THEORETICAL PHONETICS: VOWEL SYSTEM. PRINCIPLES OF CLASSIFICATION

F. Sultonova ¹
(Scientific supervisor: Erdanova Zebiniso Abilkosimovna, Doctor of Philosophy on Philological Sciences (PhD))

Abstract:
This article delves into the fascinating world of English vowels, exploring the principles underlying their classification and the complexities they present for both language learners and native speakers. The study examines the key parameters used to categorize vowels, including tongue height, tongue position (front/back), and lip rounding. It highlights the challenges posed by the inherently dynamic nature of vowels, which are subject to variations in pronunciation based on context and individual speaker characteristics. The article further explores the interplay of phonetics and phonology in the classification of vowels, addressing the impact of surrounding sounds on vowel articulation and the development of allophones. By examining the intricacies of English vowel classification, this paper sheds light on the dynamic and nuanced nature of spoken language.

Key words: phonetics, vowel classification, phonology, monophtongs, diphtongs, diphtongoids, tongue height, tongue position, lip rounding, lax vowels, oral cavity, cardinal vowels, tense vowels, implications, articulations.

Introduction: The study of phonetics is a fundament of linguistics, focusing on the physical properties of sounds in human speech. Among the various aspects of phonetics, the vowel system plays a crucial role in language structure and communication. This article explores the theoretical underpinnings of vowel systems, examining their classification, features, and significance in linguistic analysis.

Body: Vowels are speech sounds produced without significant constriction or obstruction of airflow in the vocal tract. There is no noise component. They are typically characterized by their openness and resonance, making them central to syllable formation and word structure. Unlike consonants, which are defined by specific articulatory gestures, vowels are more variable and can be analyzed through their articulatory, acoustic, and auditory properties. Vowels can be classified based on several articulatory features:

1. Height (the stability of articulation): This refers to the vertical position of the tongue during articulation. Vowels are categorized as high (e.g., [i], [u]), mid (e.g., [e], [o]), or low (e.g., [a]).

---

¹ *Sultonova Fozilakhon, Student*

212

2. Backness (the tong position): This dimension describes the horizontal position of the tongue. Vowels can be front (e.g., [i], [e]), central (e.g., [ə]), or back (e.g., [u], [o]).

3. Roundedness (the lip position): This feature pertains to whether the lips are rounded during articulation. Rounded vowels (e.g., [u], [o]) involve lip rounding, while unrounded vowels (e.g., [i], [e], [a]) do not.

4. Tension(the length of the vowel): Vowels can be tense (e.g., [i], [u]) or lax (e.g., [ɪ], [ʊ]), reflecting the degree of muscular tension in the vocal tract during articulation.

Regarding the stability of articulation vowels are divided into three main categories and they are: monophtongs, diptongs and diphtongoids. Monophtongs refers to pure vowels as articulation is almost unchanging throughout their pronunciation,

Diphthongs-many languages also include diphthongs—combinations of two vowel sounds within a single syllable (e.g., [ai] in "my").Each diptongs consists of two elements: the nucleus and the glide. The nucleus I strong and distinct; the glide is weak, its articulation is not fully accomplished. In english, the primary diptongs include:

1. [aɪ] as in "my"
2. [aʊ] as in "how"
3. [eɪ] as in "day"
4. [oʊ] as in "no"
5. [ɪə] as in "ear" (in some dialects)
6. [eə] as in "air" (in some dialects)

Diphtongoids are characterized by some change in the articulation between the starting point and the end, nevertheless the difference between is not distinct as in diphtongs.

Cardinal vowels by Daniel Jones

The cardinal vowel is a system devised by the British pheneticist Daniel Jones in the early 20th century to classify, describe, and compare vowels of different languages and dialects around the world on the same basis. in this article, we will describe in detail the Cardinal Vowels in English with list. The basic vowel consists of eight primary vowels, eight secondary basic vowels, and two middle-high vowels [ɨ] and [ʉ]. The first basic vowels were set by dividing the vowels that humans can produce at the extremes of articulation phonetics and dividing them into equidistant distances by listening phonetics. And, in these vowels, the originality was changed to set the second basic vowel.

An important aspect of English vowel classification is vowel reduction, which occurs in unstressed syllables. In these contexts, vowels often shift toward a more centralized and neutral position, typically represented by the schwa [ə]. For example, the vowel in "banana" becomes [bəˈnænə], illustrating how unstressed vowels are affected by their phonetic environment.

English vowel sounds are central to the language's phonetic structure, playing a crucial role in distinguishing meaning and facilitating communication. Understanding the classification of these sounds is essential for linguists, language

learners, and educators. This article explores the principles of classifying English vowel sounds, focusing on their articulatory and acoustic properties.

