الصّوت اللّغوي في الدّرس العربي بين القدامى والمحدثين

The Linguistic Sound in The Arabic Lesson Comparison Between the Ancients and the Modern.

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Abstract

The field of Arabic linguistics has undergone a significant transformation under the guidance of eminent scholars who delved into the intricacies of the Arabic language. Their investigations extended from the analysis of individual phonetic elements to the examination of language structure and context. The study of linguistic sound, in particular, received considerable attention during its early stages. At that time, scholars relied primarily on self-observation due to the absence of auxiliary sciences like physics and anatomy. Nevertheless, they succeeded in providing a precise phonetic description of the language. This description was subsequently corroborated by advancements in technology and accompanied by scientifically substantiated explanations. This research paper aims to explore the theme of linguistic sound in Arabic, tracing its development from ancient to modern perspectives. Our objective is to

الملخص

عرف الدرس اللغوي في العربية تطورا وتحولا كبيرا على يد ثلة من العلماء البارزين الذين حاولوا سبر أغوار العربية، فبحثوا ونقّبوا في ثناياها بدءا بالصوت اللغوي باعتباره أصغر وحدة لغوية وصولا إلى البنى والتراكيب والأسيقة. قد حظيت الدراسة الصوتية في العربية باهتمام كبير في وقت مبكر جدا حيث اعتمد العلماء آنذاك على الملاحظة الفردية المجردة بسبب غياب العلوم المساعدة كالفيزياء والتشريح، ومع ذلك نجد أنهم حققوا نجاحا في هذا المجال؛ إذ أن الدراسات الحديثة وفق التكنولوجيات المتطورة أثبتت نتائج الأبحاث الموروثة واعترفت بسبق هؤلاء وفطنتهم.

تروم هذه الورقة البحثية إماطة اللثام عن موضوع الصوت اللغوي في العربية بهدف تتبع مراحل دراسته بين القديم والحديث.

discern the points of departure and convergence between these two periods of inquiry.		
Keywords :Arabic; Articulation; language; modern; Sound; traditional.		**كلمات مفتاحية: العربية؛ اللغة؛ الت ّمفصل؛ القديم؛ الحديث؛ الصوت.**

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1. INTRODUCTION

People all over the world have paid attention to their languages for various purposes, including religious and social reasons, nourishing tribal and ethnic tendencies. However, in the end, they serve the language in one way or another. Scholars, with their diverse perspectives and specialties, have dedicated themselves to researching, scrutinizing, and studying language in all its details, leading to the emergence of several specialized linguistic sciences. Perhaps the phonetic level is the first level relied upon among the levels of linguistic study, as it addresses the first building block in language, which is linguistic sound.

2. The Sound and the Letter:

Before delving into the topic of linguistic sounds, it is necessary to first differentiate between the concepts of sound and letter (harf= character) "*Ibn Jinni* defines sound as the bell (jarass= جرس), and it encompasses different voices. It is said 'He called out (sātta = صات) , makes a sound (yasoto= يصوت) , he has sounded (yosato= يصات) a sound (sawtan= صوتا) , and he caused to sound , and he called out (ʔāsat) and made it sound (sawata)';whenever a person calls out, it is considered a sound. It is also said 'He made a sound (sāta=صات) and produced a sound (sawtan= صوتا), so he is a caller (ṣāʔit)', meaning a caller (voicer= صائت).[1] *Ibn Al*-Sikkīt states, 'Sound is the voice of a person and others, and a caller (ṣāʾih= صائح) is the one who calls out or shouts'. When we talk about sound, it must be noted that it is not exclusive to humans, but all beings have sounds. *Ibn Jinni* says, 'Sound is the source of a thing's calling out, making a sound, so it is a caller

(voicer= صـائت=saʔit). And a sound that produces a sound, making it sound, so it is a sound. It is a general term and not specific. It is said, 'I heard the sound of the man and the sound of the donkey'. As evident in the verse ﴿إِنَّ أَنكَرَ الأَصْواتِ لصوْتُ الحَمِيرِ﴾ ﴿Verily, the harshest of all voices is the voice (braying) of the ass﴾. (Surah Lukman, 19)

This universality of sound is poetically captured in:

ka?'anama 'aswatoha fi alwadi 'aswato hajjin min Oman ghadi.[2]

Their sounds in the valley are like the sounds of a pilgrim heading from Oman.

