ	خ	χ	ḫ
8	kāf	ك	k	k
9	qāf	ق	q	q
10	ḍād	ض	ɗ	ḍ
11	ẓīm	ج	dʒ	ẓ
12	šīn	ش	ʃ	š
13	yāʿ	ي	j	y
14	lām	ل	l	l
15	rāʿ	ر	r	r
16	nūn	ن	n	n
17	ṭāʿ	ط	ṭ	ṭ

⁴ See Carter (2004: 124); Al-Nassir (1993: 12).

18	dāl	د	d	d
19	tāʿ	ت	t	t
20	ṣād	ص	s ^ʿ	ʃ
21	zay	ز	z	z
22	sīn	س	s	s
23	zāʿ	ظ	ð ^ʿ	ʒ
24	ḍāl	ذ	ð	ḍ
25	ṭāʿ	ث	θ	ṭ
26	fāʿ	ف	f	f
27	bāʿ	ب	b	b
28	mīm	م	m	m
29	wāw	و	w	w

Hārūn mentions that the two other editions (Derenbourg 1881 and Bulaq 1898) of *Al-Kitāb* list the *qāf* [q] before *kaḥ* [k]; however, he places them in the opposite order (Hārūn: Vol. 4:431, footnote 2). The correct order is *qāf* [q] and *kaḥ* [k] as provided by Sībawayhi's order of points of articulation. The first commentary of *Al-Kitāb* states that “this is certainly not alphabetical order.”⁵

The twenty-nine names of the letters of the alphabet stand for each sound. One of these, for historical reasons, has two values; namely the *'alif* that acts either as a lengthening marker for *ā* or a seat for the *ʔ* (*hamza*), of which only the latter can serve as a consonantal radical.⁶ Sībawayhi does not confuse between the written form and the acoustic form here, since the written form remains constant regardless of variations, and is thus no more than a symbol for the phoneme and the allophone. The old version of the Arabic alphabet has separate symbols for the long vowel *'alif* [a:] / (l) and the glottal stop *hamza* [ʔ] / (ʿ).

This technique (order of points of articulation) was applied first in *Kitāb Al-'ayn* (the first dictionary of Arabic) of Al-Khalīl Ibn Ahmed Al-Farāhīdī (d.776). Al-Khalīl's *Kitāb Al-'ayn* was arranged by articulation locus of the sounds starting from *'ayn* (guttural) sound and ending with the lips. Al-Khalīl arranged the Arabic sounds *Al-Kitāb Al-'ayn* in the order displayed in Table 2.

⁵ Carter (2004: 123).

⁶ Al-Nassir (1993: 10).

Table 2. Al-Khalīl's order of points of articulation of the Arabic sounds (from left to right)

ع	هـ	ح	خ	غ	ق	ك	ج	ش	ض	ص	س	ظ	ط	د	ت	ز	ذ	ث	ر	ل	ن	ف	ب	م	ا	و	ي
‘	h	ḥ	ḫ	g	q	k	ž	š	ḏ	ṣ	s	ẓ	ṭ	d	t	z	ḏ	ṯ	r	l	n	f	b	m	ā	w	y

Al-Khalīl was the first linguist to use the phonetic order, but the order partly reflects his concern for the graphemes, especially that of the *hamza*. Sībawayhi followed him and improved the order. His arrangement was based purely on phonetic considerations. His arrangement of the Arabic sounds is displayed in Table 3.

Table 3. Sībawayhi's order of points of articulation of the Arabic sounds (from left to right)

ء	ا	هـ	ع	ح	غ	خ	ق	ك	ض	ج	ش	ي	ل	ر	ن	ط	د	ت	ص	ز	س	ظ	ذ	ث	ف	ب	م	و
’	ā	h	‘	ḥ	g	ḫ	q	k	ḏ	ž	š	y	l	r	n	ṭ	d	t	ṣ	z	s	ẓ	ḏ	ṯ	f	b	m	w

This order was adopted by all the Arab grammarians who succeeded Al-Khalīl and Sībawayhi, such as Ibn Jinnī, Sakkākī, and Ibn Ya‘īsh, agreeing with Sībawayhi.⁷

2.2 Thirteen Derived Sounds

Sībawayhi uses the term *furū‘* “branches” in describing thirteen *furū‘* or derived letters and classifies them into two groups based on the recitation of the Qur’an and of poetry. These are: favoured/accepted derived sounds and disfavoured/rejected derived sounds.

