

## The Vowels in the Arabic Phonetics

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### Abstract

The research discussed the vowel in two sides: the term and concept, and also held a chapter for long vowels because of their importance in the ancient linguistic lesson as well as the modern. The research also attempted to differentiate between consonants and vowels, and touched on what is known recently as cardinal vowels, and dealt to its sections.

### Introduction

The vowel in Arabic has received great attention, both ancient and modern. Old sources have seen various treatments for the concept of the vowel and its functions and titles. In this aspect, several terms have emerged that can be studied in the linguistic lesson of the vowel, such as short and long vowels and others.

The vowel was also studied by many modernists, headed by Kamal Bishr in his books "Phonetics" and "Studies in General Linguistics", and Sameer Istetiah also studied the vowel in his book "Linguistic Voices", as he dealt with the vowel in chapters from the fourth to the eighth of his book mentioned.

It is known that vowels represent the second part of linguistic voices, and they are characterized in very difficult in the linguistic lesson, at both theoretical and practical levels, and the difficulty of studying the vowels is in the great difference caused by different environments, and different individuals in the environment. The vowels are the most subject to change in comparison to the consonants, and this is evident in the difference in the performance of these vowels in the contemporary Arab environments. Hence, the vowels differ in their nature, number and characteristics. In an attempt to control the definitions of the vowels, their characteristics and features; some phonologists have established universal standards that certify the vowels of each language, the vowels are called, according to them, the cardinal vowels, which will come later in this research.

In this regard, the research discusses the concept of the vowel as the ancients saw, and it tries to differentiate between consonants and vowels, and deals with long vowels and cardinal vowels.

### The term of the vowel

The ancients used the concept of the vowel to denote *'alfathah*, *'alḍammah*, *'alkasrah* and its branches, which is called after that the "short vowels" (see: 1952, p 3/121); and some of the ancient linguists were called *'alfathah* a small *'alif*, *'alḍammah* a small *wāw* and *'alkasrah* a small *yā'* (see: 1952, p 2/315), Short vowels, in the words of the ancients, were also known by

other names like: *'annaṣb*, *'annaṣbah*, *'alḍammah*, *'alḍamm*, *'arraf*, *'arraf'ah*, *'alkasrah*, *'alkasr*, *'alḡarr*, *'alḡarrah*, *'alḡafḍ* and *'alḡafḍah*. These terms, although different in their morphological structure, refer to passing references to one of the functions of these vowels in speech, namely, being signs of parsing or grammatical structure. (see: 1986, p 425)

More recently, the term *vowel* has become broader and more meaningful than it was before the ancients. It is comprehensive for short and long vowels. Hence, some modernists found a reason to reject the term *vowel*, because, according to their perception, it was not used in the ancient linguists signify all that is vowel, but in their studies it was limited to what we today call: *short vowel* (*'alfathah*, *'alḍammah* and *'alkasrah*). Their claim is that the term should be an expression of its history and a mirror to it.

This issue was discussed by Sameer Istetiah in his book "Linguistic Voices". he refuted the opinions of the rejectionists of the term *vowel*, (see: 2003, pp 202-204). In addition, the words of the ancients indicated that they did not distinguish much between the concepts of the short vowels and the long vowels. (see: 1993, p 23. 1986, p 224)

### Vowels in the opinion of the ancients

Sibawayh's concept of these vowels was agreeing of the view of his teacher Alkalil. He (Sibawayh) realized the relationship between the short vowels and the long vowels, he said in his book "*'alḡitāb*" that *'alfathah* is taken from *'al'alif*, *'alḍammah* is taken from *'alwāw* and *'alkasrah* is taken from *'alyā'*" (see: 1988,p 4/242), and linguists continue to approve and confirm this relationship, as it appears from their words. (see: 1993, p17. 1996, p 1/69. 1992, pp 66-67).

Recently, studies have shown that there is no difference between the short and long vowels except in the characteristic of shortness and length, and the perception of this feature has emerged by addressing the issue of origin and branch of these vowels, and they have three views:

The first is that the three short vowels (*'alfathah*, *'alḍammah* and *'alkasrah*) are taken from the three long vowels (*'al'alif*, *'alwāw* and *'alyā'*), based on the fact that the letters is before the vowels. According to this opinion, *'alfathah* is taken from *'al'alif*, *'alḍammah* from *'alwāw* and *'alkasrah* from *'alyā'*.