Sound is the auditory form of expressing needs, meaning it's a means and method of communication. In customary terms, it's the bell of speech. Scientifically, it's air that travels through the vocal apparatus and spreads outside, creating movement in the external air. *Ibn Jinni* referred to this concept when he said, "A display that comes out with the breath, extending and connected."[3] It strikes parts of the air, causing it to vibrate with its movement. Then it strikes the nerve lining in the ear, shaping the nerve in its form. Finally, it reaches the imagination and is presented to the mind for understanding.

" (letter = character= harf) can have various meanings, حرفThe term " =*hadd* . As mentioned in *The* حد= taraf and *limit*= طرفincluding *edge* = '= letter = character=haraf denotes the حرف*Sahih*, it is stated: "The term ' edge, limit, and extremity of everything. This includes the term for a ' is one of حرفmountain, which refers to its *peak* and specified *limit*. The ' ﴿وَمِنَ ٱلنَّاسِ مَن يَعْبُدُ ٱللَّهَ عَلَىٰ the letters used in writing, and when Allah says: حَرْفٍ فَإِنْ أَصَابَهُۥ خَيْرٌ ٱطْمَأَنَّ بِهِۦ وَإِنْ أَصَابَتْهُ فِتْنَةٌ ٱنقَلَبَ عَلَىٰ وَجْهِهِۦ خَسِرَ ٱلدُّنْيَا وَٱلْـَٔاخِرَةَ ۚ ذَٰلِكَ هُوَ ٱلْخُسْرَانُ ٱلْمُبِينُ﴾

﴿*And there are some who worship Allah on the verge (حرف) ˹of faith˺: if they are blessed with something good, they are content with it; but if they are afflicted with a trial, they relapse ˹into disbelief˺, losing this world and the Hereafter. That is ˹truly˺ the clearest loss.*﴾*(Surah Hajj 22.11)* it is said to mean that they worship Him in prosperity but not in adversity.[4]

Ibn Jinni explains that whenever the root letters (ح.ر.ف) occur in speech, it

refers to "the limit and extremity of a thing, like the edge of a mountain, which is its limit and side...This is why the root letters are called 'حروف' (letters), because they mark the edges and facets of words, like the edges and facets of a thing."

Ibn Sina talks about the letter by saying: "The *letter* is a form for sound that opposes it, distinguishing it from another sound like it in terms of intensity and weight."[5]

From this perspective, the letter is more specific than sound. It takes shape by the air passing through the vocal tract encountering barriers that prevent it from extending, thereby acquiring distinct and varied characteristics due to differences in the locations of air interruption and its quality. This explains the presence of several letters sharing phonetic characteristics related to the unified phonetic nature among them as is the case with (siin=s= سين=س and zay= z= زاي=ز).

For the study of linguistic sound, it is essential to refer to the science of phonetics. This science deals with the study of the changes that occur in the speech organs during the realization of speech sounds, determining their articulation and characteristics within the framework of this science.

3. The Science of Articulatory Phonetics/The Science of Sounds:

This science has been around since ancient times and has received extensive study and examination. In their early days, scholars relied on self-observation resulting from repeated pronunciation of sounds and attempted to determine their articulation and characteristics, due to "the lack of mechanical and anatomical means available in their era". However, they soon benefited from the science of anatomy and the available tools and equipment.[6] The importance of this science is evident in the study and classification of sounds, which is usually based on two considerations: an organic-physiological consideration, which involves the location of sound production or its articulation, and a phonetic consideration, which involves the nature of the sound or the quality it exhibits in its pronunciation.[7]

3.1.Speech Apparatus in the Ancients:

