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ТЕОРЕТИЧНА ФОНЕТИКА АНГЛІЙСЬКОЇ МОВИ

Theoretical English Phonetics

Посібник

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Навчально-методичний посібник присвячений основним питанням теоретичної фонетики англійської мови. Видання складається з 15 лекцій з завданнями у формі питань для само-опрацювання та рекомендованою літературою для кожної лекції, що полегшує сприйняття матеріалу та систематизує знання з теоретичної фонетики. Може використовуватися як для аудиторної роботи під час підготовки до семінарів та контрольних робіт з теоретичної фонетики англійської мови, так і для самостійної роботи.

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ВСТУП

Методичний посібник містить лекції з теоретичної фонетики, які допоможуть студентам, що вивчають англійську мову як фахову, покращити і систематизувати свої знання з фонетики, а також розвинути навички правильної англійської вимови.

Методичний посібник складається з 15 лекцій. Кожна лекція має чітку структуру, що дозволяє виробити систему в опрацюванні матеріалу і полегшити його засвоєння.

Після кожної лекції у посібнику містяться питання не лише для перевірки отриманих знань і розуміння матеріалу, а й для пошуку додаткової інформації для поглиблення знань з фонетики. Завдяки цьому студенти навчаються як засвоювати запропоновану лекційну інформацію, так і ініціативно підходити до більш глибокого її опрацювання протягом семінарських занять.

Запропоновані для обговорення питання мають на меті заохотити студентів до дискусії, що сприяє розвитку комунікативних навичок та творчого мислення.

Методична розробка створена та апробована на кафедрі англійської філології та міжкультурної комунікації Інституту філології Київського національного університету імені Тараса Шевченка.

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The word "phonetics" is derived from the Greek "φωνή" (fo:ne:) meaning sound, voice. In modern times phonetics is often defined as "the science of speech sounds considered as elements of language".

It should be emphasized that phonetics is not a separate, independent science. It is a branch of linguistics, like the other branches, such as lexicology and grammar. However, phonetics, being a branch of linguistics, occupies a peculiar position. On the one hand, it is quite independent, and develops according to its own laws. Today the sphere of phonetics is wider and deeper than ever before. The objects of phonetic investigation are the following: phonemes and their distribution in words, their mutual adaptation, stress, syllable formation, intonation, the relation between oral and written speech and a number of other problems.

On the other hand, phonetics is closely connected with a number of other sciences, such as physics (or rather acoustics), biology, physiology and others. The more phonetics develops the more various branches of science become involved in the field of phonetic investigation.

Phonetics is an essential part of language because it gives language a definite form; — the vocabulary and grammar of a language can function only when the language has phonetic form.

Hence, grammar and vocabulary depend on phonetics; they cannot exist outside of phonetics, because all lexical and grammatical phenomena are expressed phonetically. Thus, although phonetics serves as a means of expressing grammatical and lexical phenomena, yet it has laws of its own which are independent of grammar and vocabulary.

Although phonetics is not a new science and was known to the ancient Greeks and Hindus, as an independent science it began to develop in Western Europe and Russia only in the 19th century. There

was considerable progress and growth in the 20th century – new concepts sprang up, new theories and new schools came into existence, new methods of investigation were developed.

Some new branches of phonetics also appeared. The most important of these are special phonetics and general phonetics.

Special phonetics may be subdivided into descriptive phonetics and historical phonetics. Descriptive phonetics is concerned with the study of the phonetic structure of one language only, in its static form, at a particular period, synchronically. Historical phonetics studies the phonetic structure of a lan¬guage in its historical development, diachronically.

General phonetics is based on the extensive material which the special phonetics of a great number of languages provides; it is also based on other sciences, such as physics, biology, psychology, speech pathology, etc. On the one hand, general phonetics is based on the data of special phonetics; on the other hand, general phonetics provides valuable theoretical material which enables us to understand clearly and to interpret correctly the different phonetic phenomena of concrete languages.

Experimental and comparative phonetics are frequently considered to be either branches of phonetics or methods of investigation.

Articulatory phonetics investigates sound producing mechanisms. Its method consists of observing the way in which the air is set in motion, the movements of the speech organs and the coordination of these movements in the production of single sounds and trains of sounds. It borders with anatomy and physiology. The tools for investigating just what the speech organs do are ones used in these fields: direct observation, wherever it is possible, e.g. lip movement, some tongue movement; combined with x-ray photography or x-ray cinematography; observation through mirrors as in the laryngoscopic investigation of vocal cord movement etc.

