

THE SYSTEM OF ENGLISH PHONEMES

§ 1. Vowel and consonant phonemes

There are two main classes of sounds traditionally distinguished in any language — consonants and vowels. The opposition ‘vowels vs. consonants’ is a linguistic universal and it is clearly seen on all levels of sound production.

This distinction on the acoustic level is clear due to the effect produced by these sounds: consonants have voice and noise combined, while vowels consist of voice only.

On the articulatory level the difference is exercised through the work of speech organs: vowels are produced without any obstruction, consonants are produced with the help of various obstructions, such as complete, partial or intermittent blockages of the air passage.

On the perception level the difference is understood through the integral characteristics of tone in vowels and the indispensable characteristics of noise in consonants.

On the functional level both vowel and consonant classes of sounds are represented as a set of phonemes established with the help of phonological analysis. Each of the classes taken separately may undergo further classifications on the acoustic, articulatory, auditory and functional levels.

The first three levels should be studied simultaneously as there is no sharp division between them.

Thus the articulatory classification defines the peculiarities of speech sounds as the combination of articulatory, acoustic and auditory characteristics.

The phonological classification studies the peculiarities of sounds from the functional point of view.

§ 2. Articulatory and phonological views on the classification of English consonants

2.1. General characteristics of English consonants

Consonants are speech sounds made with the air stream that meets a complete, partial or intermittent obstruction in the mouth or nasal cavities. The closure blocks the air stream and the sound production is accompanied with certain audible noise characteristics.

The phonological analysis establishes 24 phonemes of the English consonant system [p, b, t, d, k, g, f, v, θ, ð, s, z, ʃ, ʒ, h, tʃ, dʒ, m, n, ŋ, w, r, l, j].

2.2. Articulatory classification

Articulatory classification organizes English consonants into certain groups according to distinctive changes in the degree of noise, the manner of articulation, the place of articulation, the presence of voice and the position of the soft palate.

I. The degree of noise is determined by the presence of voice and noise characteristics. According to it English consonants are divided into noise consonants and sonorants.

Noise consonants [p, b, t, d, k, g, f, v, θ, ð, s, z, ʃ, ʒ, h, tʃ, dʒ] are characterized by noise component characteristic.

Sonorants [m, n, ŋ, w, r, l, j] are produced with tone prevailing over noise.

II. The manner of articulation is determined by the type of obstruction. According to it English consonants are grouped into occlusive, constrictive and occlusive-constrictive.

Occlusive consonants are produced with a complete obstruction in the mouth [p, t, k, b, d, g] or nasal cavities [m, n, ŋ]. The sounds [p, t, k, b, d, g] are also called plosives or stops, because in their production the air is released with plosion.

Constrictive consonants are produced with an incomplete obstruction in the resonator, forming a narrow [f, v, θ, ð, s, z, ʃ, ʒ, h] or a wider passage [w, r, l, j]. The sounds [f, v, θ, ð, s, z, ʃ, ʒ, h] are also called fricatives, because in their production the air is released with friction.

Occlusive-constrictive consonants or affricates [tʃ, dʒ] are produced with a complete obstruction, which is slowly released with friction.

III. The place of articulation is determined by the position of the active organ of speech. According to it English consonants are divided into labial, lingual and glottal. The class of labial consonants is further subdivided into bilabial and labio-dental; the class of lingual — into forelingual, mediolingual and backlingual.

1. Labial consonants are articulated by the lips. This class includes:
 - bilabial consonants [p, b, m, w], produced with both lips;
 - labio-dental consonants [f, v], articulated with the lower lip against the upper teeth.
2. Lingual consonants are articulated by the tongue. This class is divided into:
 - forelingual consonants [t, d, s, z, ʃ, j, θ, ð, tʃ, dʒ, n, l, r], produced with the tip of the tongue;
 - mediolingual consonant [j], produced with the front part of the tongue;
 - backlingual (velar) consonants [k, g, ŋ], produced with the back part of the tongue.

The subclass of forelingual consonants may be grouped into:

- interdental consonants [θ, ð];
 - alveolar consonants [t, d, s, z, n, l];
 - post-alveolar consonant [r];
 - palato-alveolar consonants [tʃ, dʒ, ʃ, j].
3. Glottal consonant [h] is articulated in the glottis.

It's necessary to mention, that the **number of places of articulation** may be different. Thus English consonants are divided into:

- unicentral [p, b, t, d, k, g, f, v, θ, ð, s, z, ʃ, j, h, m, n, ŋ, r, l, j], which have one point of articulation;
- bicentral [tʃ, dʒ, w], which have two points of articulation.