The ancient Arab scholars spoke about the speech *apparatus* and its

components on several occasions, but they did not give it a specific and precise name. *Ibn Sina*, for example, referred to it as the "*instrument of sound*."[8] Al-*Khalil ibn Ahmad al-Farahidi* described the speech organs and specified their functions through his discussion of the articulation of letters, as can be found in his statement: "The 'ain= عين=ع , ha'= هاء=ه, kha'= خاء=خ, and ghain= غين=غ are *pharyngeal* because their origin is in the pharynx." Here, he refers to the pharynx without providing a definition or anatomical dissection, and he followed the same method with the rest of the organs. As for *Sibawayh*, he traced the footsteps of his teacher *Al-Khalil* and followed the same approach but provided a more precise division of the speech organs. For example, he talked about the parts of the pharynx, dividing it into three: the upper part, the middle, and the lower part. [9] He also spoke about the tongue and the palate, and their respective parts. For instance, he said: "The farthest part of the tongue, and what is above it from the palate, is the exit for the letter Qaf=قاف=ق. Below it, from the location of Qaf on the tongue, a little, and what follows from the upper palate is the exit for the letter Kaf=k=كاف=ك. In the middle of the tongue, between it and the middle of the upper palate, is the exit for the letters Jeem=/dʒ/=جيم=ج, Sheen = /ʃ /, and Ya'ʔ/j/= y=ياء=ي. At the front edge of the tongue and what follows from the molars is the exit for the letter Saad. The front edge of the tongue from its lower part to the tip of the tongue, between it and the upper middle palate, and above the molars is the exit for the letter Nuun= /n/= نون=ن." He also mentioned the teeth, saying: "...and between the tip of the tongue and the roots of the molars is the exit for the letters Ta'ʔ=/t/= تاء=ت, Dal=/d/=دال=د, and Ta'ʔ=(emphasized t)= طاء=ط...". He mentioned the lips in his statement: "And between the two lips is the exit for the letters Ba'ʔ=/b/=باء=ب, Meem=/m/=ميم=م, and Waaw=/w/=واو=و."

Ibn Jinni mentioned a comparison for the speech apparatus in his statement: "Some likened the throat and the mouth to a flute, for the sound comes out of it straight, smooth, and simple, just like the sound of 'Alif' =/a/= ألف=أ flows effortlessly without artifice. When the flutist places his fingers on the holes of the flute and changes his technique, the sounds differ, and for each

hole, there is a sound that doesn't resemble its source. Similarly, when the sound is produced in the throat and mouth using different positions, it is the reason we hear these various sounds."

Similarly, the string of a lute is an analogy. When struck while it is stretched, you hear a sound. If the player restricts the end of the string with some of his left-hand fingers, a different sound is produced. If he slightly loosens it, you hear something other than the first two sounds. Likewise, every time he moves his finger closer to the beginning of the string, different echoes form. However, the sound produced by the string, much like that of the flute, is not confined; you find it in addition to what it produces while being compressed, constrained, smooth, and vibrating. This varies with the strength, rigidity, weakness, and looseness of the string. In this representation, the string is like the throat, and the strike with the pick on it is like the first sound from the farthest part of the throat. The flow of sound in it is unrestricted, much like the flow of sound in the stationary 'Alif' =/a/= *ألف*=أ along with the pressure and restriction it encounters from the fingers, similar to what happens with the articulation of letters in the syllables. The differences in sounds there are akin to their differences here.[10]

In his discussions concerning the articulatory system, *Ibn Jinni* incorporated references to the anatomical components of speech organs, often in conjunction with the articulatory positions of specific letters. For instance, he stated, "Above the premolar, the canine, the quartet, and the incisors, serves as the point of articulation for the letter 'lam=/l/=L= *لام*=ل... and from the tip of the tongue, positioned between it and the area above the folds, emerges the articulatory position for the letter 'nuun= n= *نون*=ن'" Furthermore, he elaborated on the articulatory origin of the letter 'nuun= n= *نون*=ن,' stating that it emanates from the nostrils (nasal sound) , either light or indefinite (nunation= sukoon=*سكون*) .

Shifting to the contributions of Ibn Sina in the field of vocal system description, it is worth noting that he offered meticulous and comprehensive insights, surpassing his predecessors in precision. His medical background

played a significant role in this endeavor. *Ibn Sina* provided detailed explanations of various speech organs, with a particular focus on the larynx and the tongue [11].

Ibn Sina made significant contributions to the study of the vocal apparatus. Drawing on his expertise as a physician, he provided detailed and precise descriptions, surpassing his predecessors. *Ibn Sina* delved into the intricacies, particularly focusing on the larynx and the tongue. He described the larynx as composed of three cartilages: the thyroid cartilage, the cricoid cartilage, and a third cartilage he named 'al-Makbi,' referring to its heart-like shape. However, his attention to the anatomy of the tongue was not as comprehensive as that given to the larynx. While he provided an extensive description of the tongue, he didn't pay as much attention to the detailed differentiation between its external and internal muscles.