2.2.1 Favoured/Accepted Derived Sounds

The twenty-nine original sounds are increased to thirty-five when six favoured/accepted derived sounds are added. These are accepted as correct and they commonly occur in the recitation of the Qur’an and poetry. Sībawayhi describes the favoured/accepted derived sounds as those which “occur frequently in speech and are accepted and favored in Qur’anic recitation and in poetry”⁸ . وهي كثيرة يُؤخذُ بها وتُسْتَحْسَنُ في قراءة القرآن والأشعار⁸

The Six favoured/accepted derived sounds are as follows:

(30) 1. The “light” [n] (effectively a kind of nasalization)⁹

“النون الخفيفة”

⁷ Ibid., 14.

⁸ Ibid., 17; Sībawayhi, IV, 432.

⁹ Carter (2004: 123).

- (31) 2. *Hamza bayna bayn* [ʔ] (Intermediate and weakened type of glottal stop)
 “الهمزة التي بينَ بيْن”
- (32) 3. The “strongly inclined” *alif* of *’imālah* (extremely open pronunciation of [ā])
 “الألف التي تُمال إمالة شديدة”
- (33) 4. The *shīn* which is similar to the *žīm* [ž] (a voiced variant of [š])
 “الشين التي كالجيم”
- (34) 5. The *ṣād* which is similar to the *zāy* [z] (a voiced variant of [ṣ])
 “الصاد التي تكون كالزاي”
- (35) 6. The *alif* of *tafḥīm* (a back unrounded variant of [ā])
 “ألف التفخيم”

Sībawayhi describes the *alif* of *tafḥīm* briefly and remarks that the Arabs of Hijāz produce it in words such as *ḥayāt* “life,” *ṣalāt* “prayers,” *zakaāt* “charity”:

“يَعْنِي بِلُغَةِ أَهْلِ الْحِجَازِ، فِي قَوْلِهِمْ: الصَّلَاةُ وَالزَّكَاةُ وَالْحَيَاةُ.”¹⁰

He does not elaborate on the phonetic properties of these derived sounds.

2.2.2 Disfavored/Rejected Derived Sounds

Sībawayhi listed seven derived sounds additionally, which are not approved and not discussed in detail in the Qur’an and Classical Arabic poetry. The list of *furū’* consists of thirteen sounds by adding these additional sounds. Sībawayhi classifies these seven allophones as disfavored/rejected. He also defines favored/accepted derived sounds as “good” and disfavored/rejected derived sounds as “bad.” He describes them as “infrequent in the language of those, whose Arabic is acceptable; neither are they favoured in reciting the Quran nor in reading poetry”¹¹

“غَيْرُ مُسْتَحْسَنَةٍ وَلَا كَثِيرَةٍ فِي لُغَةٍ مِنْ تُرْتَضَى عَرَبِيَّتُهُ، وَلَا تُسْتَحْسَنُ فِي قِرَاءَةِ الْقُرْآنِ وَلَا فِي الشُّعْرِ.”

The seven disfavored/rejected derived sounds are as follows:

- (36) 1. The *kaḥf* which is between the *žīm* and the *kaḥf* “الكاف التي بين الجيم والكاف”
- (37) 2. The *žīm* which is similar to the *šīn* “الجيم التي [كالجيم، والكاف، والجيم التي] كالشين”
- (38) 3. The weak *ḍād* “الضاد الضعيفة”
- (39) 4. The *ṣād* which is similar to the *sīn* “الصاد التي كالسين”
- (40) 5. The *ṭā’* which is similar to the *tā’* “الطاء التي كالتاء”
- (41) 6. The *bā’* which is similar to the *fā’* “الباء التي كالفاء”

¹⁰ Sībawayhi, IV, 432.

¹¹ Al-Nassir (1993: 19).

(42) 7. The *zā'* which is similar to the *tā'* “الطاء التي كالتاء”

For sound number 37, it requires us to count the two variants of [ž] as one item: a [ž] realized as [k], probably [g] and a spirantized [ž], like the letter š, probably [ç] as in German “ich.”¹² Sībawayhi does not explain how these disfavored/rejected derived sounds are similar to the original sounds.