The second is that the long vowels are taken from the short vowels, which is the view of some grammarians, based on that the vowels before the letters, according to this, *'al'alif* is taken from *'alfathah*, *'alwāw* from *'alḍammah* and *'alyā'* from *'alkasrah*, and this is evidenced by the fact that these letters (*'al'alif*, *'alwāw* and *'alyā'*) arise from the satisfaction of the short vowels.

The third is that the long vowels are not taken from the short vowels, as well as the short vowels are not taken from the long vowels, based on the fact that one of them did not precede the other. (see: 1998, p 1/ 18)

It is clear that the first view is not accurate, because it is based on the written form of short and long vowels, not the linguistic truth of their role and their special functions in the construction of speech, so what is taken from the long vowels is the symbols of vowels, not the vowels themselves. The second view has two possibilities: First, the form of long vowels is taken from the form of the short vowels, but history and reality reject this possibility, the opposite is true here, it is a lengthening of the short vowels in pronunciation, however, this does not mean that

long vowels are taken from the short vowels. The third view is that which is consistent with careful scientific consideration that negates the idea of originality and subsidiary, and makes for both long and short vowels functional and situational independence in the linguistic structure, as in the case of many voices.

### 3. The Vowels and Consonants

The vowels are characterized by their lack of a fixed standard, agreed upon by scientists, that distinguishes them from consonants. Phonologists have adopted a number of criteria that characterize the vowels from the consonants, as follows (See: 2003, pp 206 & beyond)

**1. Acoustic Criteria:** The vowel, according to this standard, is a phenomenon caused by a longitudinal change in the rate of speed of voice. Therefore, the frequency of the vowels is the frequency of the consonants. This category, as Pike noted, belongs to two criteria:

- a. **The Sonority:** The power that is characterized by voice waves so that it can distinguish an auditory effect, stronger than the auditory effect found in the voices that are devoid of it. But this feature, although present in the vowels, but it is also found in many consonants, hence Pike responded this attribute, which was a criterion to distinguish between vowels and consonants.
- b. **The Friction:** a phenomenon that results from the interception of the air stream, which leads to the friction of this current of the voice corridors, especially in the mouth. In Pike's division, there are two parts: air friction at the position of pronunciation, called local friction. Air friction with the walls of one of the pronunciation chambers, the larynx and the mouth, is called friction chamber. Before Pike, phonologists almost unanimously agreed that friction is a characteristic of consonants, but the latter did not see friction as an accurate criterion for distinguishing between vowels and consonants. Its response to this standard is summarized as follows:
  1. The interception of the air stream that causes friction to a precise degree, is not perceived by sense or hearing, we can not determine the degree of interception at which friction occurs.
  2. That there is friction is heard when the pronunciation of some vowels, and that some voices are not friction frictional, yet they are silent not vowels.
  3. When side voices are unknown, there is an inaudible room friction that comes into being, but when they are marginal, local friction is what comes into being.

**2. Contextual Criteria:** It is intended to look at the vowel in one or more silent passages in a particular syllable. For the purpose of distinguishing between vowels and consonants, phonologists initially looked at the syntactic contextual functions of vowels and consonants, and did not look at the abstract pronunciation of each.

**3. Articulatory Criteria:** These standards meet in two aspects, as Pike noted, namely:

- a. **Air Interception:** When the vowels are spoken, air intercepts only partially, while the degree of interception is greater when consonants are spoken. Pike responded to this common standard that objection in both vowels and consonants is partial rather than total.

B. The Narrowing: The narrowing of the lane through which the vowel passes, ultimately leads to pronunciation of consonant. Because the degree to which narrowing is not specified, this basis is not a criterion for distinguishing between vowels and consonants.

Istetiah touched upon his teacher Catford attempt to find a standard for differentiating between vowels and consonants. The Catford's differentiation is based here on a chronological basis. Time is more ambiguous and related to time than to the consonant. The vowel is stretched with the fact that this stretching is part of its production, rather than part in the production of consonant. Istetiah has insisted on this standard and endorsed it for two reasons<sup>1</sup>. It takes into account the abstract rationale of voice. 2. That this basis can be a steady criterion in differentiating between vowels and consonants.