In the course of his research on the vocal system, *Ibn Sina* did not overlook the nose; however, he did not treat it as a singular entity with distinct functions. Instead, his exploration of the nose's role within the vocal apparatus was limited in comparison to his in-depth examination of other components.

The articulation apparatus is comprised of:[12]

- ***Diaphragm***: It is an extended muscle that separates the chest cavity from the abdominal cavity. This muscle is capable of upward and downward movement, aiding the lungs in contraction and expansion. The lungs are responsible for the respiratory process, which involves inhalation and exhalation. *Al-Farabi* discussed their role in producing sounds, stating: "The air that a person draws into his lungs from the outside and into his chest, to be taken by the heart and then pushed out when warmed, if a person exhales this breath all at once and stops without producing a noticeable sound. However, if a person contains this air in two lungs and the area beneath the throat, and releases it gradually, touching the concave of the throat and striking its parts one after another, a sound is produced, similar to what happens when air moves through musical instruments."[13].
- ***Trachea***: This group of cartilage is densely arranged in the shape of

a tube, serving a dual role as a resonator and an air passageway during the process of respiration.

- ***The pharynx***: It constitutes the route for food passage to the stomach and functions as an acoustic chamber for sound amplification. Situated posterior to the trachea, it fulfills both of these roles.
- ***The larynx*** :It is composed of a cluster of cartilages, encompassing the cricoid and thyroid cartilages, the pyramidal cartilages, and the epiglottis. Furthermore, the larynx houses the two vocal cords within its structure.
- ***The two vocal cords***: They are two siblings that extend from the back to the front in a horizontal manner and surround the larynx. The two vocal cords can exist in different positions:

-Open mode : This is the position when breathing and when making whispered sounds.

-Vibration mode*:* When the two vocal cords make contact and air flows through them, they vibrate, creating a musical tone characterized by specific attributes, including the degree of fluctuation and others. This mode of vibration is responsible for the production of voiced sounds.

-Distortion mode [14]: "The position of breathiness: The vocal cords may come close together unevenly, creating a wider gap on one side compared to the opposite side, allowing air to pass through, causing noise but without the vibration of the vocal cords. This is known as breathiness. When they separate, the sound of the glottal stop hamza /ʔ/= ء is produced, which is another position of the vocal cords."

- ***The Throat*** [15]: Alternatively termed the glottis. The throat space denotes the area situated between the farthest extent of the tongue and the posterior wall of the throat. This region also serves as the juncture connecting the mouth to the esophagus. According to Al-Khalil's classification, the throat is divided into three parts: the uppermost part, the lower part, and the interior."
- ***The Uvula***: This is a prominent anatomical feature located within the human mouth, suspended from the terminus of the soft palate.

- ***The Upper palate***: It constitutes the upper surface of the mouth, bounded anteriorly by the teeth and posteriorly by the uvula. Furthermore, it can be further subdivided into:
    - ***Soft palate***: It is referred to as a soft moving part known as the palate [16].
    - ***Hard palate***: It is known as the middle of the palate or the antrum, and it is a fixed part.
- ***The front palate***: By this, we mean the gingiva, which is the part adjacent to the upper teeth.
- ***The Tongue***: being the most pliable and mobile organ in the oral cavity, possesses the remarkable capacity to shift, alter its position, change shape, and vary in length. It plays a pivotal role in the articulation of speech sounds and can be divided into five distinct sections:
    1. The Tip (*الذولق*): This is the front most part of the tongue.
    2. The Blade (*الشفر*): It is located just behind the tip.
    3. The Front (*الأمام*): This section extends from the blade to the area just behind the front teeth.
    4. The Middle (*الوسط*): It is located behind the front section.
    5. The Back (Root) (*الخلف*): This is the rearmost part of the tongue.
- ***The Teeth:*** We mean the upper and lower teeth. Teeth are used in pronouncing some sounds to the extent that certain sounds are attributed to them. For example, we say dental sounds like 'tha= /θ/='ث, 'da'=/d/=د. 'ta'=/t/=ت, 'dha'=/ð/=ذ, and 'ta'= emphatic /t/= ط.
    - ***The lips***: The lips adopt different positions during speech, and thus they hold a prominent place among the speech organs.Both *Al-Khalil* and *Sibawayh* highlighted the significance of the lips in multiple instances within their discourse on speech sounds.[17]
    - ***The Nasal Cavity*** : It is a cavity adjacent to the soft palate that allows air to pass through. It is considered a resonating chamber where sounds are amplified. The nasal cavity is recognized as a resonating chamber where sounds undergo amplification. [18].

