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A Brief Overview of the History of Arabists' Studies on Arabic Sounds: Achievements and Prospects

Abstract

The article reviews the works of Western, Russian, and Azerbaijani Arabists dedicated to the study of Arabic sounds, providing a brief overview of their contributions. The phonetic structure of the Arabic language has been explored in several significant works by Western linguists and Arabic scholars. These studies address the Arabic language both as a direct object of phonetic research and in the context of various other topics such as sociolinguistics, dialectology, and historical linguistics. The works utilize diverse approaches, standards, and criteria that meet modern linguistic requirements, allowing for a multifaceted examination of the Arabic language. These studies are presented both as independent research and as parts of broader thematic investigations. However, despite the numerous works devoted to Arabic phonetics, none of them have provided a comprehensive examination of the language's phonetic system from both phonetic and applied phonology perspectives. As for Azerbaijani Arabistics, several significant articles on Arabic sounds have been published in recent years. However, their limited number has not allowed for a comprehensive study of all aspects of the Arabic language's phonetic structure. Despite the importance of these studies, many issues related to the detailed examination of Arabic sounds within the context of their phonetic system remain unresolved, and further in-depth research is needed in this area. This would significantly expand the understanding of the



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specifics of the Arabic language and enrich both the lexicogrammatical and phonetic theory of Arabistics.

Keywords: Arabic Sounds, Phonetics, Phonology

Arabist Çalışmalarının Tarihine Kısa Bir Bakış Arapça Sesler Üzerine: Başarılar ve Beklentiler

Öz

Bu makale, Batılı, Rus ve Azerbaycanlı Arap bilim adamlarının Arapça seslerin incelenmesine adanmış çalışmalarını gözden geçirmekte ve katkılarının kısa bir özetini sunmaktadır. Arap dilinin fonetik yapısı, Batılı dilbilimciler ve Arap akademisyenler tarafından birçok önemli çalışmada araştırılmıştır. Bu çalışmalar Arap dilini hem doğrudan bir fonetik araştırma nesnesi olarak hem de sosyodilbilim, diyalektoloji ve tarihsel dilbilim gibi çeşitli diğer konular bağlamında ele almaktadır. Çalışmalarda modern dilbilimsel gereklilikleri karşılayan farklı yaklaşımlar, standartlar ve ölçütler kullanılarak Arap dilinin çok yönlü bir şekilde incelenmesine olanak sağlanmıştır. Bu çalışmalar hem bağımsız araştırmalar olarak hem de daha geniş tematik araştırmaların parçaları olarak sunulmuştur. Bununla birlikte, Arap fonetiğine adanmış çok sayıda çalışmaya rağmen, bunların hiçbiri dilin fonetik sisteminin hem fonetik hem de uygulamalı fonoloji perspektiflerinden kapsamlı bir incelemesini sunmamıştır. Azerbaycan Arabistiğine gelince, son yıllarda Arapça sesler üzerine birkaç önemli makale yayımlanmıştır. Ancak bunların sınırlı sayıda olması, Arap dilinin fonetik yapısının tüm yönlerinin kapsamlı bir şekilde incelenmesine imkân vermemiştir. Bu çalışmaların önemine rağmen, Arapça seslerin fonetik sistem bağlamında ayrıntılı olarak incelenmesiyle ilgili birçok mesele çözülmemiştir ve bu alanda daha derinlemesine araştırmalara ihtiyaç vardır. Bu, Arap dilinin özelliklerinin anlaşılmasını önemli ölçüde genişletecek ve Arabistiğin hem leksikogramatik hem de fonetik teorisini zenginleştirecektir.

Anahtar Kelimeler: Arapça Sesler, Fonetik, Fonoloji

Introduction

The study of Arabic sounds has attracted significant attention in the field of linguistics, with scholars from Western countries, Russia, and Azerbaijan contributing to its exploration. This article provides a comprehensive overview of the works of these Arabists, focusing on their contributions to understanding the phonetic and phonological aspects of the Arabic language. Phonetic research on Arabic has been an essential subject for several linguists, with studies addressing not only the language itself but also exploring broader topics such as sociolinguistics, dialectology, and historical linguistics. The methods and approaches used in these studies vary, incorporating different standards and criteria that align with modern linguistic demands. The research is presented both as independent works and as part of larger thematic investigations, contributing to the growing body of knowledge on Arabic phonetics.

While numerous studies have been devoted to understanding Arabic sounds, none have provided a comprehensive examination of the language's phonetic system from the perspectives of both phonetics and applied phonology. In Azerbaijan, recent studies have addressed Arabic phonology, yet the limited number of publications has hindered a thorough investigation of all the language's phonetic features. There remains a need for further research to bridge these gaps, expand the understanding of the specifics of the Arabic language, and enhance the theory of Arabistics. The study of Arabic sounds is closely linked to the examination of the sounds of the Quran, as these sounds determine the rules for the correct pronunciation of the sacred text. The phonetic features of the Arabic language, such as the different types of consonants and vowels, are of particular importance in the context of Quranic recitation. Tajweed, the system of rules for proper Quranic recitation, is based on a precise understanding of the phonetic structure of the Arabic language and the application of this knowledge to preserve the accuracy and sanctity of the text. Thus, research in Arabic phonetics and phonology directly influences the understanding and adherence to the rules of Quranic recitation. The Holy Quran in original meaning, i.e., in Arabic language is understood as recitation, declamation as well as being known as reading. Despite other books are also read, however there are neither recited nor declaimed while recitation and declamation are special properties of the Holy Quran, and it is supposed to be read by certain rules.