2.3 Sixteen Points (Places) of Articulation of Arabic Sounds

Sībawayhi starts his description by stating that “Arabic letters have sixteen *muhraž* “outlet” (see Figure 1; see also Table 4 below) “ولحروف العربية ستة عشر مخرجا.”¹³ He was probably the first Arab linguist to use the term *muhraž* for the point of articulation.¹⁴ His teacher, Al-Khalīl, used the terms *mudraž* “point of movement” and *ḥayyiz* “space” for it.¹⁵

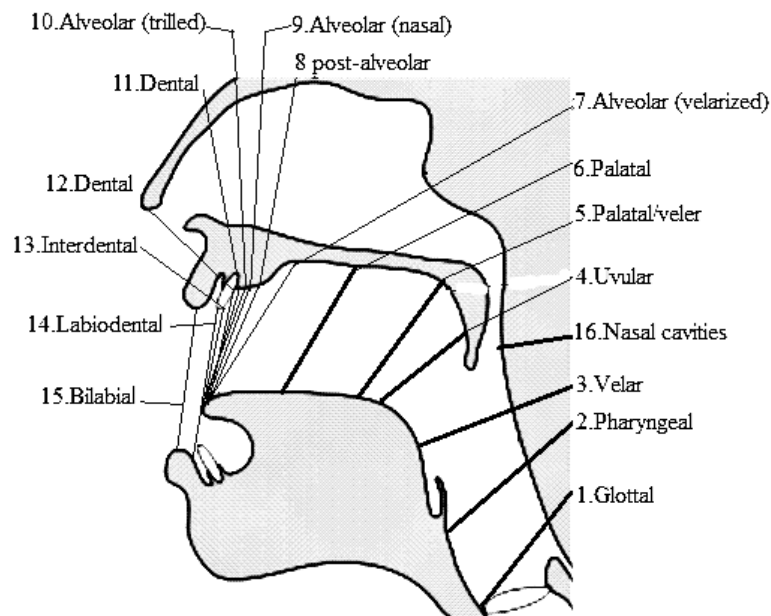


Figure 1. Sībawayhi's Points of Articulation for Arabic Sounds from the Larynx to the Lips

Nevertheless, Sībawayhi does seem to be influenced by his teacher in grouping the sounds. He first starts by identifying three groups of sounds within the throat (see Figure 2):

1. The back of the throat (glottal): there are three sounds [ʔ, h, ā]

¹² Carter (2004: 124).

¹³ Sībawayhi, IV, 433.

¹⁴ Al-Nassir (1993: 14).

¹⁵ Sara (1993: 186).

2. The middle of the throat (pharyngeal): there are two sounds [ʕ, ħ]
3. The front of the throat (velar): there are two sounds [g, ħ]

فللحلق منها ثلاثَةٌ فأقصاها مُخْرَجاً: الهمزةُ والهاءُ والألفُ. ومن أوسطِ الحلقِ مُخْرَجُ العينِ والحاءُ. وأدناها مُخْرَجاً
من القَم: الغين والحاء¹⁶

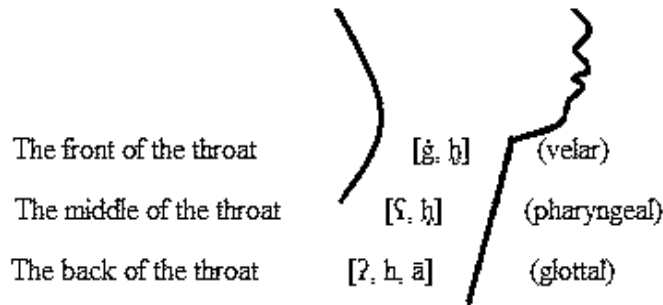


Figure 2. Sub-regions of the Throat as Divided by Sībawayhi.

He describes the first three groups of sounds as occurring in the area he termed *ḥalq* “throat” which could be presumed to include the larynx (glottal) and pharynx up to the velum. He subdivides this part of the vocal tract into three subdivisions: back, middle and front. He placed three sounds in the larynx, two in the pharynx and two in the velum. He did not consider the *hamza* [ʔ] as a true consonant and formed with a glottal constriction. Sībawayhi’s influence on the Arabic grammatical tradition was significant enough that his view of the *hamza* was accepted by his successors.¹⁷ Later, Ibn Sīna describes it in details: “it occurs from a powerful push from the diaphragm and the muscles of the chest to much air and from trapper of the resistant arytenoid to the push of the air, for a short time, then pushing it towards release by means of the opening muscles and the air pressure, together.”¹⁸ Beyond the throat, Sībawayhi similarly identifies the rest of the sixteen “outlet” as follows:

4. From the farthest part of the tongue and above the top of the palate (uvular), there is one sound [q]

”ومن أقصى اللسان وما فوقه من الحنك الأعلى مُخْرَجُ القاف“¹⁹

5. A place slightly lower than [q] (palatal/velar), there is one sound [k]

”ومن أسفل من موضع القاف من اللسان قليلاً ومما يليه من الحنك [الأعلى] مُخْرَجُ الكاف“

¹⁶ Sībawayhi, IV, 433.

