

THE PHONETICS OF AL-AZHARĪ

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Summary:

In the eighth century, al-Halīl ibn Aḥmad al-Farāhīdī wrote the first comprehensive dictionary of Arabic, called *Kitāb al-ʿayn* (The book of ʿayn). Of interest to phoneticians and phonologists of Arabic is that he pre-pended a treatise on Arabic phonetics to this dictionary. It is the first full treatise on Arabic sound system. This practice became a tradition that subsequent lexicographers followed in writing their own dictionaries. Ibn Durayd, a ninth century lexicographer included a phonetics treatise in his dictionary: *Ġamharat al-luġa* (Compendium of Language). The current author; Abū Maṣṣūr al-Azharī, a tenth century lexicographer, also included a treatise on the phonetics of Arabic in his *Tahdīb al-luġa* (Rectification of Language). In addition to the documentary trail that these lexica establish for their interest in phonetics and phonology of Arabic, they chart the changes that were occurring in Arabic sound system in different generations of speakers.

This presentation will provide, in a summary fashion, the details of the sound system of Arabic as presented by al-Azharī with references to his two predecessors. Emphasis will be placed on the organization of the system, and the system of features that he established to describe each segment of the sound system.

0.0. Preliminaries

True to the tradition of Arab nomenclature his name is Abū Maṣṣūr Muḥammad b. Aḥmad b. Ṭalḥa b. Nūḥ b. al-Azhar al-Azharī al-Harawī aš-Šāfiʿī. He is often referred to by the highlighted abbreviation. (Abū Maṣṣūr Aḥmad al-Azharī). He lived mostly in the tenth century (282/895-370/981). He was born in Herah in Ḥurāsān, but moved to Baghdad for his studies. He travelled among the tribes, and while living among them, he observed their speech, and recorded many of their expressions and idioms in his dictionary. The motivation for the composition of his dictionary, he claimed, was to set the record straight, and point out all the errors that he noticed the other linguists had made (al-Azharī, *Tahdīb*: 54). Consequently, he called his dictionary: *Tahdīb al-luġa* (Rectification of Language). He detailed in the introduction to this dictionary his evaluation of his sources, his judgements on his predecessors and his contemporaries. Indeed, this forms a short history of linguistics as al-Azharī perceived it. His judgements are forthright about the people on his list. His list mentions all of his predecessors and contemporaries to whom he feels he is indebted in the composition of his dictionary. He is quite severe on some of the linguists, in particular his contemporary, Ibn Durayd. He does, however, show measured respect

for al-Ḥalīl and his dictionary. al-Azharī felt that he could incorporate into his own dictionary materials from the sources at his disposal rather freely. He was a very self-possessed person, who was sure of his own judgement, and the judgements he passed on his predecessors. It is to his credit that he put great value on the verification of his information by re-eliciting his material, or ascertaining that the material provided in the sources was properly elicited and accurate. Here, we can not go into the details of his critique of others, but one of the persons he respected and whose work he used, or more accurately stated, he incorporated, verbatim in many part, into his dictionary was al-Ḥalīl ibn Aḥmad, whose dictionary is called: *Kitāb al-ʿayn* (The book of ʿayn). This was the first full-fledged dictionary of Arabic and had become the model for the dictionaries that came after it.

After a review of the literature, the evaluation of the authors he considered worthy of mention, and following al-Ḥalīl's initiative, al-Azharī also included a section on the phonetics of Arabic, as part of the introduction to his dictionary, just before he began to record the lexical entries of the dictionary. It is a section of about a dozen pages (*Tabdīb*: 41-54) in a fifteen volume dictionary. But it is a significant contribution to the understanding of the sound system of Arabic of that time.

It is very instructive to review these ancient lexica of Arabic and try to follow the development, or lack of it, of the phonological changes in the language that these lexicographers noted in their works, in particular in their dictionaries. This is a way of documenting the subtle changes that they observed in Arabic of their day, and from a phonological perspective, the classifications and subclassifications they introduced into the process of accounting for the sounds of the language. Their arrangements and classifications of the sounds of Arabic might not appear revolutionary from our current perspective, but from the perspective of the eighth, ninth and tenth century phonologists it was an original and significant advancement in phonological analysis and systematization.