In the Holy Quran, it is stated: "Recite the Quran with Tarteel (measured recitation)!"

(Bunyadov, 1997). Ali ibn Abu Talib, when asked about the meaning of *Tarteel*, said: "Tarteel is the clear articulation of sounds, following Tajweed rules, and reflecting on their origin (İbn Al-Jazari, et al, p. 209). There are two disciplines dedicated to learning how to properly read the Quran:

1. Tajweed
2. Waqf and Ibtida (pausing and resuming, or foundation and outset)

The word *Tajweed*, in its deepest meaning, also encompasses the concepts of *Waqf* and *Ibtida*.

It is very difficult to identify specific scholars and their works on Tajweed in Europe. However, the history of Arabic language research in the West dates back to 1505. Around the same time, the Spanish scholar Pedro de Alcalá published a small-volume book (referred to as *Andalis*) describing the dialect and vocabulary of the Quran. From a phonetic perspective, the significance of this book lies in its being the first known transliteration of Arabic sounds (Alcala, 1928). Later, in 1538 the French linguist Guillaume Postel (1510-1581) published a broucher (Pretzl, 1933-34) on Arabic grammar. Subsequently, two other syllabuses for teaching

Arabic were published in 1613 and 1620 by the Dutch orientalist Thomas van Erpe (1584–1624) (Erpenius, 1620; Ewald, 1831-1833). The publications that emerged in France and the Netherlands serve as evidence of the growing interest in the Arabic language in Europe, distinct from Spain's historical context. This interest arose despite the populations in these regions having little direct contact with Arabs. The influence of classical Arabic is clearly reflected in these works, as many elements of the language, such as the morphological structure of words (roots and the concept of internal flexion), were incorporated into European linguistic studies. The study of Arabic phonetics and phonology in the West dates back to the first decade of the 19th century.

The prominent French orientalist and linguist Antoine Isaac Silvestre de Sacy (1758–1838) published his two-volume *Arabic Grammar* in Paris in 1810 (with a second edition released in 1831) (Sacy, 1831). which inflected most of statues of classical Arabic language. This work addressed many aspects of classical Arabic. The first volume (pp.118) contains 9 pages entirely dedicated to the sounds of the Arabic language. As mentioned earlier, the work in the book is heavily inspired by classical Arabic, and it became a valuable resource for the non-Muslim community in the 19th century. Despite the chapter on sounds written by the German orientalist Georg Heinrich August Ewald (1803–1875) between 1831 and 1833, and the work of the Norwegian theologian Carl Paul Caspari (1814–1892) written (Ewald, 1831-33) between 1844 and 1848, the underlying meaning remained the same. In 1850, the English orientalist, translator, and lexicographer Edward William Lane (1801–1876) published an article on the "Pronunciation of Vowels and Accents in the Arabic Language (Lane, 1850). In his article, the author describes the similarities between Arabic sounds, their corresponding signs, and the sounds of English words. Some phonetic events, such as *imālah* and its types, *istilā* and *tafkhīm*, are briefly discussed from the perspective of Tajweed sources.

In the final part of the article, the author discusses the rules for defining correct accents in words. After his death in 1855, the article "Sounds and Names of Sounds in the Arabic Language" by the Finnish geographer and professor George August, also known as Abdul Wali (1811–1852), was published (Wallin, 1859). The influence of Tajweed scholars is still evident in this extensive article. It also contains information about the concept of a letter, the Arabic alphabet (with 29 letters), as well as the classification and descriptions of sounds. G.A. Wallin classified the sounds of the lips, teeth, tongue, palate, and throat. One of the interesting aspects is his description of sounds in different dialects. Another noteworthy point is the presumption that the author may have referenced the work of Mirza Muhammad Ibrahim (1800–1857), an