¹⁷ Coetzee (2007: 230).

¹⁸ Sara (2005: 10).

¹⁹ Sībawayhi, IV, 433.

6. The middle of the tongue and middle of the palate (palatal): [ʒ, ʃ, y]
 “ومن وسط اللسان بينه وبين وسط الحنك الأعلى مُخْرَجُ الجيم والشين والياء“
7. The tip of the tongue and sides adjacent to the molars (velarized alveolar): [d̠]
 “ومن بين أوّل حافة اللسان وما يليها من الأضراس مُخْرَجُ الضاد“
8. The front edge of the tongue, the palate and the front teeth (lateral alveolar): [l]
 “ومن حافة اللسان من أدناها إلى منتهى طرف اللسان ما بينها من الحنك الأعلى وما فُوَيْقُ الثنايا مُخْرَجُ النون
 ”وبين ما يليها“
9. The tip of the tongue and above the incisors (nasal alveolar): [n]
 “ومن حافة اللسان من أدناها إلى منتهى طرف اللسان ما بينها من الحنك الأعلى وما فُوَيْقُ الثنايا مُخْرَجُ النون
 ”وبين ما يليها“
10. The same to [n] but slightly further back and closer to [l] ‘going further in towards the back of the tongue because it slants towards the [l] (trilled alveolar): [r]
 “ومن مُخْرَجُ النون غيرَ أنه أدخلُ في ظهر اللسان قليلاً لانحرافه إلى اللام مُخْرَجُ الراء“
11. The tip of the tongue and the base of the upper incisors (alveolar): [t, d, t̪]
 “وممّا بين طرف اللسان وأصول الثنايا مُخْرَجُ الطاء ، والذال ، والتاء“
12. The tip of the tongue and little above the incisors (dental): [z, s, ʃ]
 “وممّا بين طرف اللسان وفُوَيْقُ الثنايا مُخْرَجُ الزاي ، والسين ، والصاد“
13. The tip of the tongue and the tips of the incisors (interdental): [z̪, d̪, t̪]
 “وممّا بين طرف اللسان وأطرافِ الثنايا مُخْرَجُ الطاء ، والذال ، والتاء“
14. The inside of the lower lip and the tips of the upper incisors (labiodental): [f]
 “ومن باطن الشفة السفلى وأطرافِ الثنايا العُلَى مُخْرَجُ الفاء“
15. Both lips (bilabial): [b, m, w]
 “وممّا بين الشفتين مُخْرَجُ الباء ، والميم ، والواو“
16. The nasal cavities (nasal): [ŋ]
 “ومن الخياشيم مُخْرَجُ النون الخفيفة“²⁰

²⁰ Sībawayhi, IV, 434.

Table 4. Sībawayhi's phonetic table (based on Sara 2006: 286)

S.no.of Points of articulation	Lower perimeters	Arabic symbols	IPA Equivalents	Other Used Symbols	Upper perimeters
1.	Throat: farthest section	ء, ه, ا	ʔ, h, a:	ʾ, h, ā	Throat: farthest section
2.	Throat: mid-section	ع, ح	ʕ, h	ʿ, ḥ	Throat: mid-section
3.	Throat: closest to oral cavity	خ, غ	ɣ, x	ḡ, ḥ	Throat: closest oral section
4.	Tongue: farthest section	ق	G	q	Palate: farthest section
5.	Tongue: lower than	ك	k	k	Palate: pre-farthest section
6.	Tongue: mid-section	ي, ش, ج	dʒ, ʃ, j	ž, š, y	Palate: mid-section
7.	Tongue: beginning of edge	ض	d ^f	ḍ	Palate: molar section
8.	Tongue: closest edge to tip	ل	l	l	Palate: above pre-molars, canines and incisors
9.	Tongue: tip	ن	n	n	Palate: above the incisors
10.	Tongue: slightly inner surface	ر	r	r	Palate: above the incisors
11.	Tongue: tip	ت, د, ط	t ^f , d, t	ṭ d t	Palate: base of incisors
12.	Tongue: tip	ز, س, ص	s ^f , s, z	ṣ, s, z	Palate: slightly above the incisors
13.	Tongue: tip	ث, ذ, ظ	ṯ ^f , ḏ, ṯ	ṯ ḏ ṯ	Teeth: tip of incisors
14.	Lip: inner surface of the lower lip	ف	f	f	Teeth: tip of the upper teeth
15.	Lip: lower	و, م, ب	b, m, w	b, m, w	Lip: upper
16.	Nostrils: nasal cavity	ن	n	n	Nostrils: nasal cavity