With that perspective in mind, one can follow the examination of the "treatise" of al-Azharī in order to understand better his approach and methodology in describing and classifying the sounds of Arabic as he perceived them. It will be immediately noticed that this treatise of al-Azharī is substantially the same as that of al-Ḥalīl, with minor variations.

1.0. Word Structures

He begins by stating that Arabic words are constructed on four patterns: *at-tunāʾī* (the bi-radical), *at-tulāʾī* (the tri-radical), *ar-rubāʾī* (the quadri-radical), and *al-ḥumāsī* (the quinque-radical) patterns. Examples¹:

¹ N.B. in the examples above, the *ḥarakāt* (the motions), i.e. the vocalic elements, are not counted, but only *sawākin* (still letters) i.e. the consonantals, are counted.

1.1. The Patterns:

- at-tunā'i* (bi-radicals) e.g. *qad* (may), *lam* (not)
at-tulātī (tri-radicals) e.g. *harağ* (exit), *darab* (strike)
ar-rubā'i (quadri-radicals) e.g. *dabrağ* (tumble), *qartas* (hit target)
al-humāsī (quinque-radical) e.g. *safarğal* (quince), *šamardal* (youth), *išankek*
 (become pitch dark), *iğša'arr* (shiver)

To be noted in the above examples is that the Arabic writing system does not indicate the *ḥarakāt* (motions), also called 'short vowels', in the sequence, and the author is counting only *as-sawākin* (the still letters). In Arabic, anything above the five radicals in a word is an augment, for example: *ʿankabūt* (spider) is from *ʿankab*. Substantive words, on the other hand, may not be less than three letters. If, however, nouns appear on the surface as bi-radicals as in words like: *yad* (hand), *fam* (mouth), then one is to look at their derivations for their full structures to surface, i.e. that they are tri-radical as it appears in the plural *aydihim* (their hands), and *yudayya* (the diminutive form for hand). That makes the tri-radical stem for hand as [ydy] cf. 1.2 below:

1.2. The Radicals of Bi-lateral Nouns

<i>yad</i>	(hand)
<i>aydihim</i>	(their hands)
<i>yudayya</i>	(hand, diminutive form)
[ydy]	the tri-radical stem for hand

It will be stated later that the language does have forms that go beyond the canonical patterns, but if they are encountered, then they are either borrowed or made up (*Tahdīb*: 41-43).

2.0. *al-ḥurūf* (The Letters): Their labels and their *madāriğ* (localities)

To ascertain the articulatory quality of the letters of Arabic, al-Azhari followed the technique that al-Halil used in defining the sounds of Arabic, thus: In the production of any one letter: one is to begin with the pronunciation of an [a] and end up with the intended letter, like this: [ab], [at], [ah], etc. One is to stop at the intended sound that is the object of observation, as [-b, -t, -h] in the above examples. In this fashion one will come up with the following list of letters at different *madāriğ* (exits) for Arabic:

[ʿ ḥ ḥ — ḥ ġ — q k — ġ š ḍ — š s z — ṭ d t — z ḍ ṭ — l r n — f b m — w A y ']

The order in which these letters occur is significant. It will be noticed that it is a departure from the traditional sequencing, [alif, bā', tā',] etc., in that it organizes the letters of Arabic according to an articulatory criterion that begins with the deepest letter in the pharynx, and ends up with the labial ones according to their proper grouping *madāriğ* (localities) and *madāriğ* (exits) (*Tahdīb*: 41) the last four letters are a special case as it will be pointed out below.

2.1. Subdivisions of the Letters

The letters of Arabic are re-grouped into six classes according to particular articulatory features.

2.1.0. Letters of *ḍulq* (fluency) and *ṣafawiyya* (labiality) are six:

[*l, r, n, f, b, m*].