Azerbaijani scholar who studied English and Persian. Ibrahim later moved to England from Iran in 1826 (Meerza Mohammad, 1841). The prominent Austrian physiologist and anatomist Ernst Wilhelm Ritter von Brücke (1819–1892) studied the generation of sounds and is well known for his approach to sounds within a physiological context. His article, "*The Study of Sounds in the Arabic Language*," was published in 1860 (Beeston, 1962, pp.307–356). E.W.R. Brücke did not examine the sound system in just one language; rather, he provided a thorough explanation of the articulation of both vowel and consonant sounds. Moreover, the author primarily focused on the role of the speech organs during articulation, particularly the guttural sounds. In 1861, the eminent German orientalist, archaeologist, Egyptologist, and linguist Karl Richard Lepsius (1810–1884) published the article "*Sounds in the Arabic Language, Letter Writing, and the Sound of Hard 'i' in Tatar and Slovenian Languages* (Lepsius, 1861). In his work, Lepsius provided a detailed classification of the denominators and adjectives related to sounds by Khalil ibn Ahmad and Sibawaihi. His consideration of pharyngeal sounds as "faucal" in his classification is particularly intriguing. Lepsius also took a phonological approach in his use of transcription symbols (e.g., for the *Sa* and *Zal* sounds). At the end of his work, there is a transliteration of the second verse of *al-Baqarah* from the Quran. The English orientalist and scholar Edward Henry Palmer (1840–1882) published his *Arabic Grammar* (Palmer, 1874) in 1874, followed by another book (Palmer, 1891) on the study of the Arabic language in 1881. Both works contain general information about Arabic sounds. In 1876, the Czech literary critic and orientalist Max Theodor von Grunert (1849–1929) published a booklet titled "*Imālah – Umlaut (Diacritic) in the Arabic Language* (Grünert, 1876). His work describes the phonetic event *Imālah*, which is studied in Tajweed. *Imālah* is considered an umlaut (diacritic) phonetic phenomenon, i.e., a change in the tone and articulation of a vowel sound, or, in other words, a case of syn-harmony. In 1892, the German orientalist and librarian Karl Faller (1857–1909) published the article "*Sibawaihi and the Yaishda System of Sounds in the Arabic Language* (Vollers, 1892 pp.130–151). Karl Faller was the first scholar to mention the influence of Hindi on Arabic phonetics. In his article published in 1893, the German semitologist Hubert Grimmer (1864–1942) not only discussed the Arabic language but also touched upon the context of accent in phonetic research within the Syriac (Sami) language (Grimme, 1893 pp.276–307). The French orientalist Mayer Lambert (1863–1930) published an article in 1897 on the issue of accent in the Arabic language (Lambert, 1897, pp. 402–413). The German orientalist Sigmund Frenkelin (1855–1909) published an article in 1898 on the alteration of sounds in Semitic languages (Fraenkel, 1899, pp. 60–86). The German orientalist August Wilhelm Hermann Gustav Fischer (1865–1949) published an article in 1899 on the loudness of sounds in the

Moroccan dialect (Fischer, 1899, pp.275–286). The German orientalist George Kapfmayer (1864–1936) published an essay on the sounds of the Arabic language in 1908 (Kampffmeyer, 1908, pp. 1–59). In that essay, the description of sounds in the Arabic language is provided according to the rules outlined in classical Arabic. The essay primarily aims to introduce the sounds of the Arabic language. The two-volume foundational work of the German orientalist and founder of Semitology, Karl Brockelmann (1868–1956) (with Theodor Nöldeke (1836–1930)), on the comparative grammars of Semitic languages, was published between 1908 and 1913 (Brücke, 1860). Pages 39 to 282 of the publication discuss the phonetics of Semitic languages. It also covers topics such as combinatorics, diphthongs, syllables, accent, changes and alterations of sounds, articulation, assimilation, dissimilation, gapology, metathesis, epenthesis, and other related phenomena, all from the perspective of the common Semitic languages. In his 1911 work (Schaade, 1911), the author Arthur Schaade (1883–1952) conducted research, but in his explanations, he was unable to go beyond the framework established by classical Arabic. In the same year, the Swedish orientalist Emmanuel Mattsson published his article on phonological issues in the Lebanese dialect (Mattsson, 1911). In 1912, another French orientalist, William Ambruz Marsen (1872–1956), published a brief article on the phonetic events in the speech of Tangierians in Morocco (Marcais, 1912, pp.22–27). The Czech Semitologist and Arabologist Rudolf Rujička (1878–1957) published an article explaining the sound of the letter ģ in Proto-Semitic language (Ruzicka, 1913 pp.21–45). In his article, the author presents the sound as an innovation of the Arabs, claiming that it did not exist in Proto-Semitic language. Interestingly, the Austrian Semitologist and Africanist Otto Rössler, in two articles (Rossler, 1961 pp.158–172) dedicated to this topic, indicated that the sound belongs to Proto-Semitic. On the other hand, another Czech Semitologist, Arabologist, Islamologist, and Africanist, Karel Petráček (1926–1987), agreed with Rujichka's theory (Petracek, 1956, pp.240–262; Petracek, 1953 pp.475–478). In 1915, Gotthilf Bergsträsser (1886–1933), a German orientalist, published a book studying the languages spoken in the territories of Syria and Palestine (Bergstrasser, 1924). Another work by the author, published in 1924, explored the phonetic characteristics of the Damascus dialect and brought these features to the attention of scholars (Birkeland, 1954). A notable aspect of that work is G. Bergsträsser's designation of long vowels as "cadence." In the same year, August Fischer's monograph on the phonetics of the Moroccan dialect was published (Fischer, 1915). A large portion of the work focuses on the issues related to solving the system of transcription. It also includes an extensive section describing the characteristics of the denominators and adjectives