Acoustic phonetics studies the way in which the air vibrates between the speaker's mouth and the listener's ear. Its basic method is instrumental. Speech sounds are investigated by means of operator called spectrograph. Intonation is investigated by intonograph. Acoustic phonetics comes close to studying physics and the tools used in this field enable the investigator to measure and analyse the movement of the air in

the terms of acoustics. This generally means introducing a microphone into the speech chain, converting the air movement into corresponding electrical activity and analyzing the result in terms of frequency of vibration and amplitude of vibration in relation to time. The use of such technical devices as spectrograph, intonograph and other sound analyzing and sound synthesizing machines is generally combined with the method of direct observation.

Auditory phonetics is the branch of phonetics investigating the hearing process. Its interests lie more in the sensation of hearing, which is brain activity, than in the physiological working of the ear or the nervous activity between the ear and the brain. The means by which we discriminate sounds — quality, sensations of pitch, loudness, length, are relevant here. The methods applied in auditory phonetics are those of experimental psychology: experimenting, based on different types of auditory tests.

Functional phonetics studies the way in which sound phenomena function in a particular language, how they are utilized in that language and what part they play in manifesting the meaningful distinctions of the language. So this is the branch of phonetics that studies the linguistic function of consonant and vowel sounds, syllabic structure, word accent and prosodic features, such as pitch, stress and tempo. In linguistics, function is usually understood to mean discriminatory function, that is, the role of the various elements of the language in the distinguishing of one sequence of sounds, for example a word or a sequence of words, from another of a different meaning. The basic method is substitution of sounds in different environments.

Phonetics has a wide sphere of application. It is used in teaching children to read and write their mother tongue. Knowledge of phonetics is indispensable in teaching and learning foreign languages. Phonetics is also used in teaching deaf-mutes to speak, and, in correcting speech defects, in telephony, in broadcasting, in training actors, teachers, singers, etc.

Phonetics is connected with other branches of linguistics. First of all it is linked with grammar because reading rules help to understand what form endings are to be pronounced. It also holds true about the category of number,

e.g.: *book-books, bag-bags, box-boxes*

Sound interchange signifies many important changes:

a) vowel and consonant interchanges, for example *goose-geese or leaf-leaves, house-houses* show the plural-singular categories of number;

b) vowel interchange in irregular verbs, for example *write-wrote-written.*

It helps us to form different parts of speech, for example *extend-V, extent-N; relief-N, relieve-V.*

It's important to mention sound symbolism (onomatopoeia – imitation of sounds in words e.g.: *to raw, bang, splash, smack, buzz*) – the use of compound nouns demonstrates this (for example *chip-chop* – рубити, *hip-hop* – підстрибувати, *flip-flop* – шльопати). Intonation, pausation in particular, may play a vital role too. Intonation alone can single out the logical predicate (e.g. *did Steve get an 'A' in history?).* Affirmative statements with the rising intonation may change into questions.

Phonetics is also linked with lexicology. Depending on the stress location it may form different parts of speech – for example 'abstract N – abs 'tract V). homographs (words identical in spelling) are pronounced differently, thus being different semantically, for example *bow* – «лук» [bou] і « поклонитись» [bau]. The same is true about homonyms – *black board and blackboard*.

It is also connected with stylistics: the components of intonation – speech melody, sentence stress, rhythm, pausation, voice tember – help to convey the attitude of the speaker towards the situation, the participants of it, and the atmosphere.

Graphical expressive means – the use of rhythm, rhyme, repetition of words – can also be connected with phonetics. Repetition of sounds called alliteration may also be found in a close sequence (e.g. "*Alone, alone, all, all alone, alone in a wide, wide sea*…" – implies the attitude of loneliness, sorrow).

Theoretical phonetics is mainly concerned with the functioning of phonetic units in the language.

The phonetic system of English is comprised of the following four components: speech sounds, the syllabic structure of words, word stress, and intonation (prosody). These four components constitute what is called the pronunciation of English.

Phonetics studies the sound system of the language that is segmental units (phonemes, allophones); suprasegmental units (word

stress, syllabic structure, rhythmic organization, intonation). It is divided into two major components: segmental phonetics, which is concerned with individual sounds (i.e. "segments" of speech), their behavior; and suprasegmental phonetics whose domain is the larger units of connected speech: syllables, words, phrases and texts.

2. Phonetics and Phonology

Phonetics must be differentiated from phonology. According to the concepts of the Prague School, phonetics and phonology are two independent branches of science. Phonetics is a science concerned with the physical and physiological characteristics of speech sounds. Phonology is a linguistic science and is concerned with the social functions of different phonetic phenomena. The term "phonology" is now widely used by linguists of many countries and refers to the part of linguistics which makes a study of phonetic phenomena from the point of view of their social significance.

