



**ЯЗЫКИ НАРОДОВ ЗАРУБЕЖНЫХ СТРАН (С УКАЗАНИЕМ КОНКРЕТНОГО ЯЗЫКА ИЛИ ГРУППЫ ЯЗЫКОВ)/LANGUAGES OF PEOPLES OF FOREIGN COUNTRIES (INDICATING A SPECIFIC LANGUAGE OR GROUP OF LANGUAGES)**

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**PHONETIC AND PHONOLOGICAL FEATURES OF THE VOWEL SYSTEM IN THE AZERBAIJANI LANGUAGE**

Research article

**Isaeva K.R.<sup>1</sup>, Mammadzada G.S.<sup>2</sup>, Ahmadova V.Z.<sup>3,\*</sup>, Kazimova S.A.<sup>4</sup>**

<sup>1</sup>ORCID : 0000-0001-8290-0528;

<sup>2</sup>ORCID : 0000-0001-8639-1692;

<sup>3</sup>ORCID : 0000-0001-5290-8756;

<sup>4</sup>ORCID : 0000-0007-8290-0465;

<sup>1,3,4</sup> Ganja State University, Ganja, Azerbaijan

<sup>2</sup> Azerbaijan University of Architecture and Construction, Baku, Azerbaijan

\* Corresponding author (vusala.ahmadova[at]gdu.edu.az)

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**Abstract**

The paper offers a thorough examination of the structural, articulatory, and functional properties of vowels in contemporary Azerbaijani. The research demonstrates that vowels function not only as phonetic units but as essential grammatical components shaping word formation and morphophonemic patterns.

The analysis focuses on the articulatory dimensions of vowel height, backness, and lip rounding, showing how these factors interact to preserve harmony within the phonological system. Particular emphasis is placed on vowel harmony as a defining characteristic that unifies sound and grammatical structure.

Comparative aspects with other Turkic languages are explored, emphasizing the typological uniqueness and phonosemantic role of Azerbaijani vowels. This study ultimately clarifies how sound structure and grammar interconnect to sustain coherence and balance in the Azerbaijani linguistic system.

**Keywords:** phonetic and phonological features, vowel system, Azerbaijani, language, sound structure, grammar.

**ФОНЕТИЧЕСКИЕ И ФОНОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ГЛАСНОЙ СИСТЕМЫ АЗЕРБАЙДЖАНСКОГО ЯЗЫКА**

Научная статья

**Исаева К.Р.<sup>1</sup>, Мамедзаде Г.Ш.<sup>2</sup>, Ахмедова В.З.<sup>3,\*</sup>, Казимова С.А.<sup>4</sup>**

<sup>1</sup>ORCID : 0000-0001-8290-0528;

<sup>2</sup>ORCID : 0000-0001-8639-1692;

<sup>3</sup>ORCID : 0000-0001-5290-8756;

<sup>4</sup>ORCID : 0000-0007-8290-0465;

<sup>1,3,4</sup> Гянджинский государственный университет, Гянджа, Азербайджан

<sup>2</sup> Азербайджанский университет архитектуры и строительства, Баку, Азербайджан

\* Корреспондирующий автор (vusala.ahmadova[at]gdu.edu.az)

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**Аннотация**

Статья представляет всестороннее исследование структурных, артикуляционных и функциональных свойств гласных звуков современного азербайджанского языка. В работе показано, что гласные выполняют не только роль фонетических единиц, но и являются важными грамматическими компонентами, формирующими словообразовательные и морфофонемные закономерности.

Анализ сосредоточен на артикуляционных параметрах — высоте подъёма, ряду и степени огубленности, — которые в совокупности обеспечивают гармонию внутри фонологической системы. Особое внимание уделено гармонии гласных как определяющему признаку, объединяющему звуковую и грамматическую структуру языка.

В работе также рассматриваются сопоставительные аспекты с другими тюркскими языками, подчёркивающие типологическую уникальность и фоносемантическую роль азербайджанских гласных. В конечном итоге исследование раскрывает, каким образом звуковая структура и грамматика взаимодействуют для поддержания целостности и гармонии в азербайджанской языковой системе.