of the dialect. In 1916, the Italian linguist and founder of experimental phonetics (Panconcelli-Calzia, 1920-21, pp. 182–188) Giulio Panconcelli-Calzia (1878–1966), published an article dedicated to the experimental exploration of the sound *ain* in the dialects of Yemen and Aleppo (Panconcelli-Calzia, 1916, pp.45–54). The French Arabologist of Lebanese descent, Michel Feghali (187–1945), published his research on the Lebanese-Syrian dialect in 1919. In 1920, the German Lutheran theologian and orientalist Gustav Holscher (1877–1955) published an essay studying the rhythm of Arabic poetry (Hölscher, 1920, pp.359–416). With his particular approach in his writings, the author provides an explanation of *Rajaz* and *Saj* and reviews Arabic poetry by sorting it according to rhythms and interpreting it through musical notation. A German Africanist, Karl Friedrich Michael Meinhof (1857–1944), published an article describing emphatic sounds in 1920-21 (Meinhof, 1920-21, pp. 81–106). The Belgian orientalist-scholar August Martin Julien Bricteux (1873–1937) published an article fully characterizing the consonant sound *Hamza* (Brockelmann, 1908-1913, pp.109–130). It also explains the sound *Hamza* in various positions, such as when paired (before, in the middle, and after words). In 1924, another work by A. Fischer on phonetics was published (Fischer, 1924, pp. 544–547). The author described numerous ways of pronouncing *Lafzatullah*. The first work in Europe dedicated to Arabic phonetics was published in 1925: "*Arabic Phonetics: A Useful Resource on the Pronunciation of Classical Arabic and Colloquial Dialects (in Egyptian Dialect)*" (Gairdner, 1925). The author of the work is William Henri Temple Gairdner (1873–1928), an Anglican Church missionary in Egypt and the translator of Abu Hamid al-Ghazali's (1058–1111) *Mishkat al-Anwar* into English in 1924. In 1917, by adding a section on phonetics based on the Egyptian accent to his book on spoken Arabic, he created a comprehensive resource. The book was primarily designed for his students studying the Arabic language. In the sections on phonetics, the author provided information about Arabian linguists from medieval history. While describing the sounds of the Arabic language, he also highlighted the classifications of sounds made by these Arab linguists. He categorized consonant sounds, including their denominators and adjectives, while vowels were classified into three fundamental sounds. As a pioneer of modern Arabic phonetics, Gairdner was clearly influenced by the works of medieval Arab linguists. His article, published in 1935, reflected the perspectives of Arab scholars on consonant and vowel sounds (Gairdner, 1935, pp. 242–257). In 1925, the Soviet-Russian linguist Nikolay Yushmanov (1896–1946) published an article on emphatic consonant sounds (Yushmanov, 1925 pp.55–58). The work by Swiss linguist Arnald Steiger (1896–1963), who studied Romance languages, depicting the influence of Spanish Arabs on Iberian Romance languages, was published in 1932 (Steiger, 1932). In the work, the

author addresses several issues. In addition to topics such as the general classification of Arabic consonant and vowel sounds, the work provides clear explanations of phonetic events, such as gemination. In 1934, the German orientalist Otto Pretzl (1893–1941) published his work on the reading of the Holy Quran (Pretzl, 1933-34). The work provides an explanation of the phonetic events as outlined in traditional linguistics. In the same year, American professor Meyer Max Bravmann (1909–1978) defended his dissertation, which included research and materials on phonetics in Arabic linguistics (Bravmann, 1960). In 1938, M.M. Bravmann published a work on another phonetic issue (Bricteux, 1922). In the work, Bravmann studies the alteration of accents on syllables when the vowel letter *i* is used in a word in Sami languages. The alteration of the short vowel *i* to a subordinate vowel in Sami languages was proposed as a new theory by Bravmann (though it is not considered a distinct feature in traditional Arabic linguistics). In 1938, the Arab-descended French linguist A. Dhina (---) published articles on the phonetics and morphology of spoken Arabic (Dhina, 1938, pp.313–353). The phonetics section of the article, spanning pages 313-318, consists of two elements: consonantism (pages 313-316) and vocalism (pages 316-318). Based on different phonetic principles, the author provides numerous examples from dialects, such as the letter "c" being characterized as a shamsiyya consonant, the pronunciation of *jaza* as *zajja*, and the pronunciation of several short vowels (e.g., *kbir*). The outstanding French linguist Jean Cantineau (1899–1956) made significant contributions to the exploration of Arabic language phonetics. In 1939, he published his first work on phonetics (Cantineau, 1939, pp. 313–323). In his writing, he examined the alveolar consonants (z, s, ş), which had undergone significant changes in the speech of Southern Arabs. In 1941, J. Cantineau published his seminal work, *The Course of Arabic Language Phonetics* (Cantineau, 1941). In 1960, the author revised and published his research, incorporating the ideas of N.S. Trubetskoy (Cantineau, 1960). Today, Jan Cantineau's works are considered primary resources for research on the phonetics of Arab dialects. In 1966, the Tunisian linguist Saleh Girmadi (1933–1982) translated J. Cantineau's work and published it, adding a French-Arabic terminology dictionary (Cantineau, 1966). Almost all of the works preceding J. Cantineau were characterized as descriptive, as they lacked the functional analysis found in his work. The general concepts of phonetics, as well as phonological issues, were clarified in his study. The phonemic structure of the Arabic language was compiled for the first time, offering new insights into their compatibility. The monograph consists of eight chapters: seven describe consonant sounds (consonantism), and the final chapter focuses on vowel sounds (vocalism). When discussing consonant sounds, J. Cantineau extensively used concepts such as: 1) exception, 2) intersection,