He added a new standard in this aspect, which is expressed in the movement of the tongue, because the movement of the tongue can not be overlooked when describing the vowels, nor exceeded when distinguishing between them, when the tongue producing vowel, a horizontal or vertical position be basically in the production of vowels, distinguishing between them, and Istetiah text on his new standard by saying, "each voice we find ourselves obliged when describing, to mention the horizontal or vertical position of the tongue, it is a vowel. And each voice does not need to describe the horizontal or vertical position of the tongue, it is consonant"(1986, p 211). Consequently, he used well-known data in the lesson of the vowel, to establish a new standard and basis for distinguishing between vowels and consonants.

#### 4. The Long Vowels

The long vowels received the largest share of interest from the ancient linguists, and Kamal Bishr due to two reasons (see: 2000, p 430 & beyond):

The first is that these letters have written symbols that form part of the body of the word, which makes it easier to identify and deal with them, as are the silent voices, as evidenced by the fact that they are originally considered in the word, and are composed of components of formulas.

Second, these letters, as they noted, are subject to change from one formula to another, they had to look at this change, and know the causes, within their method based on the search for assets before any change, so they interpreted those changes according to their method and their own vision, although the modern language lesson contradicts what they decided.

Bishr also follows the ancients' concepts of the long vowels (*'al'alif*, *'alwāw* and *'alyā*) and reached the following results (see: 2000, p 234 & beyond):

First: the three letters, *'al'alif*, *'alwāw* and *'alyā*, are weak letters, wherever they come. The basis of this provision is how the air passes through the mouth when spoken, as it expands those voices in a way that distinguishes them from other voices.

Second: *'al'alif* is a weak and lengthened letter, and being a weak letter has been decided before, while the lengthened has originate from the extension of *'alfathah* before it, according to their understanding. *'al'alif* in this case is classified in the modern language lesson as a long vowel.

Third: 'alwāw and 'alyā' are weak and lengthened letters, if preceded by a homogenous vowel, like 'alwāw in the word *yaqūl* in Arabic and 'alyā' in the word *yabī'* in Arabic, and newly they are classified as two long vowels.

Fourth: 'alwāw and 'alyā' are weak letters only, like 'alyā' in the words *bayt* and *yaşil* in Arabic and 'alwāw in the words *waşala* and *mawt* in Arabic, so if 'alwāw and 'alyā' moved or came silent after 'alfath, the characteristic of lengthening will disappear and the characteristic of weakness will remind. Newly they are classified as semi-vowels.

According to these results, Bishr went to the permissibility of the term "voices of lengthening and weakness" on 'al'alif in *qāla* and 'alwāw in *yaqūl* and 'alyā' in *yabī'*. 'al'alif, 'alwāw and 'alyā', in this form, represent what phonologists today call long vowels which are as follows (see: 1986, p 130 & beyond):

'al'alif, in modern phonetic custom is called a vowel, a long *fathah*, and its image in phonetic writing is thus ā: or aa based on the fact that repeating the symbol means the length of the vowel. It was natural that the determination of the long *fathah* depends on the determination of the short *fathah*, because they share all the characteristics of the pronunciation except the quantity or the length of time it takes to pronounce each, which necessarily lead to a difference in the degree of openness of the lips.

The short *fathah* is one of the three main vowels in the Arabic language. Like other voices, 'alfathah can be identified in more than one scientific way at the acoustic level:

1. It can be determined on the basis of its pronunciation and auditory effects, in the sense that we can describe 'alfathah with reference to the mechanism of pronunciation, with the process involved in the status of the organs of speech and its various vowels, and the resulting vibrations and voice waves up to the ear of the hearing and influenced it. This view, as it seems, includes three aspects that are inseparable. The first: phonetic, the second: natural or physical, and the third: auditory.