The aim of phonology is to establish the inventory of the phonemes of the given language with the help of commutation tests.

Aspects of Speech Sounds

All speech sounds have 4 aspects (mechanisms):

1. Articulatory – it is the way when the sound-producing mechanism is investigated, that is the way the speech sounds are pronounced.

2. Acoustic – speech sound is a physical phenomenon. It exists in the form of sound waves, which are pronounced by vibrations of the vocal cords. Thus, each sound is characterized by frequency, certain duration. All these items represent acoustic aspect.

3. Auditory – sound perception aspect. The listener hears the sound, percepts its acoustic features and the hearing mechanism selects from the acoustic information only what is linguistically important.

4. Functional – every language unit performs certain functions in actual speech.

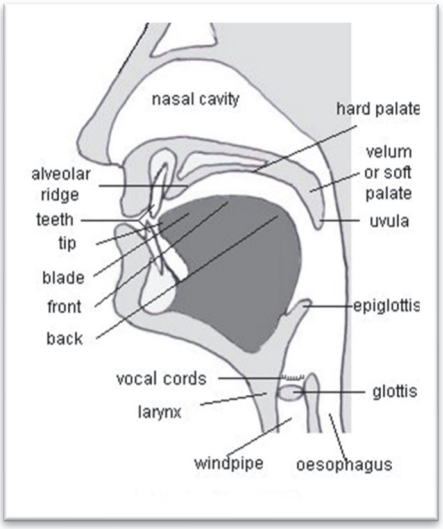
a) Like any other sounds, speech sounds are communicated to the air in the form of sound waves. Speech sounds have pitch, intensity, and timber. Musical tones and noises may be distinguished among them. Speech sounds can be investigated by the same methods as any other sounds and are subject to the same acoustic laws.

b) Speech sounds may also be considered from the biological point of view as phenomena resulting from the activities of "the speech organs". We now consider them to be a complex system of conditioned reflexes governed by and dependent upon the cortex of the cerebral hemispheres. The ability of man to respond by means of speech is what differentiates him from any other animal. This sphere of human activity was termed the "second signal system" by Prof. I. P. Pavlov.

The Organs of Speech

In speech the basic source of power is the respiratory system pushing the air out of the lungs. It goes up to the wind pipe the windpipe (the trachea) into the larynx, at which point it must pass between two small muscular folds called vocal folds. If the vocal folds are apart the air from the lungs will have a relatively free passage into the pharynx and the mouth. But if the vocal folds are adjusted so that there is only a narrow passage between them, the airstream will cause them to vibrate. Sounds produced when the vocal folds are vibrating are called are said to be voiced, as opposed to those in which the vocal folds are apart, which are said to be voiceless. For example, [v] is voiced and [f] is voiceless. Putting fingertips against larynx or hearing buzzing of the vibration or trying a pair of words one can identify the voiced and voiceless sounds. The differences between voiced and voiceless sounds are often important in distinguishing sounds. The air passages above the larynx are known as vocal tract which is like a tube and plays an important role in the production of speech sounds. The parts of the vocal tract that can be used to form sounds are called articulators. Given below are different Human Speech Organs:

1. Upper lip and upper teeth (frontal incisors)
2. Alveolar ridge
3. Hard palate
4. Soft palate or Velum
5. Uvula
6. Pharynx
7. Larynx
8. Lower lip and lower teeth
9. Tongue – tip, blade or front, centre, back, root



10. Nasal Cavity
11. Epiglottis

The methods of investigation used in phonetics vary, but there are three principal ones: (1) the direct observation method; (2) the linguistic method; (3) the experimental method.

1). The direct observation method comprises three important modes of phonetic analysis: by ear, by sight and by muscular sensation. Investigation by means of this method can be effective only if the persons employing it have been specially trained to observe the minutest movements of their own and other people's speech organs, and to distinguish the slightest variations in sound quality.

The muscular sensation is developed by constant and regular practice in articulating various sounds. A trained phonetician should be able to pronounce sounds of a given quality (e. g. an open back unrounded vowel, a trilled [r], a fronted [k], etc.), as well to recognize, by means of his highly developed muscular sensa¬tion the exact nature of the articulation of any speech sound that he hears.

2). The aim of the linguistic method of investigation of any concrete phonetic phenomena is to determine in what way all of these phonetic features are used in a language to convey a certain meaning.

The linguistic method utilizes linguistic analysis in observing the actual facts of language and interpreting their social signifi¬cance.