and 3) identity, allowing for mutual parsing and opposition. In 1941, the American linguist Francis James Carmody (1889–1958) published an article illustrating Arabic language sounds, particularly the pharyngeal sounds (such as ‘‘, ‘h’), based on experimental research using X-ray beams (Carmody, 1941 pp.377–384). The lack of advanced technology limited F.J. Carmody's experiments to a narrow range. However, these initial efforts undeniably paved the way for further research into Arabic language sounds.

As an achievement of experimental phonetics dependent on technical equipment, it had to wait for its time. A prominent American structural linguist of Jewish origin, Zellig Sabbettai Harris (1909–1992), whose family emigrated from Ukraine, published an article in 1942 studying the system of phonemes in the Moroccan dialect (Harris, 1942 pp. 309–318). In 1945, an American Assyriologist of German origin, Frederick Wilhelm Gers (1885–1955), published an article on the emphatic sounds in the Akkadian language (Geers, 1945, pp. 65–67). Another work by Jan Cantineau was published in 1946 (Cantineau, 1946, pp. 93–140). In his essay on Arabic language phonology, Jan Cantineau rightly referenced the works of Sibawayh and Khalil ibn al-Ahmad on sounds, praising them as exemplary from a phonological standpoint. Cantineau described how the opposition between minimal pairs of consonant and vowel sounds represents one of the most profound insights into the Arabic language's sound system, particularly from the perspective of classical scholars. It is hard not to agree with Cantineau's view that the time gap between the 8th and 20th centuries has not significantly impacted the phonology of the Arabic language. Moreover, it is worth noting that thanks to the dedication and meticulous work of scholars throughout history, especially driven by the precision demanded by the Holy Quran, the sounds of the Arabic language—from the consonants to their detailed characteristics—have been extensively studied and documented through scientific observation, despite the lack of modern technological tools. In other words, over the past 14 centuries, the sounds of the Arabic language, particularly as articulated in the Quran, have remained remarkably unchanged. The unique prominence of the Arabic language in this regard has created a challenge for 21st-century researchers attempting to introduce new ideas. However, in 1960, Jan Cantineau revisited his earlier work (Cantineau, 1960) incorporating the views of N. S. Trubetskiy. He, integrated these insights into his ongoing research, further enhancing his contributions to Arabic phonology (Cantineau, 1960, pp. 165–204). In 1948, French Arabist Philippe Marse (1910-1984) published a work in which he described the softening of emphatic articulation in Moroccan dialects. This study added to the understanding of phonetic variations within the Arabic dialects, highlighting how regional influences can lead to subtle changes in articulation and pronunciation (Marcais, 1948, pp. 5–28). In 1949, Jan

Cantineau published several important articles focusing on different aspects of phonetics in Semitic languages: One article dealt with the usage of the assisting *i* vowel at the beginning of words in Semitic languages, exploring how this vowel functioned in the context of phonological systems within these languages; In 1950, he published an article on the phonological objects in Moroccan dialects, providing an in-depth study of the unique phonological features in this dialect; In 1951, Cantineau focused on the consonant system in Semitic languages, further advancing the understanding of the consonantal structures that are a defining feature of these languages. These works by Cantineau were significant contributions to the study of Semitic phonology, particularly in understanding the nuances of Arabic and its various dialects. His work remained influential in shaping the phonological framework for studying Arabic and other Semitic languages (Cantineau, 1949, pp. 51–67; Cantineau, 1950, pp. 79–94; Cantineau, 1950, pp. 193–207). In 1951, Jan Cantineau published a phonological analysis of the spoken language in Hamma, a town in the Qabes region of Tunisia. This study provided a detailed examination of the phonetic and phonological features specific to the local dialect spoken in that region. By focusing on this dialect, Cantineau contributed to a deeper understanding of the variation within Arabic dialects, emphasizing the phonological nuances that exist across different regions. Additionally, regarding the theory of the assisting *i* at the beginning of words, Cantineau, although critical of M.M. Bravmann's approach, ultimately reached a similar conclusion. Both scholars explored the role of the *i* vowel in Semitic languages, particularly in the context of Moroccan dialects, yet Cantineau did not fully support Bravmann's theory, instead offering a more nuanced perspective that still aligned with Bravmann's conclusion. This reflects Cantineau's careful consideration of phonological phenomena and his ability to challenge existing theories while arriving at comparable conclusions (Cantineau, 1951, pp.64–105). In 1949, American linguist Marryl Young van Wagoner (1917-1979) reviewed the Arabic language in detail in Iraqi dialects (Wagoner, 1949). In 1949-1950, an essay by French archaeologist and orientalist Pierre Henri Fleish (1904-1985) concerning the phonetics of the Arabic language was published. In this work, the author describes the sounds of the Arabic language and provides their classification according to their characteristics. The consonants are presented in a special list, while syllables, idgham, haplology, and intervocalic sounds are listed in a general manner. In 1950, American linguist Joseph Harold Greenberg (1915-2001), originally from Germany, published his article related to the description of root morphemes in Semitic languages (Greenberq, 1950, pp. 162–181). A total of 3,775 triple-consonant Arabic