IV. The voice characteristic depends on the work of the vocal cords. According to it English consonants are divided into:

- voiced [b, d, g, v, ð, z, dʒ, m, n, ŋ, w, r, l, j];
- voiceless [p, t, k, f, θ, s, ʃ, h, tʃ].

V. According to the **position of the soft palate** all consonants are classified into:

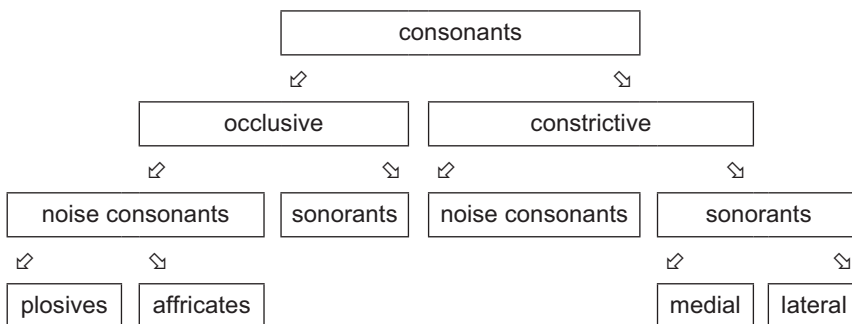
- oral consonants [p, b, t, d, k, g, f, v, θ, ð, s, z, ʃ, j, h, tʃ, dʒ, w, r, l, j], produced when the soft palate is raised;
- nasal consonants [m, n, ŋ], produced when the soft palate is lowered.

2.3. Phonological classification

The phonological description of consonants partially follows the articulatory one but still has certain distinctions. The same points are taken into consideration (the degree of noise, the manner of articulation, the place of articulation, the presence of voice, the position of the soft palate), but they are studied from the point of view of the functional relevance which is exemplified with the help of distinctive oppositions.

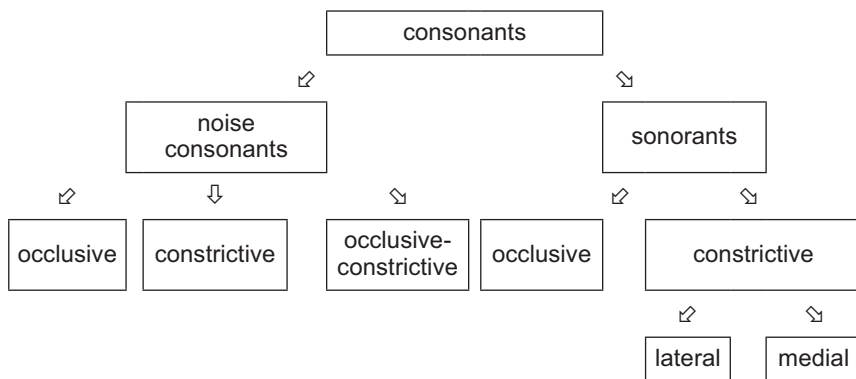
I. The first two points of articulatory classification are the **degree of noise** and the **manner of articulation**. They are considered to be relevant for phonological description as well, but some disputes arise concerning their primary importance.

For example, V.A. Vassilyev gives major importance to the type of obstruction and distinguishes the opposition of occlusive consonants vs. constrictive ones: *tea* [ti:] — *sea* [si:], *seed* [si:d] — *seas* [si:z], *pull* [pul] — *full* [ful], *boat* [bəut] — *vote* [vəut]. Each of the classes is then divided into noise consonants and sonorants with further subdivisions.



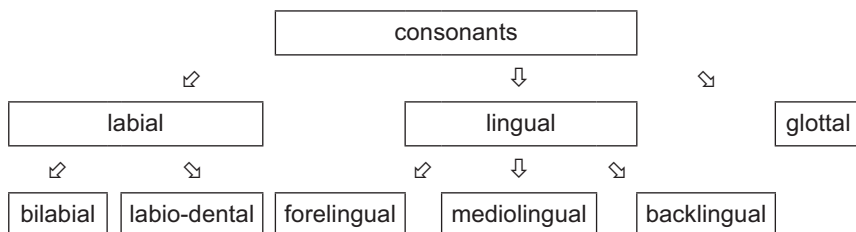
M.A. Sokolova suggests another approach and states the degree of noise to be the first and basic principle of classification. Thus consonants are divided into noise consonants and sonorants because of great articulatory and acoustic differences between them. The phonological relevance of this factor is proved by contrastive oppositions: *bake* [beik] — *make* [meik], *veal* [vi:l] — *wheel* [wi:l].

