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Abstract :

This article examines the concept of the vocal apparatus in Arabic linguistic heritage and modern phonetic studies, showing how early Arab scholars described the organs of speech and their role in sound production through observation and analysis, while modern linguistics developed a more systematic and scientific approach to the same concept. It particularly highlights the contribution of Kamal Bishr, who viewed speech production as a coordinated process involving several articulatory organs rather than a single point of articulation, and also discusses the problem of terminological variation in phonetic literature, which leads to confusion in defining the same concept, ultimately stressing the importance of precision and clarity in linguistic terminology.

Keywords: Vocal apparatus – Phonetics – Articulation – Terminology.

Introduction:

The vocal apparatus is considered one of the most important topics addressed in linguistic and phonetic studies due to its fundamental role in

the production and formation of speech sounds. Ancient Arab scholars devoted considerable attention to this apparatus through detailed investigations of the organs of articulation and their functions, laying the foundations for the study of speech production within the Arabic linguistic tradition. This interest continued to develop in modern linguistic studies, which sought to reconsider phonetic terminology and redefine it within more scientific and objective frameworks. As a result, different perspectives emerged regarding the nature of the vocal apparatus, the functions of its constituent organs, and the appropriateness of the terms used to designate it. This article examines the concept of the vocal apparatus from both traditional and modern perspectives, focusing on traditional awareness of the vocal apparatus and its organs, the role of the articulatory system in the formation of speech sounds, and the evolution of phonetic terminology in modern linguistic studies. Particular attention is given to the contributions of modern scholars, especially Kamal Bishr, whose critical reflections contributed to the reformulation of the concept of the articulatory system within contemporary phonetic research. Accordingly, this study seeks to answer the following question: How has the concept of the vocal apparatus evolved from the Arabic linguistic tradition to modern linguistic studies, and to what extent has this evolution contributed to the development and stabilization of its phonetic terminology?

1 The Vocal Apparatus in the Arabic Linguistic Tradition:

1.1 Traditional Awareness of the Vocal Apparatus and Its Organs:

Deep reflection in any science depends on understanding its terminology, which carries its principles, theories, and serves as a means of expressing its various concepts. Talking about scientific terminology is therefore an

urgent necessity imposed by the needs of different sciences, including “phonetics,” where both ancient and modern scholars devoted great efforts to the precise study of phonetic terminology. Kamal Bishr is considered one of the most prominent modern scholars who contributed to serving the Arabic language, especially in its phonetic aspect. He produced several works, including the book “Phonetics,” which was rich in various phonetic topics characterized by precision, comprehensiveness, and quality, which we will study and analyze.

The phonetic aspect of linguistic study did not escape the attention of the first generation of Arab scholars, who produced studies that touched all its aspects and analyzed all its details. Among these studies was their discussion of the articulatory apparatus, its organs, and their functions. Among them was Al-Khalil ibn Ahmad al-Farahidi, who invented a scientific method based on analyzing the sounds of words and observing their articulation in the oral cavity. "It seems that Al-Khalil was aware of the vocal apparatus, its structure and components, and its cavities and pathways, so he was able to determine the places of articulation of sounds," [1] and the speech organs responsible for their production.

Ancient Arab scholars spoke about the vocal apparatus with all its organs and functions. Sometimes they mentioned it explicitly, and at other times they referred to it indirectly, as in Ibn Jinni's statement: "Some compared the throat and the mouth to a flute." [2] Here he was referring to the articulatory system, meaning that “by throat and mouth he meant the entire vocal apparatus, which was common at that time as they represented the vocal system.” [3] Thus, the organs responsible for the speech process and sound production are the articulatory organs. He did not explicitly mention the articulatory apparatus but referred to it through its component organs.

1.2 The Articulatory System and the Formation of Speech Sounds:

Any student of phonetics must be familiar with the organs of articulation involved in forming speech sounds produced by the articulatory system as a whole, which is “called the place of articulation, i.e., the point at which the greatest narrowing of the mouth occurs,”[4] since the place where the speech sound is produced is the articulation point. "It was called by ancient Arab scholars “al-majra” or “al-mahbis,” while Western phoneticians called it “point of articulation” (point d’articulation)",[5] meaning that Arab scholars considered the sound to be produced from a single articulation point by using the singular form.

Kamal Bishr objected to this singular form, because "a single point cannot alone produce a sound; rather, other organs must participate in the production process according to the structural configuration of the sound".[6] The vocal apparatus is responsible for producing speech sounds and “is similar to a musical instrument, or even the most complete musical instrument in terms of flexibility and possibilities, because it has the remarkable ability to produce an unlimited variety of speech sounds.”[7] Each organ of the articulatory system can contribute to producing an unlimited number of sounds with the help of other fixed and mobile parts.

Researchers differed regarding the full utilization of the speech apparatus, which led to similarities between human languages in some sounds and differences in others, depending on the extent to which each language uses the capabilities of the articulatory system. For example, "Indo-European peoples did not use all the articulatory possibilities of the throat, which is why some of their languages lack the sounds /x/ and /ʕ/, unlike Arabic and most Semitic languages".[8] In Arabic and similar

languages, the speech sound is associated with an organ while all parts of the vocal system participate together in its production.