verbs were reviewed. In this work, the author attempts to match the phonemic and phonological principles of verbs in Arabic and other Semitic languages.

In our opinion, this can be considered the first work to study the structure of morphemes and phonotactic limitations. In 1952, the French Arabologist Régis Blacher (1900-1973) published his article on the hamza consonant (Bravmann, 1953). In this article, he presented different writing methods of hamza, as well as its articulation and various features. It is worth noting that R. Blacher is also the author of an article on the linguists of Basra and Kufa (2nd–4th century), which was published in 1951 (Blachere, 1952, pp. 37–48). The above-mentioned Karel Petráček touched on the topic of the hard articulation of the consonant / (Petracek, 1952, pp. 509–523). Medieval scholars began to repeatedly study this topic. In 1953, Meyer Braveman researched the quantity apophony (ablaut) in Semitic languages (Bravmann, 1934 pp. 1–23). Here, he mentioned his disagreement with the German orientalist Jacob Barth (1851-1914) (and his follower Carl Brockelmann), who had combined inner and outer changes of plurals in the Arabic language and defended his “compensation rule” (Barth, 1894; Brücke, 1860). The author declares that the outer plural is formed with the help of the ending -əæt/-aat by stretching the existing vowel. A French linguist and the last famous representative of structuralism, André Martinet (1908-1999), published his notes on the syllable system (Martinet, 1953, pp. 67–78) of Semitic languages in 1953. In this work, he provided a general analysis of the consonant system of Semitic languages and introduced his own research on the syllable system of proto-Semitic languages.

In 1954, an essay by Norwegian semitologist Harris Birckeland (1904-1961) was published, studying the norms of stress in the Arabic language (Blachere, 1950). In this work, the author states that there is no special norm for adjusting stress in Arabic, but rather it concerns the change of position (e.g., *mudərrisul-mədrasə* (schoolteacher) – *mudərrisu'l-mədrasə* (schoolteachers)). In 1954, in his article, Rudolf Ruzhichka investigated whether the sound ġ is used in Semitic and Ugaritic languages and concluded that this sound does not exist in Proto-Semitic languages (Ruzicka, 1954, pp. 176–237). In the same year, Karel Petracek, together with another Czech Semitologist, Stanislav Sequert (1921-2005), published some articles (Petracek, 1954, pp. 588–596) about Semitic languages. In 1956, K. Petracek published two articles on the correct articulation of consonants in Arabic and phonological objects in Semitic languages (Petracek, 1956, pp.227–232; Petracek, 1956, pp. 631–634). In the same year, Jean Cantineau published his article on the phoneme system in the Damascus dialect (Cantineau, 1956, pp. 116–124). He described the short 'a' vowel with three allophones (lipped, common,

and fronted), the short 'e' vowel with one allophone (y), and the short 'o' vowel as being similar to 'u' when contacting with 'v'.