Each of the classes then undergoes further subdivisions.



Still in spite of all the controversy in opinions, both characteristics are essential for the phonological description of consonants.

II. The principle of consonant classification according to the **place of articulation** is fairly universal. On the basis of the position of the active speech organ against the point of articulation English consonants are classed into labial, lingual, glottal with further subdivisions.



This characteristic is relevant for phonological description. The fact is proved by oppositions of consonants, which bring changes in meaning, for example:

- bilabial vs. forelingual *pan* — *tan* [pæn] — [tæn];
- bilabial vs. backlingual *pick* — *kick* [pɪk] — [kɪk];
- forelingual vs. mediolingual *less* — *yes* [les] — [jes];
- forelingual vs. backlingual *day* — *gay* [deɪ] — [geɪ];
- forelingual vs. glottal *sigh* — *high* [saɪ] — [haɪ];
- labio-dental vs. forelingual *feet* — *seat* [fi:t] — [si:t], etc.

IV. The **voice characteristics** in phonological analysis is connected with the force and energy of articulation rather than with the work of the vocal cords.

According to it consonants are divided into strong (fortis, voiceless) and weak (lenis, voiced). The difference is exemplified in distinctive oppositional pairs: *cap* — *cab*, *not* — *nod*, *pick* — *pig*, *cap* — *gap*, *pit* — *bit*.

V. The **position of the soft palate** is not phonologically relevant, because the presence or absence of nasalization is not used for meaning differentiation in English. There are no distinctive pairs of consonants which differ in the position of the soft palate so in phonology this feature is considered as an indispensable concomitant one.

2.4. Problem of affricates

The problem of affricates arises in phonology, when phoneticians define the phonological status and number of these consonants in the English language.

Russian specialists state there are two affricate sounds in English: [tʃ, dʒ]. Foreign linguists enlarge the scale and point out six more affricates: [ts, dz, tr, dr, tθ, dð]. So there are eight reputed affricate sounds in English: [tʃ, dʒ, ts, dz, tr, dr, tθ, dð].

In order to overcome such a controversy, it's necessary to consider this problem thoroughly.

We should note here that only voiceless affricates are the object of phonological investigation in this case. The articulation of voiced counterparts is said to follow the same principles as voiceless ones.

The **first question** that needs an answer is: whether these sounds are monophonemic bicentral entities or biphonemic combinations of two different elements?

According to the rules of articulatory indivisibility by N.S. Trubetzkoy, a sound complex is considered monophonemic if it possesses syllabic and articulatory indivisibility, and its duration does not exceed the normal one.

Thus the analysis of the reputed affricate sounds [tʃ, dʒ, ts, dz, tr, dr, tθ, dð] from the point of view of their syllabic indivisibility shows that there are some word-groups in which the sounds [tʃ, ts, tr, tθ] may belong to one syllable: *butcher* [butʃ-ə], *mattress* [mætr-ɪs], *curtsey* [kə:-tsɪ], *eight* [eɪtθ].

Further analysis shows that the given sound complexes are homogeneous and produced by one articulatory effort.

The length of these sounds cannot be relied on, as it depends on phonetic context. For example, the length of English [tʃ] in *match* is much longer than in *chair*, but this does not prove that in the first word [tʃ] is biphonemic.

So the analysis on the basis of articulatory and acoustic criteria shows that potentially the sounds [tʃ, ts, tr, tθ] and their voiced counterparts [dʒ, dz, dr, dð] can be considered monophonemic and therefore can be treated as affricates.

Here **the second question** arises: if these sounds are monophonemic, how many phonemes of the same kind exist in English?

According to the morphological criterion a phoneme is morphologically indivisible, hence a sound complex is considered to be monophonemic if a morpheme boundary cannot pass within it.

In this case [tʃ, dʒ] can undoubtedly get a monophonemic status, as these phoneme sounds prove to be indispensable. For example, without [t] or [ʃ] the word *chair* [tʃɛə] correspondingly becomes *share* [ʃɛə] or *tear* [tɛə]; the word *match* [mætʃ] changes into *mash* [mæʃ] or *mat* [mæt].

The sound complexes [ts, dz, tθ, dð] cannot be included in the system of English phonemes, because their last elements are separate morphemes [s, z, θ, ð] which are easily singled out by native speakers in any kind of phonetic context.