3.2.The Articulatory Apparatus in Modern Linguistics:

Contemporary linguists have provided precise descriptions of the articulatory system, drawing upon insights from the field of medicine, particularly anatomy. The vocal apparatus encompasses components of the respiratory system, as well as elements of the digestive system, primarily manifesting as the teeth and the tongue. In terms of their depiction of this anatomical structure, modern scholars did not deviate significantly from their predecessors, differing mainly in the methodologies and approaches employed, which are enriched by advancements in modern technology. Despite the availability of sophisticated machinery and laboratory resources, they relied, to a significant extent, on the insights handed down by ancient scholars. It is plausible to assert that the advantage held by contemporary linguists lies in their capacity to corroborate and scientifically substantiate the findings of their predecessors, offering a meticulous examination characterized by precision and thoroughness. This approach has endowed the study of phonetics with enhanced credibility, facilitated by rigorous laboratory research.[19]

4.Articulation and Characteristics of Sounds:

The Arabs' primary interest in their language, Arabic, and consequently in the science of sounds, can be traced back to their accurate recitation of the Quran and their commitment to preserving their language from erosion. They meticulously studied the sounds of this language, refining its pronunciation. This led to the emergence of phonetic studies among the Arabs, characterized by distinctive phonetic features and regional dialectical variations found in the recitation of the Quran. The process of transcribing the Quran, perfecting its script, and the rise of linguistic and grammatical sciences all contributed to the development of phonetic studies among the Arabs.[20]

For a learner of the Arabic language, it is imperative to master its pronunciation by understanding the articulation points of its letters and their characteristics. The articulation point and characteristic of a letter serve as its identification card; without them, it cannot be properly realized or

understood. Thus, a reader of the Quran must be proficient in the language before delving into its recitation. This necessitates an understanding of the articulation points and characteristics of the letters. As stated by linguistic scholars, "The initial step in mastering Quranic recitation is to accurately pronounce each letter from its specific point of articulation, distinguishing it from others. This requires training the tongue and mouth with exercises that lead to a natural and refined pronunciation. When a letter shares its articulation point with another, the only distinguishing feature is its characteristic, as seen with hamza=/ʔ/= ء =همزة and ha ʔ′= h=هـ = هاء , which share an articulation point but differ in voicing and shadda *(*the emphasis or stress that is added to certain letters to highlight and define them with force in pronunciation)."

This meticulous approach by the Arabs, driven by their reverence for the Quran and the desire to safeguard their language, laid the foundation for the scientific study of phonetics in the Arabic language.

4.1.Sound Articulation (exit= Makhraj):

The "Makhraj"= مخرج is the point of *exit*. It is said, "he exited with a sensation, and this is his makhraj." In terminology, it refers to "the location where sound terminates,[21] meaning it's the place where sound is produced and occurs. Scholars have been interested in the makharijs (exits or points of articulation) and sifats (characteristics) of sounds since ancient times. They understood the concept well, but didn't extensively define it, as they had a complete grasp of it, were in agreement about it, and left the matter of terminology while focusing on explanation, analysis, and justification.

Regarding the issue of makharijs (exits or points of articulation) , one observes a difference among scholars in their count. According to *Al-Khalil ibn Ahmad Al-Farahidi* (175 AH), there are seventeen (exits) *makharijs*. This is the Makkan school of thought also followed by *Makkī bin Abī Ṭālib* (467 AH) and *Ibn Al-Jazari* (833 AH), and it was empirically confirmed by *Ibn Sina* (428 AH). On the other hand, *Sibawayh* stated that there are sixteen makharijs (exits), omitting the makhraj (one exit) of the hollow letters and distributing them among the makharij of the throat, tongue, and

lips. He placed *Alif* = A= أ = ألف with Hamzah = a= ء =همزة in the farthest part of the throat, Ya'= y= ي = ياء of elongation with non-elongated *Ya'* in the middle of the tongue, and Waw= w= و =واو of elongation with non-elongated *Waw* of the lips.