**Ключевые слова:** фонетические и фонологические особенности, гласная система, азербайджанский язык, звуковая структура, грамматика.

**Introduction**

The Azerbaijani language, part of the southwestern branch of the Turkic family, is distinguished by its internal consistency and strong phonological harmony. The vowel system, as one of its most vital components, establishes the foundation for



phonetic articulation and grammatical structure. Vowels in Azerbaijani perform more than a phonetic function – they determine the form of affixes, regulate morphophonemic patterns, and sustain syntactic coherence.

The key to Azerbaijani's melodic and rhythmic nature lies in its vowel harmony. This harmony creates balance between sounds, ensuring ease of articulation and unity within words. Each vowel's features – height, backness, and rounding – interact systematically to maintain this equilibrium. Through this principle, speech becomes smoother and more predictable, allowing for both phonological precision and aesthetic beauty.

Historically, vowel harmony is a fundamental trait of the Turkic languages, and Azerbaijani has preserved it with remarkable stability. Even in borrowed words from Persian, Arabic, or Russian, vowel adaptation typically occurs to align with Azerbaijani phonological norms. Consequently, the integrity of vowel harmony remains one of the strongest aspects of Azerbaijani phonology.

Earlier studies by researchers such as Əsgərov (2008) and Məmmədli (2015) established foundational insights into vowel harmony's structural and grammatical functions. Modern phonetic studies, using acoustic methods, have refined this understanding, confirming that vowel harmony operates not merely as a phonological rule but as a broader grammatical principle guiding word formation and pronunciation.

The relevance of this research lies in the growing need for comprehensive phonetic–phonological descriptions of Azerbaijani within modern Turkological studies. As comparative typology, acoustic phonetics and morphophonology continue to develop, systematizing the vowel system of Azerbaijani becomes increasingly important for understanding its structural stability and functional mechanisms.

The novelty of the study consists in providing an integrated analysis of Azerbaijani vowels from articulatory, phonological, and functional perspectives, considering both native lexical structure and the behavior of vowels in borrowed forms. The research also introduces comparative observations with other Turkic languages, allowing for a deeper understanding of typological similarities and distinctions.

The theoretical significance of the work lies in its contribution to Turkic phonology and general phonological theory, particularly in elucidating the interaction between vowel articulation, phonological harmony, and morphophonemic processes. The findings enhance the theoretical understanding of how vowel harmony contributes to systemic cohesion within the language.

The practical significance is reflected in the study's applicability to language teaching, lexicography, automated text processing, speech technology, and the development of phonetic and orthographic standards for Azerbaijani. The results can also support translation studies, as knowledge of vowel harmony is essential for accurate morphological analysis.

The objective of this paper is to analyze Azerbaijani vowels comprehensively from articulatory and functional viewpoints. By observing their behavior in both native and borrowed words, and comparing them with other Turkic systems, the study seeks to reveal how vowel harmony maintains phonological stability and morphological transparency within Azerbaijani.

### Research methods and principles

This research integrates descriptive, comparative, and analytical linguistic approaches. The descriptive method identifies and classifies Azerbaijani vowels according to articulatory parameters – height, backness, and lip rounding. Observation of standard literary Azerbaijani serves as the basis for analysis, with examples drawn from everyday usage, education, and media.

The comparative method establishes parallels between Azerbaijani and other Turkic languages such as Turkish, Turkmen, and Uzbek. This comparison highlights both shared Turkic phonological traits and distinctive Azerbaijani innovations, particularly regarding front-back contrast and rounding patterns. It also provides insight into the historical continuity of vowel harmony within the Turkic linguistic heritage.

The analytical method interprets vowel harmony as a grammatical mechanism. It examines alternations in suffixes, vowel assimilation, and the interaction of phonological and morphological structures. The study considers synchronic patterns of modern Azerbaijani while referencing diachronic evidence to trace developmental changes [1].