The case with [tr, dr] complexes is more difficult, because in some cases they turn to be inseparable when the elimination of one element

results in the change of meaning: *tray* [treɪ] — *ray* [reɪ]. Still they are normally regarded as sound sequences and are not included in the system of English phonemes.

Consequently, it's necessary to take into consideration both approaches and regard the problem of affricates successively, first resting on the articulatory and acoustic characteristics and then on the morphological and functional ones.

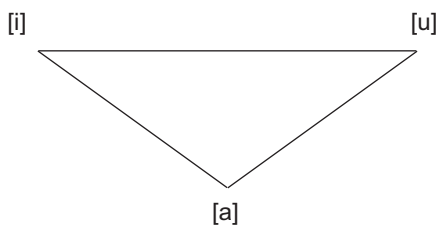
Thus Russian phoneticians define [tʃ, dʒ] as monophonemic units that are included in the system of English phonemes and possess the articulatory characteristics of occlusive-constrictive, bicentral, (fore)lingual, palato-alveolar consonants with the opposition of voiceless fortis [tʃ] vs. voiced lenis [dʒ] (*to catch* — *to cadge*; *riches* — *ridges*; *lunch* — *lunge*; *to beseech* — *to besiege*). In home phonology [tr, dr, ts, dz, tθ, dð] are considered as biphonemic complexes which cannot enter the consonant sub-system in spite of their articulatory and acoustic indivisibility in some contexts.

§ 3. Articulatory and phonological views on the classification of English vowels

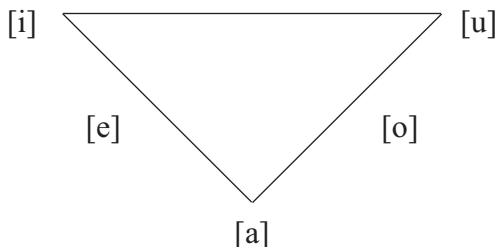
3.1. General characteristics of English vowels

Vowels are speech sounds made with the air stream that meets no obstruction in the mouth, pharyngeal or nasal cavities. There is no noise component characteristic in the production of vowel sounds.

A minimum vowel system of any language is likely to take the form of a triangle with the sounds [i, u, a] at the tops. They form boundaries of the vowel system as acoustically stable and articulatory different from each other sounds.



Sounds [e, o] may be added to them to mark the medium degree of unlikeness in the acoustic and articulatory characteristics. Thus we get the most common vowel system with 5 vowels.



The British linguist D. Jones tried to establish a broader classification of vowels for all languages. He devised the system of eight Cardinal Vowels on the physiological basis with the help of X-ray photography of the tongue positions. This system is recognized by most foreign linguists and serves the basis of the International Phonetic Alphabet (IPA).

IPA symbols for the cardinal vowels are: 1 [i], 2 [e], 3 [ɛ], 4 [a], 5 [ɑ], 6 [ɔ], 7 [o], 8 [u]. The triangle form in this case is changed into a trapezium.



The articulatory changes in this case should be described as follows: the front part of the tongue raised as close as possible to the palate forms point of articulation No.1, the gradual lowering of the tongue to the back lowest position gives point No.5, the lowest front position of the tongue gives point No.4, the upper back limit for the tongue position gives point No.8. The tongue positions between these points form points for No. 2, 3, 6, 7.

The system of cardinal vowels is an international standard, but in spite of great theoretical significance its practical application is limited. In language teaching this system can be learned only by oral instructions from a teacher who knows how to pronounce the vowels.

The model pronunciation can be illustrated by the following examples:

1 [i] — German *Biene*, Russian *пили*;

2 [e] — Russian *мечь*;

3 [ɛ] — Russian *эма*;

4 [a] — French *la*;

5 [ɑ] — English *hot*;

6 [ɔ] — German *Sonne*;

7 [o] — French *Rose*;

8 [u] — German *gut*.

The system of cardinal vowels gets necessary transformations when applied to a particular language.

The standard of English pronunciation, called Received Pronunciation or BBC English, contains 20 vowel phonemes [ɪ, e, æ, a:, ɔ, o:, u, dʒ, ə:, ə, i:, u:, eɪ, aɪ, ɔɪ, aʊ, əʊ, ɪə, eə, uə].