2.2 Manner of Articulation

In this section, Sībawayhi employs a series of binary contrasts in describing the manner of articulation of twenty nine primary sounds of Arabic, some applicable to all sounds and some to groups of sounds, as follows:

1. Series of binary contrasts:
 - a. *mažhūr* “shouted out loud” and *mahmūs* “whispered”
 - b. *šadīda* “tight” and *riḥwa* “slack”
 - c. *muṭbaqa* “covered” and *munfatiḥa* “open”
 - d. *layyina* “soft” and *madd* “prolongation”

2. Groups of sounds:
 - a. *šadīda* “tight”
 - b. *riḥwa* “slack”
 - c. sonorants
 - i. *munḥarif* “diverted”
 - ii. *ḡunna* “nasal”
 - iii. *mukarrar* “repeated”
 - iv. vowels

Sībawayhi lists the sounds carefully and describes the manner of articulation based on naturally (spontaneous) occurring Arabic speech.²¹ He provides the earliest reliable textual evidence for linguistic judgments about the elements of the spoken Bedouin *Tamīm* and sedentary *Ḥijaẓ* dialects.²² He discusses the features of Arabic phonetics, using terms, such as *tafḥīm* “emphasis,” *’idgām* “assimilation,” *žahr*, “overtness,” *hams* “muffled,” *waqf* “pausal,” etc.

2.2.1 Series of Binary Contrasts

2.2.1.1 *mažhūr* and *mahmūs*

One pair of binary contrasts used by Sībawayhi is *mažhūr* and *mahmūs*. He identifies nineteen *majhūr* sounds and ten *mahmūs* sounds (see Table 5 below). *Mahmūs* refers to sounds where the airflow flows freely while *mažhūr* refers to sounds where the airflow is impeded. Sībawayhi was the first linguist to use the terms *mažhūr* and *mahmūs*.²³ Arab grammarians after Sībawayhi adopted his definition verbatim and followed his classification.²⁴ According to some scholars, the two terms seem to correspond to the modern

²¹ Rosenhouse (2007: 132).

²² Cadora (1989: 264).

²³ Al-Nassir (1993: 35).

²⁴ Ibid.

terms: “voiced” and “voiceless.” However, some differ in their interpretation of the two terms, as follows:

- Cantineau (1946)
mažhūr (مجهورة): “pressed”
mahmūs (مهموسة): “non-pressed”
- Fleisch (1949)
mažhūr (مجهورة): “voiced”
mahmūs (مهموسة): “voiceless”
- Garbell (1958)
mažhūr (مجهورة): “non-breathed”
mahmūs (مهموسة): “breathed”
- Blanc (1967)
mažhūr (مجهورة): “sonorous”
mahmūs (مهموسة): “muffled”

Sībawayhi defines *mažhūr* as a “letter [sound] fully supported in its place and the flow of breath is impeded until the support is completed and the sound flows on”²⁵

”قالمجهورة : حرف أشبع الاعتماد في موضعه ، ومنع النفس أن يجري معه حتى ينقضي الاعتماد عليه ويجري الصوت . فهذه حال المجهورة في الحلق والفم“

In addition, Sībawayhi clarifies that the *mažhūr* [n] and [m] sounds require that the obstruction of the air stream be in both the mouth and the innermost part of the nose so that they become nasalized.²⁶ As for the *mahmūs* sound, Sībawayhi defines it as a “letter [sound] weakly supported in its place and the breath is allowed to flow with it”²⁷

”وأما المهموس فحرف أضعف الاعتماد في معه ، وأنت تعرف ذلك إذا اعتبرت فرددت الحرف مع جري النفس موضعه حتى جرى النفس“

In other words, *mahmūs* sound is articulated with feeble obstruction of the air stream at its point of articulation with the breath being allowed to flow along the sound.

2.2.1.2 *šadīda* and *riḥwa*

Another pair of binary contrasts introduced by Sībawayhi is that of the *šadīda* “tight” and *riḥwa* “slack” sounds. He identifies eight sounds belonging to the former ([ʔ], [q], [k], [ʒ], [t]),

²⁵ Sībawayhi, IV, 434; see also Al-Nassir (1993: 35).

²⁶ Sībawayhi, IV, 434; see also Al-Nassir (1993: 35).

²⁷ Ibid.