The speech sound is a natural phenomenon originating from the articulatory system and resulting from the combined functions of a group of speech organs. This system is referred to by different names among both ancient and modern scholars." Among early scholars, Al-Dani used the term "speech organs," as in his statement: "...separating the organs means removing them from their places." [9] Here, "organs" refers to speech organs responsible for forming sounds in humans.

2 The Vocal Apparatus in Modern Linguistic Studies:

2.1 Phonetic Terminology between Multiplicity and Confusion:

Tajweed scholars were among the first to use the term "speech instrument," where the word "instrument" also refers to sound production and its rapid movement." Al-Rida also used the term "instrument of letters" at times and "instrument of sound" at other times". [10] The term "instrument of sound" is closer to the physiological aspect of sound production and is closer to being synonymous with "vocal apparatus," "articulatory system," and "phonatory system" used by modern scholars, and it seems he succeeded in choosing the most appropriate term.

Some modern scholars considered these names to be closer to metaphor than to scientific objectivity, including Kamal Bishr, who argued that what scholars called "speech organs" such as the lungs, trachea, larynx, mouth, and nose are merely metaphorical designations. He stated that speech organs do not only function to produce speech sounds, since they have other more important functions; for example, "the tongue's primary function is tasting and moving food". [11]

Hussam al-Bahnasawi agreed with him, stating that “we must realize that humans do not possess an independent speech apparatus, because what we call the speech apparatus—by extension—is a system whose organs share the function of speech, but it is not incorrect to say that speech is the most prominent function of this system.”[12] What happens in phonetics is that scholars have linked speech organs to speech production while neglecting their primary biological functions.

The organs that produce speech sounds have primary biological functions such as digestion and respiration. "Because they contain cavities and flexibility beyond what is needed for these functions, God enabled humans to use them secondarily for sound production".[13] Thus, these organs have biological roles in all living organisms without exception. However, the terms “speech organs” and “speech apparatus” are closer to phonetics than to physiology and anatomy, even though these organs have other important roles in human life. The inability to produce speech due to muteness does not mean that these organs are incapable of performing their primary biological functions. A mute person’s tongue performs all the functions of a normal tongue except speech and sound production.

Modern phonetics scholars tend to use the term “speech apparatus,” which is close to the term “speech instrument.” One scholar stated: “The organs involved in sound production form a tubular structure with a complex shape extending from the diaphragm below the lungs to the lips,” meaning that these organs together contribute to the formation of speech sounds, starting from the lungs and ending at the lips as air passes through all speech organs.

Hadi Nahr also used the term “phonatory system,” stating: “Modern scholars have extensively discussed the ‘phonatory system’ in its three components...”[14] Some scholars preferred the term “element” or “instrument,” saying: “...distinguishing the primary active element (instrument) of sound from other assisting elements...”[15]

The terms “instrument” and “system” are synonymous, although the system consists of several instruments." The common usage is that “instrument” refers to smaller devices, while “system” refers to larger ones".[16]

What we observe is a multiplicity of terms for a single concept, which is a common phenomenon in phonetic literature, known as terminological confusion.

2.2 The Articulatory System in Modern Linguistic Studies:

Kamal Bishr frequently discussed the speech apparatus in many parts of his book “Phonetics.” However, regarding the term he adopted, he sometimes used only the term “speech organs” to refer to the articulatory system without explicitly mentioning the speech apparatus, as in: "...this aspect is represented in the process of articulation from the speaker’s side and the movements of the speech organs involved in this process,"[17] preferring to refer to the speech apparatus through its organs.

This is also found in Sibawayh, who sometimes mentioned the throat and mouth to refer to the speech apparatus, and at other times explicitly used the term “speech apparatus,” as in: “The process of speech production represented in sounds produced by what is called the speech apparatus... the waves and vibrations occurring between the speaker’s mouth and the listener’s ear, as a result of movements of the speech organs and as a direct effect of these movements,”[18]

At other times he used both terms together: "...determining articulation points and specifying the movements of speech organs... and mere attention to these processes is enough to develop special abilities in the learner that enable them to discover what is happening in the speech apparatus,"[19]

Kamal Bishr's ideas fluctuate between implication, explicit statement, and combining both. Like most modern scholars, he preferred the term "speech apparatus," because it carries a more scientific and objective meaning than earlier terminology. As mentioned earlier, a system usually consists of several instruments, as is the case with the speech apparatus, which is composed of several organs working together from the lungs to the lips. Thus, Kamal Bishr appears in this aspect as an innovator rather than a follower.

Conclusion

It becomes clear from this presentation that the vocal apparatus is a central axis in both classical and modern phonetic studies, and its conceptualization has evolved from partial description in early scholarship to more precise analytical treatment in modern linguistics. The study also shows that the multiplicity of terms such as "speech organs," "speech instrument," "vocal apparatus," and "phonatory system" reflects a terminological problem known as "terminological confusion."

This led some modern scholars, especially Kamal Bishr, to reconsider these terms and attempt to regulate them scientifically. He emphasized understanding the articulatory system as an integrated system in which several organs cooperate to produce speech sounds, rather than a single production point. Thus, the study of the vocal apparatus reveals the evolution of linguistic thought from traditional descriptions to modern

linguistic theory, and highlights the importance of terminological precision in phonetic research.

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