In general, J. Cantineau devoted special attention to the Arabic language and the phonetics of its dialects. As previously mentioned, the works of J. Cantineau are highly valuable and remain relevant to this day. In 1956-1957, three articles (Ferguson, 1956, pp. 384–387; Ferguson, 56, pp. 446–452; Ferguson, 1957, pp.460–478) related to the phonetics of the Arabic language were published by Charles Albert Ferguson (1921-1998), an American linguist renowned for his contributions to the study of diglossia and one of the founders of sociolinguistics. Among these, he continues the exploration of the hard articulation manner of the sound *l*. In another article, the author presents new ideas in response to Harris Birkeland's essay. C. A. Ferguson was one of the first scholars to emphasize the significant role of phonemic stress. This is clearly illustrated in the example: mudə'rrisul-mədrasə ("a teacher of the school") – versus mudərrisu'l-mədrasə ("schoolteachers"). In his third article, Ferguson critically analyzed the treatment of Arabic dialects in works published in 1956 by the American Arabist Barnston Hanter Smiton (1915-?) and in J. Cantineau's aforementioned essay (Smeaton, 1956, pp.357–368). From the perspective of diglossia, C. A. Ferguson drew a parallel between the classical and modern vowel phoneme systems in Arabic dialects, specifically examining the role of long vowels and the ending *h*. While acknowledging the validity of some points, Ferguson critiques the analyses of long vowels by J. Cantineau (Cantineau, 1946, pp. 93–140) and B. H. Smeaton, arguing that their approaches are inadequate. For instance, Ferguson points out that long *i* can be described as *iy* and long *u* as *uv*. However, for the long *ə/a* sound, neither *ʔ*, *h*, *y*, nor *v* adequately represent its structure, necessitating a separate analytical approach. Ferguson also proposed a compelling idea by characterizing *v* and *y* as semi-vowels. This view, however, is debatable, as these semi-vowels function as independent phonemes and form integral parts of long vowels. Furthermore, Ellis Pol Malick, in an article published in 1956, compared the consonant systems of American English and Iraqi Arabic, contributing additional insights to the field (Malick, 1956, pp. 65–87). Another linguist who studied the sounds of Arabic dialects was Richard Slade Harrell (1928–1964). In his 1957 publication, he focused on the phonological features of the Egyptian colloquial dialect (Harrell, 1957). A renowned Russian-American linguist, Roman Osipovich Jakobson (1896–1982), published an article analyzing emphatic sounds characterized by tafkhim features (Jakobson, 1957, pp. 105–115). However, the author approached the subject from a phonemic perspective.

In 1958, Pierre Henri Fleisch published two essays addressing topics in Arabic phonetics (Fleisch, 1958, pp. 193–210). The first part focused on the phonetic conceptions of Ibn Jinni (913–1002) as presented in his work *Sirr Sina'at al-I'rab*, while the second part provided a critical analysis of *majhur* and *mahmus* sounds. Scholars of the medieval period classified *majhur* and *mahmus* sounds as voiced and voiceless, respectively, based on their principles of opposition. However, their understanding was not primarily rooted in the active role of vocal cords, as is commonly accepted in modern linguistics. Instead, they emphasized controlling the airflow during articulation, particularly when the flow was stopped for sounds like /f/ and /b/. Consequently, *majhur* sounds were sometimes regarded as neither purely voiced nor voiceless (e.g., the sound /t/). In 1958, Iren Garbell (1901–1966), renowned for her groundbreaking research on Neo-Aramaic dialects (Garbell, 1965) in the Azerbaijan region, published several articles (Geers, 1945, pp. 330–337) on the phonology of Arabic vernaculars spoken by communities along the eastern Mediterranean coast, specifically in Syria, Lebanon, and Jordan. In 1959, William Russell Slager (1925–2010), widely recognized as a legal expert on Palestinian issues, conducted a comparative analysis of linear phonemes in American English and Egyptian Arabic. His findings were presented in an article that explored phonetic and phonological differences between the two languages (Lehn, 1959, pp. 25–33). In 1959, André Martinet published an article not only about the Samic languages in general but also specifically focusing on the sounds of the Arabic language (Martinet, 1959, pp. 90–102). In this work, the author describes the process of softening the sound "c" from his own perspective. Indeed, the sound "c" is pronounced very similarly to "j" (zh) (for example, *təşdiid* → *təşjdiid*) when followed by the sound "d" and with no vowel occurring afterward.

The author explained this by raising the middle part of the tongue toward the hard palate, which we can associate with the structure of the oral apparatus. In other words, the position of the tongue during the articulation of the sound "c" shifts to that of the sound "d," and then transitions again to the shape of "j." However, after carefully analyzing various dialects, A. Martinet concluded that the same sound is pronounced as a pure "j." Another important study on the sounds of the Arabic language was published in 1960 by M.M. Bravmann (Bravmann, 1938, pp. 196–198). The author describes two cases of consonant sound changes in modern Arabic. In the first case, in some dialects, the sound "q" is pronounced as "x" (kh) when followed by "t" and no vowel follows (for example, *vaqt* – *vaxt* or *vakht*). The second case is related to the previously mentioned change from "c" to "j." In 1960, Canadian linguist William George Cowan (1929), known for his research on North American Hindi languages, published a work (Cowan, 1960, pp. 60–62) in which he argued that Arabic is a proto-Semitic language,