2.1.1. "The letters of fluency [*l, r, n*] are produced with the apex of the tongue" (*Tabdīb*: 44).

2.1.2. "The letters of labiality [*f, b, m*] are produced between the two lips, but the two lips are involved in the production of no other letters" (*Tabdīb*: 44).

2.1.3. The balance of the letters are higher than those just mentioned above:

[*ṭ, ḍ, z, t, d, ṯ, s, z, ṣ, ḍ, ḡ, ṣ̣*].

"These letters flow over the hump of the tongue between the incisors at the exit of [*ṭ*] and the exit of [*ṣ̣*], between the upper concavity and the surface of the tongue. The hump of the tongue does not deviate in the production of these letters as it does with the production of the letters [*l, r, n*]" (*Tabdīb*: 44).

2.1.4. "The exits of [*k, q*] are between the knot of the tongue and the uvula at the extremity of the mouth" (*Tabdīb*: 44).

2.1.5. "The exits of [*ḥ, ḥ, ḡ*] are in the throat" (*Tabdīb*: 44).

2.1.6. "The *hamza* [*ʾ*] is produced at the extremity of the throat. It is not like the other letters, since it changes to an *alif* [*A*], a *wāw* [*w*] and a *yā* [*y*], which the other letters do not do" (*Tabdīb*: 44). The orthographic representation of the glottal stop varies depending on the context. It may look like an [*A*], [*y*] or a [*w*], or itself as the context dictates.

It is note-worthy to mention that al-Azharī approaches the letters of Arabic from two directions. In the first approach, he followed al-Ḥalīl who took the flow of the exhaled air through the vocal tract, as his guide, in listing the letters from the deepest letter in the throat, and proceeding by degrees, until he ended up with the lips; but in section # 2.0. above, al-Azharī explains these exits by proceeding from the front of the oral cavity with the fluency letters, and ending up with the deepest, the *hamza* [*ʾ*], i.e. the glottal stop, which is a departure from al-Ḥalīl.

There was a deeply seated intuition or insight among the early Arab phoneticians that the ease of the articulation of certain sounds led to their frequency in the composition of words. That is, the more flexible organs are the more adept ones at sound production than the less flexible ones. They considered the tip of the tongue and the lips the more mobile, hence they would be more frequently used in the formation of words. The more complex words, i.e. the longer words, would need more muscular flexibility in their articulation than the shorter and less complex words. They felt vindicated when they examined the lexicon of the language and found out that no quinqu-radical or quadri-radical word is produced without one or more of the letters of fluency or labiality. This, they felt, followed from the nature of speech and the ease of the articulation of these sounds in Arabic. If a

quadri-radical or quinque-radical word were to occur without one or more of these letters, one would intuitively know that it is either a made-up word or a borrowed word. E.g. *ḥadaʿtaḡ* and *kašaʿtaḡ*². There are precious few exception to this generalization. The authors list ten such words in Arabic, like: *ʿasḡud* (gold), and *qasatūs* (balance).

In speech, there was also the notion of sonority and elegance to which the Arab ear responded. In such matters of the phonetics of Arabic, the inclusion of [ʿ, q] in words added to their sonority and elegance. Consequently they considered [*ʿayn*] to be *anšaʿu l-ḥurūf* (the silkiest of letters), and *aladdu samāʿan* (the most pleasant to hear), while [*qāf*] had *aṣabḥubā ḡarasan* (possessing the clearest ring). This is true to such an extent that when a native quadri-radical word comes along it invariably includes one or both of these letters of fluency or labiality. Needless to say, these are among the sounds of Arabic that new adult learners of the language find difficult to master. To round off this excursion into the phonotactics of Arabic, the letters [d, s] are considered the lighter members of their respective locales, and are to be frequently found in these quadri-radical stems. These observations on the nature of the composition of Arabic words became the metric by which one judged which words were genuinely native Arabic words and which ones were not.