English features a diverse range of vowel sounds that can vary significantly across dialects. Generally, English vowels can be categorized into two primary types: monophthongs and diphthongs.

From an acoustic standpoint, vowels are characterized by their formant structure. Formants are resonant frequencies of the vocal tract, with the first two formants being most significant for vowel identification:

Generally correlates with vowel height; lower frequencies indicate higher vowels, while higher frequencies suggest lower vowels.

Correlates with backness; higher frequencies indicate front vowels, while lower frequencies point to back vowels.

Theoretical Implications

The study of vowel systems has significant implications for theoretical phonetics and phonology:

1. Phonological Representation: Vowel systems inform theories about how sounds are mentally represented. Understanding how vowels interact with other phonetic elements aids in developing more comprehensive models of phonological rules and processes.

2. Language Change: Analyzing vowel systems can shed light on historical linguistics and the evolution of languages. Changes in vowel pronunciation and structure often signal broader shifts in a language's phonetic landscape.

3. Speech Technology: Insights from vowel systems contribute to advancements in speech synthesis and recognition technologies. Accurate modeling of vowel sounds enhances the effectiveness of artificial intelligence in processing human language.

Degree of Muscular Tension

The degree of muscular tension refers to how tightly the articulatory muscles are engaged during the production of a vowel sound. This tension can classify vowels into two primary categories: tense vowels and lax vowels. Tense vowels are produced with greater muscular tension in the tongue and surrounding structures. They are typically longer in duration and can be more prominent in speech.

Stressed Syllables: They commonly occur in stressed syllables, contributing to the vowel's prominence in speech. The character of the end of a vowel refers to how the vowel sound concludes, influencing its overall quality and perception. This characteristic can be influenced by several factors, including vowel length and the presence of glides.

Conclusion: The degree of tenseness and the character of the end of a vowel are essential components of vowel production and perception in spoken language. Understanding these features helps clarify the distinctions between tense and lax vowels, as well as the differences between monophthongs and diphthongs. This knowledge is particularly valuable for linguists, language learners, and educators, as it enhances pronunciation, comprehension, and overall communication skills in any language context. By examining the nuances of vowel sounds, we can appreciate the complexity and richness of human speech

References:

[1].	Ladefoged, P. (2006). A course in phonetics (6th ed.). Wadsworth Cengage Learning. (A classic and comprehensive textbook on phonetics)

[2].	Johnson, K. (2014). Acoustic and auditory phonetics (3rd ed.). Blackwell Publishing. (Focuses on the acoustic aspects of speech sounds)

[3].	Nearey, T. M. (1989). Static, dynamic, and relational characteristics of vowel perception. Journal of the Acoustical Society of America, 85(5), 2088-2097. (Investigates the factors involved in vowel perception)

[4].	International Phonetic Alphabet (IPA) Chart: https://www.internationalphoneticassociation.org/ (The standard chart for representing speech sounds)

[5].	Erdanova, Z., & Eshdavlatova, A. (2024, April). Lexical classification of language units. In Conference Proceedings: Fostering Your Research Spirit (pp. 43-47).

[6].	Zafarovna, E. A. (2022). The role of educational games in english classes. Journal of new century innovations, 19(6), 342-344.

[7].	Activity of Professional Terms in Linguistics

[8].	EZ Abulkasimovna, European journal of innovation in nonformal education, 2021 - Cited by 2.

[9].	Sirojxonovich, N. R. (2024). Globallashuv davrida kosmopolitizm omillarining ijtimoiy-falsafiy tahlili. Ustozlar uchun, 57(4), 148-150.

[10].	Nasrullaev, R. (2024, February). Yoshlarda vatanparvarlik tuyg'usini shakllantirishning ijtimoiy-falsafiy asoslari. In International Conference on Social and Humanitarian Research (No. 2, pp. 5-8).

[11].	Nasrullaev, R. (2024). Yoshlarni vatanga muhabbat ruhida tarbiyalashning samarali mexanizmlari. Interpretation and researches.

[12].	Насруллаев, Р. (2024). Ёшларда ватанпарварликни туйғусини шакллантиришнинг маънавий-ахлоқий асослари. worldly knowledge conferens, 6(2).

[13].	Насруллаев, Р. (2024, January). Ёшларда ватанпарварлик туйғусини шакллантиришнинг ижтимоий-фалсафий асослари. In The Role of Technical Sciences in IV Industrial Civilization: International Scientific and Practical Conference (UK) (Vol. 5, pp. 42-44).

[14].	Насруллаев, Р. (2024). Ёшларни оилада миллий қадриятлар асосида ватанпарварлик руҳида тарбиялашнинг фалсафий асослари. Ta'lim va rivojlanish tahlili onlayn ilmiy jurnali, 4(1), 169-173.