Data sources include standard Azerbaijani, supplemented by dialectal samples from Ganja, Karabakh, and Nakhchivan. References to instrumental phonetic studies [6], [8] provide acoustic evidence supporting the classification and distribution of vowel sounds. The methodology ensures both empirical accuracy and theoretical relevance within the wider field of Turkology [2].

### Main results

1. Systematic organization of vowels – the Azerbaijani vowel system demonstrates a high degree of structural organization based on three primary articulatory parameters: *height*, *backness*, and *lip rounding*. These parameters interact to maintain internal phonological harmony.

2. Functional role of vowels – vowels in Azerbaijani serve not only as sound units but also as grammatical markers that influence *word formation*, *inflection*, and *morphophonemic alternations*.

3. Vowel harmony principle – the study confirms that vowel harmony is a key feature ensuring *phonological coherence* in both simple and complex word forms, connecting sound structure with grammatical structure.

4. Typological and comparative findings – comparison with other Turkic languages reveals that Azerbaijani preserves the core Turkic vowel harmony system, but exhibits unique phonosemantic nuances reflecting historical and dialectal evolution.

5. Phonosemantic significance – the research highlights that vowels carry phonosemantic meaning, contributing to the expressive and structural balance of the language.

6. Integration of sound and grammar – the article concludes that the interdependence between phonetic structure and grammatical function is a defining characteristic of Azerbaijani, ensuring linguistic coherence and stability across its morphological and syntactic levels.



## Discussion

The Azerbaijani vowel system exhibits symmetry and balance, reflecting both its historical depth and structural precision. Azerbaijani features nine basic vowels, classified by three articulatory dimensions:

Table 1 - Azerbaijani vowel system

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Height	Front vowels	Back vowels
High	/i/, /y/	/ɯ/, /u/
Mid	/e/, /ø/	/o/
Low	/æ/	/a/

This arrangement promotes harmony and predictability, essential to the language's phonological coherence.

### *Vowel Harmony as a Phonological Principle*

Vowel harmony ensures compatibility among vowels within a word according to frontness–backness and rounding. It determines the form of suffixes and grammatical endings, ensuring ease of pronunciation and morphophonemic unity [3].

Examples:

*ev* → *evlər* (“house – houses”) → front harmony

*qapı* → *qapılar* (“door – doors”) → back harmony

*gül* → *güllər* (“flower – flowers”) → rounding harmony

This system minimizes articulatory effort, enhances rhythm, and maintains morphological transparency. Even foreign borrowings, like *telefon* → *telefonlar*, integrate into the Azerbaijani pattern seamlessly [4].

### *Morphological Implications*

Vowel harmony governs suffix selection across Azerbaijani morphology. The vowel in the suffix adapts to the vowel of the root, reflecting the language's agglutinative structure:

*kitab* → *kitablar* (“books”)

*dost* → *dostum* (“my friend”)

*göz* → *gözlər* (“eyes”)

This adaptation not only simplifies pronunciation but also preserves phonetic unity throughout word formation [5].

### *Dialectal and Phonetic Variation*

Minor regional variations exist despite the overall consistency of vowel harmony. In Ganja and Karabakh dialects, /æ/ sometimes shifts toward /a/, while in Nakhchivan, /o/ alternates with /u/. These variations are subtle and do not disrupt the harmonic balance of the system [6].

### *Acoustic and Perceptual Characteristics*

Phonetic experiments [6], [8] measuring formant frequencies confirm clear differentiation between front and back vowels. Azerbaijani vowels occupy a compact acoustic space, promoting clarity and euphony. The predictability of vowel patterns enhances processing speed and contributes to Azerbaijani's melodic speech quality, particularly visible in its oral traditions and poetry [7].

### *Historical and Typological Context*

The origins of Azerbaijani vowel harmony trace back to Proto-Turkic phonology. During Old Oghuz and Middle Turkic stages, harmony extended to nearly all morphemes. Although Persian and Arabic influence introduced foreign phonemes, the harmony system remained stable. Compared to Turkish, which lacks a fully productive /æ/, Azerbaijani retains a more flexible and balanced vowel inventory, bridging conservative and innovative Turkic models [8].