3.0. *ahyāz* (The Locales) and *madāriḡ* (Localities) of the Letters

The Arab phonologists divided the vocal tract into discrete and definite sections each of which is called *ḥayyiz* (locale), the plural is *ahyāz*. Within the locales there are specific areas where more than one letter may be produced. This is called *madraḡ* (locality), the plural is *madāriḡ*. Where a single letter is produced is called *mabraḡ* (exit), plural is *mabāriḡ*. The production of the Arabic letters is associated with these physiological structures.

Arabic has twenty nine letters in both its orthography and its phonological inventory. Twenty five of which have locales, localities and exits, and four of them are cavity letters (*Tabdīb*: 48). Cavity letters are [w, y, A, ʾ]. These last four are called *ḡawf* (cavity) letters because they are produced in the cavity as a whole, and they have no definitely assigned localities; and since they are produced in the air they have no locales with which they can be clearly associated like the other letters.

4.0. First Tier Classifications

There are nine locales in the vocal tract with which the groups of letters are associated. They are separated here by [—], and each locale is designated by a specific articulatory area of the vocal tract:

² These made up structures mimic the pattern of Arabic words, e.g. *tafaʿlal* but are not real lexical items.

4.1 The Inventory

[^ʕ h h - ḥ ġ - q k - ġ š d - s s z - t d t - z d t - l r n - f b m - w A y]

4.2 The Locales

<i>ḥalqiyya</i>	throat-I:	[^ʕ , h, h]	ع ح ه
	throat-II ³ :	[ḥ, ġ]	غ خ
<i>lahawiyya</i>	uvular:	[q, k]	ك ق
<i>šağriyya</i>	softpalatal:	[ğ, š, d]	ض ش ج
<i>asaliyya</i>	apical:	[s, s, z]	ز س ص
<i>niṭʕiyya</i>	palatal:	[t, d, t]	ت د ط
<i>liṭawiyya</i>	gingival:	[z, d, t]	ث ذ ظ
<i>ḍawlaqiyya</i>	laminal:	[l, r, n]	ن ر ل
<i>šafawiyya</i>	labial:	[f, b, m]	م ب ف
<i>ḥawāʕiyya</i>	airy:	[w, A, y, ʔ]	ء ي أ و

4.3 al-Azharī's Chart of Arabic speech sounds

<i>ahyāz</i>	Locales	<i>madāriğ/mahāriğ</i> Localities/Exits	
<i>ḥalqiyya</i>	throat I	[^ʕ , h, h]	ع ح ه
	throat II	[ḥ, ġ]	غ خ
<i>lahawiyya</i>	uvular	[k, g]	ك ق
<i>šağriyya</i>	softpalatal	[ğ, š, d]	ض ش ج
<i>asaliyya</i>	apical	[s, s, z]	ز س ص
<i>niṭʕiyya</i>	palatal	[t, d, t]	ت د ط
<i>liṭawiyya</i>	gingival	[z, d, t]	ث ذ ظ
<i>ḍawlaqiyya</i>	laminal	[l, r, n]	ن ر ل
<i>šafawiyya</i>	labial	[f, b, m]	م ب ف
<i>ḥawāʕiyya</i>	air/cavity	[w, A, y, ʔ]	ء ي أ و

5.0 Second tier classification

The second tier classification goes beyond the the locale and exit designations for each letter of Arabic, and elaborates a grouping of sounds according to shared features across articulatory locales and localities. In this manner, a new set of features are introduced into the classification of the sounds of Arabic. These new features are listed and exemplified below:

³ In al-Ḥalil there are no such divisions in the throat. It is one continuous cavity.