[t], [d], and [b]) and thirteen ([h], [ħ], [g̃], [h̃], [š], [s̃], [d̃], [z̃], [s], [z], [t], [d], and [f]) belonging to the letter (see also Table 5 below). He defines *šadīd* as a “letter [sound] which prevents the sound from flowing on”²⁸ “وهو الذى يمنع الصوت أن يجرى فيه”. As for a *riḥw* sound Sībawayhi defines it as a letter [sound] in which “you make the sound flow”²⁹ أُجريت فيه “الصوت إن شئت”. In addition, Sībawayhi clarifies that the ‘*ayn* sound fits in-between the two categories (see Table 5 below).

2.2.1.3 *muṭbaqa* and *munfatiḥa*

The fourth binary classification introduced by Sībawayhi is the *muṭbaqa* “covered” and *munfatiḥa* “open” sounds. Sībawayhi classifies the four sounds [s], [d], [t], [z] as *muṭbaqa*, and the remaining sounds as *munfatiḥa* (see Table 5 below). Sībawayhi illustrates that in the articulation of the (four) *muṭbaqa* sounds:

“... if you apply your tongue in their place, it will close on from their [primary] place up to that part of the tongue opposite the velum, towards which you raise the tongue. Applying the tongue this way the sound will be enclosed between the tongue and the velum [on one side] and the places of the letters [on the other side]”³⁰

”وهذه الحروف الأربعة إذا وضعت لسانك فى مواضعهن انطبق لسانك من مواضعهن إلى ما حاذى الحنك الأعلى من اللسان ترفعه إلى الحنك ، فإذا وضعت لسانك فالصوت مَحْصُورٌ فيما بين اللسان والحنك إلى موضع الحروف.“

According to Sībawayhi, the contact occurs between the front part of the tongue with the front part of the palate, while the back part of the tongue is raised towards the “upper” part of the palate. This means that he recognized the presence of two articulations but did not specify their type. More recently, Arabists have used the term ‘*al-ḥurūf ‘al-mufahḥama* “heavy” sounds,” a term which is acoustically and auditory-based. It has been referred to by modern linguists as “emphatic,” “velarized,” “uvularized” or “pharyngealized.”³¹ The articulatory exponents of the secondary articulation are more complicated to pinpoint, and it is possible that there is no consistent single articulatory exponent of emphasis but that speakers have a range of articulatory strategies at their disposal, including the degree of constriction and larynx height. Each strategy will depend on several factors such as native dialect, phonological context, gender and social background.

²⁸ Sībawayhi, IV, 434; see also Al-Nassir (1993: 38).

²⁹ Sībawayhi, IV, 434-35.

³⁰ Sībawayhi, IV, 436; see also Al-Nassir (1993: 50).

³¹ Hassan and Esling (2007: 17).

2.2.1.4 *layyina* and *madd*

The fourth pair of binary contrasts identified by Sībawayhi is *layyina* “soft” and *madd* “prolongation.” These are discussed in the section on “Vowels” below (see also Table 5).

Table 5. Sībawayhi’s binary classification of Arabic sounds (see also Sara 1996: 256)

Serial No.	Arabic Symbols (Sībawayhi’s order)	IPA Symbols	Other Used Symbols	Sībawayhi’s binary classification of Arabic sounds based on manner of articulation							
				<i>maẓhūr</i> “loud” & <i>mahmūs</i> “whispered”		<i>ṣadīd</i> “tight” & <i>rikkhw</i> “slack”		<i>layyina</i> “soft” & <i>madd</i> “prolongation”		<i>muṭbaq</i> “cover” & <i>munfatih</i> “open”	
Consonants											
1	ء	ʔ	’	+	-	+	-	-	-	-	+
2	ا	a:	ā	+	-	-	-	-	-	-	-
3	ح	h	h	-	+	-	+	-	-	-	+
4	ع	ʕ	‘	+	-	+	+	-	-	-	+
5	هـ	ħ	ḥ	-	+	-	+	-	-	-	+
6	ج	ɟ	ǧ	+	-	-	+	-	-	-	+
7	خ	χ	ḫ	-	+	-	+	-	-	-	+
8	ق	q	q	+	-	+	-	-	-	-	+
9	ك	k	k	-	+	+	-	-	-	-	+
10	د	d ^f	d	+	-	-	+	-	-	+	-
11	ذ	dʒ	ǰ	+	-	+	-	-	-	-	+
12	س	ʃ	š	-	+	-	+	-	-	-	+
13	ي	y	Y	+	-	-	-	+	-	-	-
14	ل	l	l	+	-	+	-	-	-	-	+
15	ر	r	r	+	-	+	-	-	-	-	+
16	ن	n	n	+	-	+	-	-	-	-	+
17	ط	t ^f	t̤	+	-	+	-	-	-	+	-
18	د	d	d	+	-	+	-	-	-	-	+
19	ت	t	t	-	+	+	-	-	-	-	+
20	س	s ^f	s̤	-	+	-	+	-	-	+	-
21	ز	z	z	+	-	-	+	-	-	-	+
22	س	s	s	-	+	-	+	-	-	-	+
23	ظ	ð ^f	z̤	+	-	-	+	-	-	-	+
24	ذ	ð	d̤	+	-	-	+	-	-	-	+
25	ث	θ	t̤	-	-	-	+	-	-	-	+
26	ف	f	f	-	+	-	+	-	-	-	+
27	ب	b	b	+	-	+	-	-	-	-	+
28	م	m	m	+	-	+	-	-	-	-	+
29	و	w	w	+	-	-	-	+	-	-	+