3). The experimental method is based, as a rule, upon the use of special apparatus or instruments, such as the laryngoscope, the artificial palate, the kymograph, the magnetic tape recorder, the oscillograph, the spectrograph.

(From Wikipedia, the free encyclopedia)

Transcription

Phonetic transcription is the visual representation of speech sounds. It is usually written in the International Phonetic Alphabet (IPA), in which each English sound has its own symbol. Phonetic transcription is usually given in brackets /ˈɪŋ.glɪʃ / or in square brackets [ˈɪŋ.glɪʃ]. Each sound in transcription is written separately. As you know, the same English letter or combinations of letters can be pronounced and read differently in different words. Of course, there are reading rules in English but there are a lot of exceptions too. The spelling of an English word does not always tell you how to pronounce or read this word. But if you can read phonetic transcription, you'll be able to pronounce any English word correctly without listening to its audio pronunciation.

Transription signs of vowel phonemes: [e], [iː], [ʊ], [uː], [ɒ], [ɔː], [ʌ] [ɑː][əʊ], [ə],[ɜː], [eə], [iə],[ai]

Transription signs of consonant phonemes: [tʃ].[θ], [ʒ], [ŋ], [ð],[ʃ], [ʤ].

In the academic discipline of linguistics, transcription is an essential part of the methodologies of (among others) phonetics, conversation analysis, dialectology and sociolinguistics. It also plays an important role for several subfields of speech technology.

Broadly speaking, there are two possible approaches to linguistic transcription. Phonetic transcription focuses on phonetic and phonological properties of spoken language. Systems for phonetic transcription thus furnish rules for mapping individual sounds or phones to written symbols. Systems for orthographic transcription, by contrast, consist of rules for mapping spoken words onto written forms as prescribed by the orthography of a given language. Phonetic transcription operates with specially defined character sets, usually the International Phonetic Alphabet.

Which type of transcription is chosen depends mostly on the research interests pursued. Since phonetic transcription strictly foregrounds the phonetic nature of language, it is most useful for phonetic or phonological analyses. Orthographic transcription, on the other hand, has a morphological and a lexical component alongside the phonetic component (which aspect is represented to which degree depends on the language and orthography in question). It is thus more convenient wherever meaning-related aspects of spoken language are investigated. Phonetic transcription is doubtlessly more systematic in

a scientific sense, but it is also harder to learn, more time-consuming to carry out and less widely applicable than orthographic transcription.

Mapping spoken language onto written symbols is not as straightforward a process as may seem at first glance. Written language is an idealization, made up of a limited set of clearly distinct and discrete symbols. Spoken language, on the other hand, is a continuous (as opposed to discrete) phenomenon, made up of a potentially unlimited number of components. There is no predetermined system for distinguishing and classifying these components and, consequently, no preset way of mapping these components onto written symbols.

Transcription systems are sets of rules which define how spoken language is to be represented in written symbols. Most phonetic transcription systems are based on the International Phonetic Alphabet. Examples for orthographic transcription systems (all from the field of conversation analysis or related fields) include a number of distinct approaches to transcription and sets of transcription conventions. These include, among others, Jefferson Notation. To analyze conversation, recorded data is typically transcribed into a written form that is agreeable to analysts. There are two common approaches. The first one, called narrow transcription, captures the details of conversational interaction such as which particular words are stressed, which words are spoken with increased loudness, points at which the turns-at-talk overlap, how particular words are articulated, and so on. If such a detail is less important, perhaps because the analyst is more concerned with the overall gross structure of the conversation or the relative distribution of turns-at-talk amongst the participants, then a second type of transcription known as broad transcription may be sufficient.

[Jefferson Notation: The Jefferson Notation System is a set of symbols, developed by Gail Jefferson, which is used for transcribing talk. Jefferson began transcribing some of the recordings that served as the materials out of which Harvey Sacks' earliest lectures were developed. Over four decades Jefferson's research into talk-in-interaction has set the standard for what became known as Conversation Analysis (CA). Her work has greatly influenced the sociological study of interaction, but also disciplines beyond, especially linguistics, communication, and anthropology. This system

is employed universally by those working from the CA perspective and is regarded as having become a near-globalized set of instructions for transcription.]

Questions for self-checking:

1. What are the major and minor branches of phonetics?
2. What's the difference between phonetics and phonology?
3. Define the aspects of speech sounds.
4. Describe the process of speech production and name human speech organs.
5. Speak about the main methods of phonetic investigation.
6. What are the two possible approaches to linguistic transcription?

Recommended literature:

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