They may be exemplified by the following words: [ɪ] *ink*, [e] *net*, [æ] *act*, [a:] *arc*, [ɔ] *on*, [o:] *all*, [u] *put*, [ʌ] *utter*, [ɜ:] *earn*, [ə] *about*, [i:] *neat*, [u:] *pool*, [eɪ] *eight*, [aɪ] *my*, [aʊ] *how*, [ɔɪ] *oil*, [ɪə] *ear*, [eə] *air*, [uə] *doer*, [əʊ] *no*.

3.2. Articulatory classification

Articulatory classification of English vowels describes distinctive changes in the stability of articulation, the tongue position, the lip position, the vowel length, the vowel tenseness and the character of the vowel end.

I. According to the **stability of articulation** English vowels are divided into monophthongs, diphthongs and diphthongoids.

Monophthongs are pure vowel sounds with stable unchanging articulation: [ɪ, e, æ, a:, ɔ, o:, u, ʌ, ə:, ə].

Diphthongs are complex vowel sounds with unstable articulation including an articulatory glide from one position to another: [eɪ, aɪ, ɔɪ, au, əu, ɪə, ɛə, uə]. They consist of two elements: the nucleus with a strong and distinct articulation which forms the starting point of a vowel, and the glide which reveals the direction of the sound change.

Diphthongoids are vowel sounds with a slight change in articulation when the difference between the starting point and the end of the sound is not so clear: [i:, u:].

II. The variations in the **tongue position** also have an effect on the quality of vowel sounds. They include horizontal and vertical movements of the tongue.

1. According to **horizontal movements** of the tongue, vowels are divided into front, front-retracted, central, back, and back-advanced.

Front vowels are produced when the tongue is in the front part of the mouth and its front is raised to the hard palate: [i:, e, æ], [eɪ] and the nucleus of [ɛə].

Front-retracted vowels are pronounced when the tongue is in the front part of the mouth but slightly retracted: [ɪ] and the nucleus of [ɪə, aɪ, au].

Central vowels are produced when the tongue is in the central part of the mouth and its front is raised to the back part of the hard palate: [ɔ̜, ə:, ə] and the nucleus of [əu].

Back vowels are pronounced when the tongue is in the back part of the mouth and its back is raised to the soft palate [ɔ, o:, u:, a:] and the nucleus of [ɔɪ].

Back-advanced vowels are produced when the tongue is in the back part of the mouth but slightly advanced and its centre is raised to the soft palate: [u] and the nucleus of [uə].

2. According to **vertical movements** of the tongue, vowels are divided into close, mid, and open.

Close (high) vowels are produced when the front or back of the tongue is raised high to the palate: [i:, ɪ, u, u:].

Open (low) vowels are pronounced when the front or back of the tongue is at the lowest position: [æ, a:, ɔ, o:].

Mid (half-open) vowels are produced when the raised part of the tongue is between the close and open positions [e, ʌ, ə:, ə].

Each of these vertical tongue positions has two variants: broad and narrow, which include a higher or lower position of articulation within one of the levels. Thus a more precise classification includes the following groups:

- close narrow vowels [i:, u:];
- close broad vowels [ɪ, u];
- mid narrow vowels [e, ə:];
- mid broad vowels [ʌ, ə];
- open narrow vowel [o:];
- open broad vowels [æ, a:, ɔ].

The nuclei of diphthongs are always pronounced within broad variants.

III. According to the **position of the lips**, vowels may be rounded or unrounded.

Rounded vowels are produced when the lips are drawn together with a round opening between them: [ɔ, o:, u, u:].

Unrounded vowels are pronounced when the lips are neutral or spread: [i:, ɪ, e, æ, a:, ʌ, ə:, ə].

IV. According to the **length** the classes of long and short vowels are distinguished:

long vowels are capable of being continued during a longer period of time [i:, a:, o:, ə:, u:];

short vowels — during a shorter period of time [ɪ, e, ɔ, u, ə, ʌ].

The vowel sound [æ] stands apart from this category because it's relatively long.

V. The **degree of tenseness** which distributes vowels into tense and lax is closely connected with vowel length.

Tense vowels are produced when the speech organs are tense, here belong all English long vowels: [i:, a:, o:, ə:, u:].

Lax vowels are produced with less tenseness of the speech organs, here belong all English short vowels: [i, e, ɔ, u, ə, ʌ, æ].

VI. English vowels are also classified according to the **character of the end** into checked and free (unchecked). This criterion is connected with the quality of vowel sounds under the influence of word stress.

Checked vowels are pronounced with maximum force of utterance and have a strong end. They are abruptly interrupted by the following consonant and therefore occur only in closed syllables. These are English stressed vowels followed by a strong voiceless consonant (*bet* [bet], *dock* [dɒk], *cart* [ka:t], *tape* [teɪp], *teacher* [ˈti:tʃə]).

