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Linguistics, Literature And Translation

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THE ROLE OF PHONETICS AND PHONOLOGY IN LINGUISTICS

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Abstract
This article analyzes the disciplines of phonetics and phonology, their fundamental concepts, and their differences. While phonetics deals with the physical and physiological properties of speech sounds, phonology studies the functional significance of these sounds within the language system. The article provides information on the research methods, main categories, and practical importance of these fields. In addition, phonetic and phonological phenomena in languages are examined, and their phonetic changes and roles within the phonological system are discussed.

Keywords: phonetics, phonology, language, linguistics, sound, vowels and consonants, phoneme, metathesis, stress, assimilation, dissimilation, orthoepy.

Introduction

Language is the primary means of human thought and communication. Every language possesses its own sound system, through which meaning is expressed and speech is formed. In linguistics, speech sounds are studied by the disciplines of phonetics and phonology. Phonetics analyzes the physical and physiological characteristics of sounds, as well as their production and perception. Phonology, on the other hand, examines the function of these sounds within the language system and their role in distinguishing meaning. This article provides a comprehensive analysis of the main aspects of phonetics and phonology, their differences, and their interrelationship.

Phonetics and phonology are two fundamental branches that study speech sounds, complementing each other. Phonetics investigates how sounds are produced and their physical properties, whereas phonology analyzes the role of these sounds in the language system and their meaning-distinguishing capabilities. Phonetics studies all sounds, while phonology determines which of

these sounds function as phonemes in a given language. Within the hierarchy of linguistic levels, phonetics stands out as the most basic level, providing the material foundation for units at other levels. Human speech activity is realized through sound units perceived by sensory organs—namely, sounds or systems of sounds. A speech sound appears as a complex unit combining three aspects:

a) a product of the central nervous system controlled by speech organs (physiological aspect);

b) an acoustic phenomenon like any natural sound (physical/acoustic aspect);

c) a means of communication and information transfer (functional, social, and linguistic aspect).

The most essential aspect of a speech sound is its functional dimension. In linguistics, there is no consensus on whether these three aspects should be studied together or separately. Some scholars argue that the physiological aspect belongs to biology and the acoustic aspect to physics, and that linguistics should focus only on the functional aspect. Others maintain that all three aspects are inseparable and should be studied as a whole. As a result of this theoretical divergence, two fields—phonetics and phonology—emerged in linguistics. Ultimately, phonetics came to deal with speech variants (particulars), while phonology focuses on linguistic invariants (generalities).

Phonetics demonstrates strong connections with other disciplines such as literary studies, physiology, physics, and psychology. Unlike these fields, however, phonetics considers sound as an element of the language system that provides material form to words, morphemes, and sentences. Phonetics also studies sound changes and alternations, as well as stress and its types. The study of phonetics is essential for mastering spelling (orthography), correct pronunciation (orthoepy), identifying differences between literary and dialectal pronunciation, and diagnosing and correcting speech disorders in speech therapy and surdopedagogy. Moreover, phonetic research plays an important role in improving communication technologies and developing automatic speech recognition systems.

Phonetics is generally divided into general, specific, and comparative phonetics.

General phonetics examines the universal conditions of speech sound production based on the capabilities of the human articulatory apparatus. This includes distinctions such as labial, lingual, and glottal consonants according to place of articulation, as well as plosive, fricative, and affricate sounds according to manner of articulation. It also studies the general acoustic properties of sounds. Based on articulatory and acoustic features, general phonetics develops classifications of speech sounds and identifies both universal and distinctive features. It further investigates sound combination patterns, the influence of one sound on another (such as accommodation and assimilation), the nature of the syllable, syllable division, phonetic structure of words, and issues such as stress and vowel harmony. Additionally, it studies intonation and its components, including pitch, intensity, duration, tempo, pauses, and timbre.

Specific phonetics examines these issues within particular languages. It may be historical or modern, synchronic or diachronic, descriptive or experimental.

Comparative phonetics analyzes vowels, consonants, phonetic changes, and other phenomena across related or unrelated languages, as well as across dialects, from a comparative perspective. It occupies an intermediate position between general and specific phonetics.

Descriptive phonetics studies sounds from the following aspects:

- Physiological (production of speech sounds by speech organs);
- acoustic (their effect on auditory perception);
- linguistic (their role in semantic differentiation).

– The third aspect is primary, as it integrates phonetics into linguistics.

– **Experimental phonetics** investigates the physiological and acoustic properties of speech sounds using various instruments. This method allows precise identification of sound features, such as vowel length or consonant articulation (plosive vs. fricative), and serves as a basis for sound classification.

Phonology studies the structural and functional patterns of a language's sound system and differs from phonetics, which examines speech from an acoustic-articulatory perspective as a semiotic system.

Each phoneme exists in the human mind as a specific "acoustic image" formed based on its distinctive features. These features arise from articulatory and acoustic properties and become stabilized over time. Like other linguistic units, phonemes function within paradigmatic and syntagmatic relations, known respectively as phonological paradigmatics and syntagmatics. A set of phonemes sharing common integral features but differing in distinctive features forms a phonological paradigm, and their relationships constitute paradigmatic relations.

In linguistics, different types of phonological oppositions are distinguished. N. S. Trubetzkoy, in his work *Fundamentals of Phonology*, classifies phonological oppositions based on three criteria:

1. According to their relation to the system (e.g., one-dimensional vs. multidimensional, regular vs. isolated oppositions);
2. According to the relationship between members (privative, gradual, and equipollent oppositions);
3. According to stability (stable vs. unstable oppositions).

The role of phonetics and phonology in language learning is highly significant. When learning a new language, correct pronunciation, understanding the sound structure of words, and producing natural intonation are essential. Phonetics and phonology provide the scientific foundation for these processes.

Conclusion

In conclusion, phonetics and phonology are fundamental branches of linguistics that study the structure, functioning, and role of speech sounds. Their study is crucial in various fields such as language teaching, speech therapy, automatic speech recognition technologies, and artificial intelligence. However, certain challenges remain, including discrepancies between spelling and pronunciation, the complexity of dialects, and the limited accessibility of advanced phonetic analysis technologies.

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