2.2.2 Groups of Sounds

Sībawayhi divided Arabic sounds into three groups in relation to continuity. The first group is *šadīda* “tight consonants” (equivalent to the modern terms: “stops and plosives”) which are produced by a complete oral closure and velar closure. The second is *riḥwa* “slack consonants” (equivalent to the modern term: “fricatives”). The third is sonorant sounds which are between stops and fricatives. This group includes the Arabic sounds nasals, liquids, glides and vowels.

2.2.2.1 *šadīda*

“Tight” sounds are a category of eight consonants, as follows:

ء	ق	ك	ج	ط	ت	د	ب
[ʔ]	[q]	[k]	[ʒ]	[t̤]	[t]	[d]	[b]

This category was discussed in the series of binary classification above.

2.2.2.2 *riḥwa*

“Slack” sounds are a category of thirteen consonants, as follows:

هـ	ح	غ	خ	ش	ص	ض	ز	س	ظ	ث	ذ	ف
[h]	[ħ]	[g̃]	[ħ]	[š]	[ṣ]	[ḍ]	[z]	[s]	[ẓ]	[t̤]	[ḍ]	[f]

This category was discussed in the series of binary classification above.

2.2.2.3 Sonorants

Sonorants sounds are between stops and fricatives. This group includes the following Arabic sounds:

- i. *munḥarīf* “diverted”/“lateral”: ل [l]
- ii. *ḡunna* “nasal”: م [m] and ن [n]
- iii. *mukarrar* “repeated”/“trill”: ر [r],
- iv. Vowels: َ[a], َ[ā], ِ[i], ِ[ī], ُ[u] and ُ[ū], six vowels (short and long).

i. *munḥarīf*

Sībawayhi termed *munḥarīf* “diverted” for the lateral consonant [l]. He additionally classifies it as belonging to the *šadīda* consonants. He explains the articulation of the *munḥarīf* where the “sound flows not from the point of articulation of this sound, but “from the two edges of

the narrow part of the tongue, little higher than that”.³² He probably meant that the airstream is diverted sideways from the central line of the tongue body.

ii. *ḡunna*

The two consonants [n] and [m] are described by Sībawayhi as nasal sounds. He uses the term *ḡunna* for nasality. His definition for [n] is thus: “You produce it from your nose while the tongue holds the contact with the place of the sound, because if you close your nose the sound would not flow.”³³ He states that the same applies to [m].

iii. *mukarrar*

Sībawayhi termed *mukarrar* “repeated” for the trill consonant [r]. He also classifies it as *šadīd*. He explains that “If it was not repeated the sound would not flow on.”

To conclude the foregoing sections on Arabic consonants, Table 6 displays Sībawayhi’s phonetic framework. It becomes evident how Sībawayhi’s system strikingly corresponds to modern day framework, with a few minor modifications.

Table 6. Arabic Consonants in Sībawayhi’s Phonetic Framework

Place →	Bilabial		Labio dental		Dental		Alveolar		Post alveolar		Retroflex		Palatal		Velar		Uvular		Pharyngeal		Glottal	
↓ Manner																						
Plosive		b					t	d							k	g	q					ʔ
Nasal		m						n														
Trill								r														
Fricative			f		θ	ð	s	z	ʃ								χ	ʁ	ħ	ʕ	h	
Affricate									dʒ													
Approximant													j									
Lateral approximant								l														

Voiceless

Voiced

³² Sībawayhi, IV, 435.