Free vowels are pronounced with lessening force of utterance and have a weak end. Here belong English vowels followed by a weak voiced consonant or no consonant at all (*pull* [pul], *card* [ka:d], *tame* [teɪm], *try* [traɪ], *illusion* [ɪˈlu:ʒn]).

3.3. Phonological classification

The phonological description of vowels partially follows the articulatory one, yet it has significant distinctions. The same criteria are taken into consideration (the stability of articulation, the tongue position, the lip position, the vowel length, the vowel tenseness, the character of the vowel end), but they are analysed from the point of view of their functional sufficiency. The criteria of articulatory classification provide the basis for the establishment of distinctive oppositions, but not all of them get the same treatment in home and foreign phonology. Moreover, some criteria are not considered to be phonologically relevant.

I. The **stability of articulation** is a disputable criterion. British and American phoneticians suppose that the stability of speech organs in the pronunciation of vowel sounds is quite relative.

Therefore in foreign linguistics the subdivision of vowels into monophthongs and diphthongs is based on the number of elements constituting a vowel phoneme. Thus simple vowels are defined as monophthongs whereas complex vowels are defined as diphthongs.

Russian scholars single out the criterion of the stability of articulation, according to which vowels are subdivided into:

- monophthongs with stable tongue position;
- diphthongs with unstable articulation which implies gradual glide of the tongue from one position to another;
- diphthongoids, with relatively unstable articulation which implies a slight glide only.

The classification suggested by Russian linguists is more exact from the articulatory point of view and thus it is more suitable for teaching purposes. Yet the phonemic status of diphthongs and diphthongoids causes much argument.

II. The **position of the tongue** in the mouth cavity is the criterion acknowledged as phonologically relevant by all linguists. Still the classifications suggested by Russian and foreign scientists have considerable meaningful differences.

According to the horizontal movements of the tongue our phoneticians distinguish five classes of vowels: front, front-retracted, central, back, back-advanced. Foreign phoneticians distinguish only three classes: front, central and back.

The classification of English vowels according to the vertical movements of the tongue is also variable. British scholars distinguish three classes of vowels: high, mid and low. Russian phoneticians make this classification more detailed and distinguish two subclasses in each class, all in all constituting six classes: broad and narrow variations of close, mid and open vertical positions.

The controversy in the treatment of this criterion naturally leads to different views on the next criterion — the length of vowels.

III. The distribution of vowels according to their **length** into long and short from the articulatory point of view is stated by all linguists. The antagonism of foreign and home linguists lies in the field of phonology.

British and American phoneticians consider vowel length to be an essential phonemic feature whereas Russian scientists don't treat it as phonologically relevant. They underline that physical duration of a vowel in connected speech depends on many factors and doesn't always serve as the only distinctive feature.

The explanation of such a considerable difference in the approaches to the second and third criteria is quite simple. In fact, the criteria of tongue position and vowel length are interconnected from the point of view of their functional significance. Foreign linguists do not single out the classes of front-retracted and back-advanced vowels when analyzing the horizontal movements of the tongue. They also do not distribute vowels into broad and narrow variants when dealing with the vertical movements of the tongue. So the number of vowel classes distinguished on the basis of the tongue position is fairly smaller which results in different views on the criterion of vowel length.

This can be clearly illustrated by the example of vowels [i:, ɪ, u:, ʊ].

According to the approach of Russian linguists, they belong to the same vowel classes, but differ in subclasses:

[i:] front, close narrow vowel — [ɪ] front-retracted, close broad vowel;

[u:] back, close narrow vowel — [ʊ] back-advanced, close broad vowel.

Therefore the distinction of minimal pairs like *Pete* [pi:t] — *pit* [pɪt], *pool* [pu:l] — *pull* [pʊl] is made with the help of functional features based on different positions of the tongue. Thus the length of vowels is not considered to be relevant.

In foreign linguistics the classification of vowels according to the tongue position is not so precise. Therefore both [i:] and [ɪ] are classed as front vowels, both [u:] and [ʊ] — as back ones. In this case word-meaning in oppositions like *beat* [bi:t] — *bit* [bɪt], *seat* [si:t] — *sit* [sɪt] can be differentiated only with the help of vowel length which should be taken into consideration as a phonologically relevant factor.

IV. The traditional classification of vowels according to the **lip position** into spread, neutral and rounded, may be reduced to two positions: rounded and unrounded.