The scholars like *Imam Qutrub* (206 AH), *Al-Farra* (207 AH), and *Ibn Duraid* (321 AH) identified fourteen articulation points (makharij), thereby reducing the original number, much like *Sibawayh* did. They grouped the letters, such as 'lam'=L= ل = لام, 'nuun'=n= ن =نون, and 'ra'ʔ = r=ر= راء, under a single articulation point, which is the tip of the tongue. The majority of scholars agreed that the number of articulation points is the same as the number of letters, which is twenty-nine articulation points. They assigned a specific articulation point for each letter.

The terms related to articulation points were diversified by *Al-Khalil*. He was the first to study the sounds based on their positions in the vocal apparatus, relying on the sensitivity of his linguistic sense that led him to conclude that there are various articulation points and phonetic pathways for the Arabic letters. This was the result of his linguistic precision and his grounding of the matter by returning to the linguistic heritage he gathered from the mouths of the Arab people, spanning various regions. He mentioned the "mudarrij"=مدارج (articulation points) and the "ahyaz"=أحياز (phonetic pathways), and we will proceed below to define these terms.

"Al-Ahyaz" is the plural form of "hayīz" and in language, it refers to the act of joining and gathering. For example, we say "the space (hayīz) of the house includes the attached facilities... and in war, a group joins another group".

In terminology, it denotes the articulation point where multiple letters converge, and a group of letters is attributed to it. Al-Khalil mentions "al-ahyaz" in many instances, such as when discussing the letters of elongation, he states: "...they do not have a space (hayīz) to be attributed to except the hollow (jawf)". He also says: "And the letter meem= M= م = ميم is among the six sibilant letters that are in two articulation points: the space (hayīz) of the lips and the space (hayīz) of the base of the tongue... and it is the last

letter in the first space (hayīz), which is the bilabial space." [22]

The spaces or Al Ahyaz are divided into sections:[23]

- ***The Bilabial space*** *(الشفهية):* Involves the participation of the lips or the lower lip and the upper incisors.
- ***The Alveolar space*** *(الذلقية):* Involves the contribution of the front of the upper palate (the alveolar ridge) and the tip of the tongue.
- ***The Palatal space****(شجرية):* Refers to the palate.
- ***The Velar space*** *(صفاقية):* Relates to the soft palate (the velum) from the upper palate and the back of the tongue.
- ***The Uvular space****(اللّهاة):* Involves the uvula and the epiglottis in producing certain sounds, like the sound of the letter "qaf= ق=قاف".
- ***The Pharyngeal space*** *(حلقي):* Relates to the throat.

The Madarrijs= Pathways (Articulation points) :

Al-Khalil ibn Ahmad al-Farahidi uses the term "Madraj" in his statement: "In Arabic, there are twenty-nine letters, of which twenty-five are consonants with articulation points and articulation pathways (Madarrijs). The five vowel letters are: waw= w= و =واو, yaa= y=ي=ياء, soft alif = a= ا =ألف اللينة, hamzah =ʔ= ء =همزة. They are called vowel letters because they originate from the oral cavity and do not fall into any of the articulation points of the tongue, nor the articulation points of the throat, nor the articulation point of the uvula. They are like an emptiness in the air, and they do not have a specific place to be attributed to except the inner (al jawf) cavity.[24]

Perhaps what *Al-Khalil* meant by the term "Madraj" is "the position where the aspirated air is interrupted in the pathway of the vocal apparatus by one of its organs or a part of them, in a specific and defined manner, resulting in the realization of a distinct sound different from other letters."[25].

In another phrasing; it is the specific point where a particular letter is produced exclusively. The articulation point is broader than the articulation pathway. The pathway (Madraj) is where a letter is specifically realized, while the space constitutes an environment for a group of letters, each with a distinct articulation point and different pathways. For example, the

alveolar and labial letters, six in total, emerge from the alveolar ridge, and the lips, constituting the articulation points for these letters. [26]This places the similar letters under one articulation point within a single space.

4.2.Classifying Sounds Based on Their Articulation:

Scholars have devoted significant attention to the locations within the vocal apparatus where sounds are produced, meticulously identifying and studying these articulatory points. Subsequently, they have ascribed specific sounds to these points and organized them into classifications based on their respective articulatory exits.