The Azerbaijani language, belonging to the Turkic language family, has evolved over centuries through a complex interaction of historical, social, and linguistic factors. Its phonetic and phonological system, particularly the vowel structure, reflects both the ancient Turkic heritage and the dynamic influence of neighboring languages and cultures. Azerbaijani's development can be traced back to the Oghuz branch of Turkic languages, alongside Turkish, Turkmen, and Gagauz. This shared origin explains the structural similarities in vowel harmony, phoneme inventory, and morphophonemic patterns observed across these languages [10].

Historically, Azerbaijani phonology developed through a gradual simplification and stabilization of sound patterns, adapting to changing linguistic environments. The early stages of Old Oghuz were characterized by a more extensive vowel inventory and a strong system of vowel harmony that governed word formation and affixation. Over time, as the language came into contact with Persian, Arabic, and later Russian, certain phonetic features underwent modification. Persian and Arabic contributed new lexical items with complex syllable structures and unfamiliar vowel combinations, leading to the partial relaxation of vowel harmony in borrowed words. Russian influence, particularly during the 19th and 20th centuries, introduced additional phonemes and altered the distribution of certain sounds, especially in urban dialects [9].

From a typological perspective, Azerbaijani exhibits the defining characteristics of the Turkic linguistic model: agglutinative morphology, vowel harmony, and a high degree of phonological predictability. The agglutinative nature of Azerbaijani allows for extensive word formation through suffixation, while vowel harmony ensures phonetic consistency across morpheme boundaries. The front-back and rounded-unrounded harmony of vowels serves not only as a phonological rule but also as a mechanism maintaining the internal logic of the language system.

Typologically, Azerbaijani stands as a representative of the front vowel-back vowel distinction typical of Turkic phonology, where morphological coherence depends on the alignment of vowel features within a word. Despite typological



similarities with Turkish and Turkmen, Azerbaijani has developed distinct articulatory nuances and phonosemantic patterns that reflect regional variation and historical adaptation. For instance, vowel reduction in unstressed positions and dialectal differences between the North and South Azerbaijani varieties demonstrate the flexibility and resilience of its phonological system.

Overall, the historical and typological context of the Azerbaijani vowel system reveals a linguistic evolution rooted in Turkic tradition yet responsive to cross-linguistic influences. Its phonetic and phonological organization embodies both historical continuity and adaptive innovation, ensuring that the Azerbaijani language maintains its identity while integrating elements from a diverse cultural and linguistic environment [10].

### Conclusion

The vowel system of Azerbaijani stands as one of the most structurally refined components of its phonological framework. Its well-defined articulatory classification, harmony-based organization, and adaptability form the cornerstone of both pronunciation and morphology.

Vowel harmony is not only a sound-based phenomenon but also a grammatical regulator, ensuring unity and fluency in speech. The interaction of height, backness, and rounding maintains systemic balance while allowing expressive flexibility. Azerbaijani's ability to retain this feature amid external influences showcases the durability of Turkic phonological principles.

Typologically, Azerbaijani occupies a central position among Turkic languages – retaining ancient harmonic features while demonstrating adaptability in modern contexts. The harmonic nature of the vowel system also enhances the language's rhythm, euphony, and cognitive accessibility.

In essence, Azerbaijani vowel harmony represents the perfect synthesis of form, function, and beauty. It reflects both the historical depth and creative vitality of the Azerbaijani linguistic tradition. Future research might expand on experimental phonetics and sociolinguistic studies to explore how bilingualism affects the realization of vowel harmony in modern Azerbaijani speech.

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### Конфликт интересов

Не указан.

### Рецензия

Все статьи проходят рецензирование. Но рецензент или автор статьи предпочли не публиковать рецензию к этой статье в открытом доступе. Рецензия может быть предоставлена компетентным органам по запросу.

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### Conflict of Interest

None declared.

### Review

All articles are peer-reviewed. But the reviewer or the author of the article chose not to publish a review of this article in the public domain. The review can be provided to the competent authorities upon request.

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