5.1 Feature Classification:

5.1a	<i>mutbaqa</i>	Covered:	one letter	[<i>m</i>]
5.1b	<i>mu'talla</i>	Weak:	four letters	[<i>w, A, y, ʔ</i>]
5.1c	<i>ṣaḥīḥa</i>	Strong:	twenty five letters	
				[<i>ʕ, ḥ, ḥ, ḥ, ḡ, q, k, ḡ, š, d, š, s, z, t, d, t, z, d, t, l, r, n, f, b, m</i>]
5.1d	<i>mudlaqa</i>	Fluent:	six letters	[<i>l, r, n, f, b, m</i>]
5.1e	<i>muṣmata</i>	Silent:	nineteen letters	
				[<i>ʕ, ḥ, ḥ, ḥ, ḡ, q, k, ḡ, š, d, š, s, z, t, d, t, z, d, t</i>]
5.1f	<i>famawiyya</i>	Oral:	fourteen letters	
				[<i>q, k, ḡ, š, d, š, s, z, t, d, t, z, d, t, l, r, n, f, b, m</i>]
5.1g	<i>ḥalqiyya</i>	Throat:	five letters	[<i>ʕ, ḥ, ḥ, ḥ, ḡ</i>]
5.1h	<i>muṣṭaʿliya</i>	Raised:	five letters	[<i>q, d, š, t, z</i>]
5.1i	<i>muhṭafida</i>	Lowered:	nine letters	[<i>k, ḡ, š, s, z, d, t, d, t</i>]

The advantages of the above sub-classifications are that sounds can be regrouped and cross classified in terms of shared features that extend beyond the articulatory parameters of locales and exits and thus lend themselves more easily to a shared feature analysis. al-Azharī considers the weak letters the more complex ones. There is, he claims, complexity in their orthographic representations. If they were to be localized, then the [A] is to be localized towards the upper concavity, the [y] towards the grinders, and the [w] between the two lips. The source of all three is, however, the *hamza* [ʔ]. When one pauses on one of the weak letters, one stops at *hamza* [ʔ]. E.g. 'if^calī' (you — f. — do), 'if^calā' (you — d. — do), 'if^calū' (you — pl. — do), in order to halt the breath. The second tier features are summarized in the following chart (# 5.10), where the following abbreviations are used:

c = covered *mutbaqa*, w = weak *mu'talla*, s = strong *ṣaḥīḥa*, f = fluent *mudlaqa*,
 x = silent *muṣmata*, o = oral *famawiyya*, t = throat *ḥalqiyya*, r = raised
muṣṭaʿliyya, l = lowered *muhṭafida*.

These features with the articulatory classifications found in chart # 4.3, that deal with the divisions of the vocal tract into designated locales, provide a complete list of all the features that characterize the inventory of the letters of Arabic.

6.0 Summary

al-Azharī was not a pioneer in phonology. He followed faithfully the tradition that was begun by al-Ḥalīl. His dictionary is a third generation dictionary of Arabic. *Kitāb al-ʿAyn* was of the first generation and served as the model for subsequent dictionaries. Al-Ḥalīl was the first systematizer of Arabic sound system which others followed, added to or amended. Al-Ḥalīl's phonetics appears in al-Azharī's treatise almost in its completeness. Al-Azharī acknowledges his debt to al-Ḥalīl in this matter, but he also does contribute organizational features not found in his primary source, al-Ḥalīl, and sub-classifications that were not mentioned by al-Ḥalīl. E.g. Throat subdivisions, or the 'silent', 'raised' and 'lowered' subgroups of sounds.

al-Azharī also refers to Ibn Durayd's dictionary in not too complementary terms, even though he incorporates most of it in his own dictionary: On matters of phonology, Ibn Durayd had taken into account other sources of phonology besides al-Ḥalīl, e.g. *Sībawayhi*⁴. He had also given a fuller synthesis of the state of the art at his time. Ibn Durayd documented many dialectal and local changes in the Arabic of his time. al-Azharī does not account for the contributions of others besides al-Ḥalīl, and in that sense he is less adventurous and less complete. Both al-Ḥalīl and Ibn Durayd have been treated elsewhere and will not be repeated here (Sara 1991; Sara & Zawawi 1995). al-Azharī's treatise, for all its conservatism, is a continuation of the tradition that began with al-Ḥalīl, and a manifestation of interest in the sound system of Arabic by the lexicographers. This treatise is yet another stage in the development in the understanding of the phonetics of Arabic.

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⁴ For details cf. Sara & Zawawi (1995).

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