A. For Al-Khalil:

Al-Khalil, in his book "Al-Ayn"= "*العين*" , arranged the sounds in ascending order from the innermost point of the vocal apparatus, which is the farthest point in the throat, to the outermost point, which is the lips. *Al-Khalil* categorized these sounds as follows:

1. ***Glottal Sounds***: Such as 'ayn = ع = عين and ḥāʔ = ح= حاء , hāʔ= h= هـ , khā= خ=خاء and ghayn= غ because their origin is in the glottis.
2. ***Uvular Sounds***: Such as qāf *(ق)* and kāf =K= ك كاف because their origin is in the *glottis*.
3. ***Palatal Sounds***: Such as jīm=J= ج= جيم and shīn=sh,ch= ش=شين and dhāl = /ð/because their origin is in the roof of the mouth.
4. ***Lingua-alveolar Sounds***: Such as ṣād= ص = صاد strong /s/, like the sound in "side" and siīn=s = س=سين and zāy = /z/=ز زاي because their origin is in the front part of the tongue.
5. ***Interdental / linguo-gingival sounds*** : Such as ḍād (ض) and dhāl= /ð/ (ذ), and thāʾ (ث)= /θ/, because their origin is in the *gingiva*.
6. ***Alveo-palatal Sounds***: Such as ṭāʾ= ط= and tāʾ= t=ت= تاء and dāl=d= د = دال because their origin is in the tip of the tongue.
7. ***lingua- denta Sounds*** : Such as rāʾ= r= ر راء and lām=L=ل= لام and nūn=n=ن=نون because their origin is in the dental region.
8. ***Labial-Dental Sounds***: Such as fā= /f/,/v/= ف فاء and bāʾ= b=ب=باء and mīm=m=م= ميم because their origin is in the lips.

These classifications are based on the articulation points where the sounds

are produced in the vocal apparatus.

B. For Sibawayh:

Sibawayh followed in the footsteps of his teacher Al-Khalil in classifying sounds and attempted to rectify his shortcomings. He categorized the sounds into groups as follows:":[27]

1. Farthest in the Throat: Hamzah (ء)= /ʔ/, Haa' (هـ), Alif (ا)= ألف.

2. Middle of the Throat: Ayn (ع), Haʔ' (ح).

3. Lowest in the Throat: Ghayn (غ), Khaʔ' (خ).

4. The Tongue and the Area just above it in the Upper Palate: Qaf (ق).

5. Below the Position of Qaf in the Tongue, Slightly Lower and the Area Following in the Upper Palate: Kaf (ك)=/k/.

6. Middle of the Tongue, between it and the Middle of the Upper Palate: Jeem(ج)=/ʤ/, Sheen (ش)=/ʃ/, Yaʔ' (ي)= /j/.

7. First Edge of the Tongue and the Molars Following it: Saad (ص).

8. Edge of the Tongue from its Bottom to the End of the Tongue, between it and the Area Following in the Upper Palate, and above the Incisors, Canines, Premolars, and Gums: Laam (ل)=/l/.

9. Edge of the Tongue from its Bottom to the End of the Tongue, between it and the Area Following in the Upper Palate, and above the Premolars: Nuun (ن)=/n/.

10. From the Exit of Noon but slightly inside the Back of the Tongue: Raaʔ' (ر)= /r/.

11. Between the Tip of the Tongue and the Roots of the Premolars: Taa' (ط)= emphatic /t/, Daal (د)=/d/, Taa' (ت)=/t/.

12. Between the Tip of the Tongue and the Upper Premolars: Zay (ز)= /z/, Seen (س), Saad (ص)= emphatic /s/.

13. Between the Tip of the Tongue and the Tips of the Premolars: Taa' (ط)= emphatic /t/, dhāl= /ð/ (ذ), Thaa' (ث)=/θ/.

Classification of Sounds According to Phonemic Attributes (Sifats):

Sifa = Attribute is considered as the second criterion for classifying sounds. Scholars have adopted it since ancient times, encompassing it with study and examination according to their phonetic research. They did not assign it

a specific term or conduct an independent study, but rather addressed it in the midst of their discussion about the letters.