Still lip rounding is not phonologically relevant because it takes place only due to physiological reasons. From the phonological point of view lip rounding is caused by different positions of the tongue. Any back vowel is pronounced with lip rounding and the degree of rounding depends on the height of the raised part of the tongue.

V. The degree of **vowel checkness** or the **character of vowel end** concerns the quality of vowels in stressed syllables under the influence of the following consonant.

According to it all English long vowels are free as their pronunciation doesn't depend on the next consonant phoneme.

The pronunciation of English short vowels is checked when they are stressed. The degree of checkness is terminated by the following consonant: it is greater before a voiceless consonant and smaller before a voiced one or a sonorant.

But this characteristic has no phonological value and it is important only for practical application in language teaching.

VI. The **degree of tenseness** characterizes the state of the organs of speech at the moment of vowel production. Special instrumental analysis shows that long vowels are tense while short ones are lax. This characteristic is also non-phonological and it is used only in teaching practice.

The criteria of vowel checkness and tenseness are phonologically non-relevant, because they are realized only in connection with other phonetic phenomena, namely the syllabic structure and the word stress. Thus in the word *pity* ['pɪtɪ] the sounds [ɪ] in the first and second syllables have different degrees of checkness and tenseness because of the differences in their placement and accentuation.

3.4. Problem of diphthongs and diphthongoids

The classification of English simple and complex vowels gets different interpretation in Russian and foreign linguistics.

Monophthongs are singled out by all phoneticians who consider that these are simple vowels with more or less stable position of the articulating speech organs. But the number of monophthongs may differ in some classifications because of various points of view on the phonemic status of complex vowels — diphthongs and diphthongoids. For example, some foreign linguists liquidate diphthongs as unit phonemes in accordance with the principle of structural simplicity and economy, others single out both monophthongs and diphthongs but reject the existence of diphthongoids.

The English diphthongs are the object of sharp phonological debates. The **question** is: whether they are biphonemic sound complexes or com-

posite monophonemic entities? Modern linguistics uses a complex approach to the solution of this problem.

According to the rules of articulatory indivisibility N.S. Trubetskoj states that diphthongs are unisyllabic, because:

- their parts can't belong to different syllables;
- they present one phoneme with gliding articulation;
- their length doesn't exceed the length of a single phoneme.

According to the criterion of morphological indivisibility added by L.R. Zinder English diphthongs can't be separated, because they belong to one morpheme: *buy* [baɪ] — *buyer* ['baɪ-ə]. Thus English diphthongs differ from Russian biphonemic combinations like [ай, ой]: *чай* [чай] — *чаю* [ча-йу], *стой* [стой] — *стою* [сто-йу].

Taking this information into consideration, phoneticians grant monophonemic status to the English diphthongs on the basis of articulatory, morphonological and syllabic indivisibility combined with the criterion of duration:

- English diphthongs are pronounced within a single articulatory effort;
- neither morpheme nor syllable boundary can separate the nucleus and the glide (*saying* ['seɪ-ɪŋ], *crying* ['kraɪ-ɪŋ], *enjoying* [ɪn-'dʒɔɪ-ɪŋ], *slower* ['sləʊ-ə], *ploughing* ['plau-ɪŋ], *clearer* ['kliə-rə], *airing* ['ɛə-rɪŋ], *poorer* ['puə-rə]);
- the duration of diphthongs coincides with the one of long monophthongs in the same phonetic context (*site* [saɪt] — *seat* [si:t], *coat* [kəʊt] — *caught* [kɔ:t]).

With the help of commutation test V.A. Vassilyev shows that any diphthong can form oppositions with practically all vowels and thus defines the monophonemic status of diphthongs (*bite* — *bit* [baɪt — bɪt]; *bite* — *but* [baɪt — bʌt]; *bite* — *bought* [baɪt — bo:t]; etc.).

The monophonemic character of English diphthongs is also proved by native speakers' intuition who perceive these sound complexes as a single unit element.

Besides diphthongs Russian linguists also define such a subclass of English vowels as diphthongoids on the basis of slight articulatory insta-

bility in the pronunciation of [i:, u:] which becomes gradually stronger in modern English.

The division of English vowels into monophthongs, diphthongs and diphthongoids is very important for language teaching since there are no such sounds in Russian. Russian sound combinations like [йа, йо, йу, ой, ай, ау, уа] (*яд, йод, юз, рой, край, мяукасть, вуаль*) are biphonemic clusters of two vowels or a vowel and the sonorant [й], when both elements are pronounced with equal energy and distinction.