2. the vowel can be determined by its function in acoustic structure; by its value and acoustic meanings at a particular location. This is usually done by comparison or exchanging between a particular voice and other voices in similar contexts, such as comparison of 'alfathah in the word *yālsah* with 'alkasrah in the word *yīlsah*. This aspect is a functional aspect concerned with voices in terms of their functions in the composition, not voices in terms of physical utterance of pure pronunciation. For example, it viewed 'alfathah as a unit or element of a particular voice system, rather than as a spoken voice event.

the general definition of vowels applies to 'alfathah as a vowel, namely that "vowel is a voice occurs during the speech when the air passes freely through the throat and mouth without hindrance, and without narrowing the airway, narrow would cause audible friction, and without to deviate from the center of the mouth to the sides or one of them, which is usually a loud voice" (1986, p 132), but the identification as a *fathah*, depends on the placement of the tongue in the mouth, and the form of the lips when the pronunciation. 'alfathah, and if there are many forms of speech, is only one unit of voice functionally, because these forms are contextual forms produced by the different locations of voice in the composition, and not each of them is unique language value different from the value of other forms.

The long *fathah* generally has the same descriptions as the short *fathah*, except in two sub-properties. The first is in the difference of quantity, as the pronunciation of the long *fathah* takes a relatively longer time than the pronunciation of the short *fathah*, and the second is that the linguistic functions of the long *fathah* are compared in structure to the long *damma* and *kasrah*, not the short, like: *qāmā*, *qūmū* and *qūmī*. The exchange here between long vowels occurs in similar phonological contexts, and this exchange differentiates between meanings. But 'alwāw and 'alyā' in *yaqūl* and *qīl* are two long and pure vowels and they generally apply to what applies to 'al'alif in *qāla*.

#### 5. The Cardinal Vowels (see: 2003, p 213 & beyond)

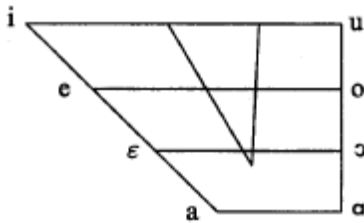
It refers to the following eight vowels [i, e, ε, a, α, o, u] in addition to the central vowel. Daniel Jones called the eight vowels the Cardinal Vowels, and called the opposite of the vowels the Secondary Cardinal Vowels, while Catford added to the designation of Jones, in relation to the eight vowels, the term *primary*, as opposed to secondary.

The theory of Cardinal Vowels is based on the fact that human languages must have a consistent standard to describe their vowels, which Jones saw as possible.

##### a. Basic Cardinal Vowels

1. The close front unrounded vowel, and its symbol is [i]. Their example in Arabic are the short and long *kasrah* in words: *sir* and *sīrī*.
2. The close-mid front unrounded vowel, and its symbol is [e]. Its example in English is: *said*.
3. The open-mid front unrounded vowel, such as tilting in Warsh reading, and in the Lebanese dialect.
4. The open front unrounded vowel, its example in Arabic is some forms of the *fathah* in such as: 'akala.
5. The open back unrounded vowel, its example in Arabic is the first and second *fathah* in the word: *qaṭa'a*.
6. The open-mid back rounded vowel, exemplified by *hot* in Scottish pronunciation.
7. The close-mid back rounded vowel, exemplified by the vowel in the French word *beau*.
8. The close back rounded vowel, its example in Arabic is some formulas of 'al $\mathit{d}$ amma in the word: *sīrū*.

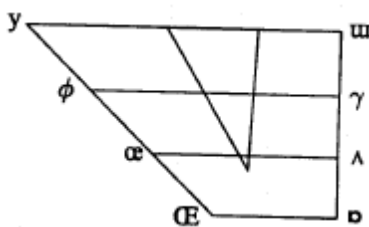
This figure illustrates the basic cardinal vowels:



## B. Secondary cardinal vowels

1. The close front rounded vowel, which is common in French.
2. The close-mid front rounded vowel, similar to the French vowel in the word *peu*.
3. The open-mid front rounded vowel, exemplified by the vowel in the French word *veuve*.
4. The open front rounded vowel.
5. The open back rounded vowel.
6. The open-mid back unrounded vowel, for example: the American pronunciation of the vowel in the word *cup*.
7. The close-mid back unrounded vowel. for example: the vowel in the word *good* in some American dialects.
8. The close back unrounded vowel.

The following diagram illustrates secondary cardinal vowels and their symbols



## Conclusion

The research discussed the vowel both sides of the term, concept, and also held a chapter for long vowels because of their importance in the ancient linguistic lesson as well as the modern. The research also attempted to differentiate between consonants and vowels, and touched on what is known recently as cardinal vowels, and dealt to its sections.

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