The Concept of the Phonetic Attribute:

Modern phoneticians refer to the phonetic attribute as "a position that reveals the letter when it is articulated at the exit."[28], while the ancients did not know it, but rather mentioned the attribute directly, as we find with Ibn Jinni in his saying: “I know that the letters in their different genders have divisions that we mention.”[29]. The author of *Al-Kashaf* mentioned it when he said: “The divisions of letters are according to their sounds: they are divided into the loud, the whispered, the strong, the soft, the plosive, the open, the extended, and the low.”[30]

5.The Articulations and Phonetic Attributes According to Modern Linguists:

The study of phonetics has transitioned from the stage of self-observation relying on senses for description and analysis, to a more precise and scientific stage, harnessing various sciences and technologies to study sound. This doesn't negate the reliance of contemporary scholars on the efforts of the ancients in this field, considering them as fundamental building blocks and honoring them for all they contributed in service of the Arabic language, safeguarding it from oblivion.

The modern scholars categorized the linguistic sounds based on their articulation points, dividing them as follows:

1. *Labial Articulation*:

- **Bilabial**: This occurs when both lips fully come together and the air passes through, producing sounds like baaʔ = /b/= باء=ب, meem= /m/= م = ميم, and waw= /w/=واو=و.

- **Labiodental**: This is the articulation of the letter faaʔ= /f/= فاء=ف, where the lower lip touches the upper teeth, narrowing the airflow.

2. *Dental Articulation*: When the tip of the tongue touches various positions of the teeth, trapping the air at a certain point and producing sounds after release. This category is further divided into:

❖ **Dental Alveolar**: The tongue slightly lowers, falling between the

upper and lower teeth, allowing the airflow to create sounds like dhaaʔ= /ð/=ظاء الظاء, dhaal=/ ð /=ذ ذال, and thaaʔ= /θ/= ث الثاء.

❖ **Gingival Dental**: The tip of the tongue connects with the upper teeth or the front part of the tongue with the gums, producing the letters: Dhaad=/ð/= ض ضاد, Daal=/d/=د دال, Taa ˠ(emphatic T)= /t/=ط طاء, Taa= /t/= ت تاء Zay=/z/=ز زاي, Saad= emphatic s= /s/= ص صاد, and Siin=/s/=س سين.

❖ **Dental Lateral**: In specific cases observed by scholars in particular languages.

3. ***Palatal Articulation***:[31]This is based on the movement of the tongue surface aligning with the palate. It's divided into:

- **Alveo-Palatal**: When the tongue surface connects with the front part of the palate, producing what's known as the "*shajariyya*"=palatal sounds, such as shiin=/ʃ/=ش شين, jeem=/ ʤ /=ج جيم=, and yaaʔ= /j/=ي ياء.
- **Uvular** : When the tongue surface connects with the back of the palate, resulting in the sound qaf= resembles /k/= ق قاف

4. ***Velar Articulation***: It refers to the articulation point where the surface of the tongue contacts the soft part of the back of the roof of the palate. The letters associated with this articulation are :kaf=/k/= ك كاف, ghain = غ= غين, and khaaʔ= خ= خاء.

5. ***Pharyngeal articulation*** : It occurs when the back wall of the *pharynx* contracts, producing sounds like ayn= ع= عين and ha ḥaʔ= ح=حاء

6. ***Fricative Articulation***: It happens when the tongue extends to the bottom of the mouth, creating a shape that allows air to pass through. The front of the tongue then connects with the front part of the palate.

7. ***Chinat Articulation***: The front of the tongue connects with the middle part of the palate, creating a cavity that serves as a resonating chamber, altering the nature of the sound. This articulation is responsible for producing sounds like shiin=/ʃ/=ش شين.

8. ***Glottal Articulation***: This sound is produced when the vocal cords close or vibrate. It's responsible for the sounds of the glottal stop hamza =/ʔ/=ء= همزة and haa= /h/= هـ= هاء.

These classifications provide a detailed insight into the diverse range of articulation points that form the basis of linguistic sounds in the Arabic language.

6.Conclusion:

The Arabic language is a vast sea and a fertile field for study and research. Scholars have excelled and outshined, especially in linguistic research, including syntax, morphology, and other honorable sciences related to the Arabic language. Phonetics, despite not initially being the focus of dedicated works and compositions, received significant attention in their studies. Their works were scattered insights and flashes here and there, but they were valuable and served as a foundation for those who followed them. Later researchers subjected the findings of ancient scholars to the scrutiny of machinery and scientific experimentation. They valued and scientifically affirmed the results of self-observation, continuing the path set by their predecessors. We, in turn, invite researchers in the field of phonetics to benefit from various technical sciences in service of the Arabic language, especially in the field of artificial intelligence, which has the potential to facilitate and elevate this science.

7.Footnotes:

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