So special attention should be given to pronunciation teaching of English diphthongs, presenting a phonemic entity of two elements, the first of them being a strong and distinct nucleus and the second — a weak and indistinct glide. The pronunciation of diphthongoids characterized by a certain degree of instability, which is greater in comparison with monophthongs and smaller in comparison with diphthongs, also requires special attention.

3.5. Problem of vowel length

Vowel length or vowel quantity has been the point of disagreement among phoneticians for a long time.

From practical point of view the quantity of a vowel in connected speech is presupposed by many factors:

- its proper length;
- the phonetic context (*be — bead — beat* [bi: — bi·d — bit]);
- the word stress (in stressed syllables vowels are longer, cf. *forecast* ['fo:ka:st] — *to forecast* [fə'ka:st]);
- the number of syllables (vowels are shorter in polysyllabic words: *verse* [və:s] — *university* [,junɪ'vɜ:sɪtɪ]);
- the syllabic structure (in words with V, CV, CCV type vowels are longer than in VC, CVC, CCVC type: [ə:] in *err* and *earn*; [ju:] in *dew* and *duty*);
- other factors (the position in the tone group, the position in the utterance, the tempo of the utterance, the type of pronunciation, the style of pronunciation, etc.).

But the problem phonology investigates is whether variations in quantity are meaningful and thus can be treated as a relevant feature when characterizing the system of English vowels.

Foreign scholars usually follow the approach of an outstanding British phonetician D. Jones who underlines the phonological relevance of vowel quantity. He states that words may be distinguished from one another with the help of oppositions of different vowel length called chronemes (*deed* — *did*, *fool* — *full*).

An outstanding Russian phonetician V.A. Vassilyev objects to this point of view and considers that the difference in the quantity of vowels should be subordinate to the difference in their quality. This conclusion is based on two laws characterizing any language system:

- (1) a relevant feature must characterize a number of units;
- (2) a feature is systemic if it does not depend on the context.

The first law can be proved with the help of distinctive oppositions containing vowels of different length. Most English vowels are characterized by the predominance of other distinctive features besides quantitative correlation:

- in [i:, u:] vs. [ɪ, ʊ] — diphthongoids vs. monophthongs;
- in [ə:] vs. [ə] — stressed vocalism (a vowel seldom occurs in unstressed syllables) vs. unstressed vocalism (a vowel never occurs in stressed syllables);
- in [ɑ:] vs. [ʌ] — back open vs. central mid characteristics.

This gives the ground not to treat vowel length as a phonologically relevant feature.

The second law shows that besides a great deal of other factors the absolute length of vowels greatly depends on phonetic context. Long vowels are the longest in terminal positions (*bee*, *bar*), they are shorter before voiced consonants (*bead*, *hard*), and the shortest before voiceless consonants (*beet*, *cart*). Still the words like *bit* and *beat* are perceived as different, because vowels differ in quality: [ɪ] is a front retracted pure monophthongs whereas [i:] is a diphthongized vowel.

So vowel length can't be considered a minimal distinctive feature since it varies under the influence of different phonetic context and serves as an incidental feature characterizing vowel sounds of a certain quality.

Such an approach to phonological relevance of the quantity of English vowels is shared by most Russian and many British phoneticians.

The problem of vowel length also concerns the status of phoneme [æ]. It is treated as a historically short vowel that tends to be lengthened before lenis consonants [b, d, g, m, n, z] almost the same as long vowels. Nowadays the most part of phoneticians considers that [æ] belongs to the subclass of long vowels on the basis of its qualitative — quantitative relations in the opposition [æ] vs. [ə].

Seminar 3

1. Give reasons why the opposition ‘vowels vs. consonants’ is considered to be a linguistic universal.
2. How is the distinction between vowels and consonants understood on the material side of phonetic units’ representation?
3. What is the way to represent vowels and consonants on the functional level?
4. Characterize consonants as a class of speech sounds. How many consonant phonemes exist in English?
5. Point out the main principles of consonant classification. Explain the divergences of the articulatory and phonological classifications.
6. Give an overview of the articulatory classification of consonants compared to their phonological classification. Discuss the relevance of the following points:
 - a) the degree of noise and the manner of articulation;
 - b) the place of articulation;
 - c) the presence or absence of voice;
 - d) the position of the soft palate.
7. Characterize vowels as a class of speech sounds. How many vowel phonemes exist in English?
8. Point out the main principles of vowel classification. Explain the divergences of the articulatory and phonological classifications.