³³ Sībawayhi, IV, 435; Al-Nassir (1993: 49).

iv. Vowels

Arabic has six primary vowels, namely: [a], [i], [u]. [ā], [ī], and [ū]. The classification of vowels is based on the distance between the top of the tongue and the roof of the mouth and the retraction or extension of the tongue.³⁴ Although Arabic linguists, on occasion, seem to discuss vowels in great detail, there is no separate chapter devoted to vowels in their works.³⁵ Because they consider a long vowel and its corresponding short vowel the same except in duration, they appear to find it unnecessary to discuss short vowels separately (see Figure 1 for a modern illustration of Arabic cardinal vowels).

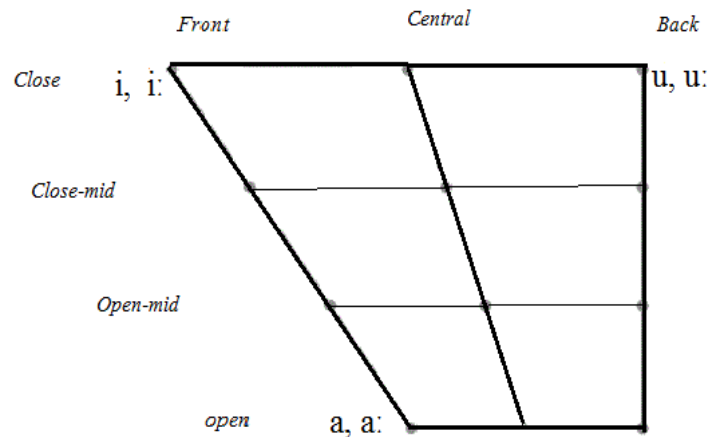


Figure 1. Arabic Cardinal Vowels

As for Sībawayhi, he divides the vowels into two groups. The first group is the open vowels, which are produced with a wide mouth opening, where the distance between the tongue and the roof of the mouth is great. This is the case with the long vowel [ā] and its short counterpart [a]. The second group is the close vowels, which are produced with a narrow mouth opening. This is the case with both [ī] and [ū] and short counterparts [i] and [u], respectively. Sībawayhi realized more specifically that [ī] is more open than [ū] and less than [ā], but it is more close to [ū] than [ā].³⁶ In the case of the shape of the lips, lip rounding is involved in [ū] and its short counterpart [u]. Other vowels are unrounded.

Sībawayhi termed vowels as either either *layyna* “soft” consisting of [ū] and [ī] both of which can be elongated or *hāwiyy* “falling” which is the *‘alif* [ā].³⁷ In addition, he uses the

³⁴ Sloat (1978: 10).

³⁵ Alfozan (1989: 27).

³⁶ Sībawayhi, IV, 435-36.

³⁷ Ibid.

term *madd* in reference to the fact that the three long vowels have short counterparts. Sībawayhi discuss vowels in conjunction with consonants with respect to place of articulation. He considers vowels neither stops nor fricatives, since their *muḥraḥ* “outlet expands for the sound stream more so than for other sounds.”³⁸ Table 7 displays the Arabic phonetic chart based on modern day linguistics. It is not too far removed from a reconstruction of Sībawayhi’s system, if we exclude vowel features such as *lax* and *tense*.

Table 7. Arabic phonetic vowel chart fitting into Sībawayhi phonetic framework

Serial Number	Arabic Symbols	IPA Equivalents	Phonetic Values	Tongue position						Lip position			Duration	
				Front	Back	Low	High	Lax	Tense	Open	Close	Round	Short	Long
1	ا	a	a	-	-	+	-	+	-	+	-	-	+	-
2	ي	i	i	+	-	-	+	-	+	-	+	-	+	-
3	و	u	u	-	+	-	-	-	+	-	-	+	+	-
4	آ	a:	ā	-	-	+	-	+	-	+	-	-	-	+
5	ي	i:	ī	+	-	-	+	-	+	-	+	-	-	+
6	و	u:	ū	-	+	-	-	-	+	-	-	+	-	+

Conclusion

Sībawayhi created a list of derived sounds, which made the total number of speech sounds forty-two. This system of classification covered all the Arabic sounds (original and derived sounds) based on articulatory variants. His phonetic views correspond strikingly to the modern view of Arabic phonemes and their allophonic variants. He does not speak about articulatory strength in his investigation of the vowels in context. Instead, he deals with the ease of articulation of the vowels. He considers the open vowels the easiest to articulate, the front vowels less easy, and the back vowels least easy. This classification seems to be based phonetically since the tongue is least involved in producing the open vowels, more involved in producing the front vowels and both the tongue and the lips are involved in producing the back rounded vowels.

³⁸ Sībawayhi, IV, 435.

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