supporting his claim with evidence of vowel changes such as the shift from *ava* and *ayə* to the long *a/ə* vowel. In 1960, American linguist Nancy Kennedy published a work concerning the pronunciation of Egyptian sounds in American English and the difficulties encountered in adapting sentence intonation (Kennedy, 1960). In fact, it was the British linguist Terence Mitchell (1919–2007) who further explored the topic of emphasis after Harris Birkeland. In 1960, T.F. Mitchell published his article, studying prominence in the Arabic language and syllable division (Mitchell, 1960, pp. 369–389). In this work, along with several other topics, the author also examines pronunciation variants with different emphases in Classical Arabic, Egyptian, Moroccan dialects, and the dialect of Cyrenaica (nowadays the eastern part of Libya), where no difference in meaning occurs (*raʿbbənəə*, *rabbəʿnəə*, *rabbənəʿə*), which does not have functional significance. The British Arabist Alfred Felix Lendon Beeston (1911–1995), commonly known as Fraddy in academic circles, published an article in 1962 studying the Arabic sounds of "sin" and "shin" (Bergstrasser, 1915, pp. 222–233). After comparing different Semitic languages, the author concludes that the Arabs who lived in northern Arabia in the 8th century pronounced "sin" and "shin" as voiceless non-emphatic sibilants (s) and (š), similar to (ş) and (ç). In 1962, another British Arabist and linguist, Richard Slade Harrell (1928-1964), published his thesis studying the aspects of Arabic phonetics (Harrell, 1962, pp. 643–647). In this work, he reviews the vowels and consonants of the Moroccan dialect and investigates the phonological structures of syllables. The Jewish orientalist and Semitologist Shlomo Morag (1926-1999) published an essay (Morag, 1962) in which he reviewed the vowel systems of Arabic, Hebrew, and Aramaic, conducting a fundamental analysis of these languages and introducing the general principles of vocalism shared among these three Semitic languages. As seen from the overview, Western scholars have investigated most of the aspects of the Arabic language and made significant contributions. However, they did not directly address the study of *tajweed* and never conducted a separate research specifically on Quranic recitation.

There is a sufficient body of work and information regarding Azerbaijani scientists who have studied *tajweed* (Suleymanova, 2003). The first book on *tajweed* was published in 1909 in Baku by the “Kaspi” publishing house. The author of the book, titled *Tajweed*, was Abdulkhaliq Gafarzadeh (Jannati). The book consisted of 115 pages and was divided into two parts, with the second part written in Persian. While the book emphasizes the importance of certain terminological subjects (Memmedeliyev, 1979, pp. 23–24), it also leaves some gaps that need to be addressed. Notably, at the beginning of the 20th century, the Azerbaijani reader was

not considered in the book's target audience. The work was intended for an Arab and Persian audience, assuming that the reader already had a certain level of knowledge about *tajweed*.

At that time, the Soviet government was opposed to religion, which made it impossible to study and research the language and phonetics of the Quran. Their aim was to destroy books and manuscripts in Arabic. However, after gaining independence, the Holy Quran became a central focus of research. Mosques, which had been repurposed as stores, warehouses, clubs, and other facilities, were reopened for the Muslim community in our country. The Quran was revived, and justice was finally restored.

Later, several books related to *tajweed* were published in the Azerbaijani language (Huseynova, 2010; Memmedli, 2009; Turabov). In our opinion, except for the work by Uzeyir Mammadli, a common flaw runs through all of them. These books do not require a perfect knowledge of Arabic, but the reader should have at least a basic understanding of the language. This renders them somewhat ineffective for Azerbaijani readers, much like the book by A. Gafarzadeh. Our conclusion is that books researching *tajweed* should be tailored for non-Arabic readers – those who do not know the Arabic language but wish to read the Quran in its original form. The goal of this work is to help such readers understand the specificities of the world-renowned Hafs recitation from Asim, the rules of *tajweed*, and the principles of *vaqf* (pauses) for those who wish to learn Quran recitation. This book is written in clear language, making it accessible not only for non-Arabic speakers but also for professionals engaged in Quran recitation and Arabic language studies. It is of practical importance, providing essential information about the phonetics of the Quran, *tajweed*, *vaqf*, and *ibtida* (the beginning of recitation) for anyone eager to learn the recitation of the Quran, particularly the narration of Hafs from Asim.

In 2011, the work by V.A. Garadaghli titled "Tajweed" (Garadaghli, 2011) was published. This book consists of an introduction to *Tajweed*, followed by two chapters titled "Waqf" and "The Science of *Ibtida*". The introduction includes information on the recitation of the Quran with *tarteel*, an investigation of this topic in both Western countries and Azerbaijan, the scientific and practical importance of the work, its relevance, the structure of the book, the primary source of Hafs from Asim, and the special transcription system developed by the author. The introduction also covers the history of the Quran, starting from the first *wahy* (revelation), its written compilation, the spread of its readings, the recitations of the 14 Qira'at, and the most prominent recitation of the modern period – Asim, along with the sources of the Hafs transmission. Additionally, it provides general information about the letters and symbols used in the Quran, as well as the correct usage of *istiaza*, *basmala*, and *takbeer*. In the first

chapter, *tajweed* is presented based on the Hafs transmission of Asim, while the second chapter covers the concepts of *waqf* and *ibtida*.

Conclusion

Thus, the review clearly shows that despite the significant number of works by Western, Russian, and Azerbaijani Arabists dedicated to the study of Arabic sounds, the phonetic system of the Arabic language has not yet been comprehensively studied from both phonetic and applied phonological perspectives. This highlights the need for further in-depth research that will significantly expand the understanding of the specifics of the Arabic language and enrich the theoretical foundation of Arabistics.

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