Articulatory classification of English vowels

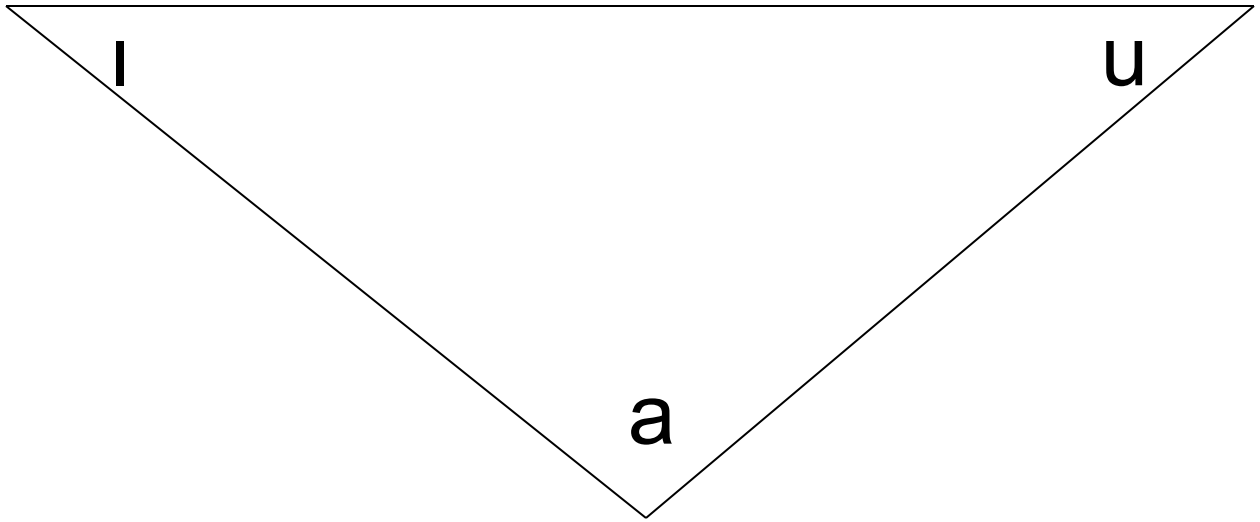
Vowels

- unlike consonants are produced with no obstruction to the stream of air, so on the perception level their integral characteristic is naturally tone, not noise.

- The following 20 vowel phonemes are distinguished in BBC English:

  [iː, aː, ɔː, uː, ɜː, ɪ, e, æ, ɔ, ʊ, ʌ, ə; eɪ, aɪ, ɔɪ, aʊ, oʊ, eə, ʊə, ɪə].

- A minimum vowel system of a language is likely to take the form of triangle



The most important characteristic of these vowels

- acoustically stable
- entirely different from one another both articulatorily and acoustically.

→ they form boundaries of "phonetic field of vowels" in a modern man's life.

Vowel quality

a bundle of definite articulatory characteristics:

- size,
- volume,
- shape of the mouth resonator,
- relative stability of the tongue,
- the position of the lips,
- physical duration of the segment,
- the force of articulation,
- the degree of tenseness of speech organs

D. Jones

- The first linguist who tried to describe and classify vowels for all languages.
- He devised the system of 8 Cardinal Vowels.
- The basis of the system is physiological.

Cardinal vowels

- No. 1 → the position of the front part of the tongue raised as closed as possible to the palate
- No. 5 → the gradual lowering of the tongue to the back lowest position
- No. 4 → the lowest front position of the tongue
- No. 8 → the upper back limit for the tongue position

- The tongue positions between these points were X-rayed and the equidistant points for No.2, 3, 6, 7 were found.
- The IPA symbols (International Phonetic Alphabet) for the 8 Cardinal Vowels are:

1 -i, 2 - e, 3 - ɛ, 4 - a, 5 - a:, 6 - ɔ, 7 - o, 8 - u.

1
2
3
4

Russian phoneticians

a classification of vowels according to the following principles:

- stability of articulation;
- tongue position;
- lip position;
- character of the vowel end;
- length;
- tenseness.

Stability of articulation

specifies the actual position of the articulating organ in the process of the articulation of a vowel:

- the tongue position is stable (articulated vowel is relatively pure)
- it changes, that is the tongue moves from one position to another (a vowel consists of two clearly perceptible elements)
- an intermediate case, when the change in the tongue position is fairly weak.

- According to Russian scholars vowels are subdivided into:
- ***monophthongs*** (the tongue position is stable);
- ***diphthongs*** (it changes, that is the tongue moves from one position to another);
- ***diphthongoids*** (an intermediate case, when the change in the position is fairly weak).

- P. Roach → British English (BBC accent) has short vowels, long vowels and diphthongs.
- A.C. Gimson distinguishes 20 vocalic phonemes which are made of vowels and vowel glides.

Phonemic status of English diphthongs

Diphthongs are complex entities like affricates:

- monophonemic units? or
- biphonemic units?

- no simple and logic criterion

Russian scholars

- English diphthongs → monophonemic status

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- arliculatory,
- morphonological
- and syllabic indivisibility + the criteria of duration and commutability

Articulatory indivisibility

neither morpheme nor syllable boundary that separate the nucleus and the glide can pass within it

['seɪ-ɪŋ] saying, ['kraɪ-ɪŋ] crying, [ɪn-'ʤɔɪ-ɪŋ] enjoying, ['puə-rə] poorer.

Duration of diphthongs

the length of diphthongs is the same as the English long monophthongs in the same phonetic context

[saɪt - si:t], [kout - kɔ:t].

Commutation test

proves the monophonemic status of diphthongs → any diphthong could be commutated with practically any vowel.

- [bait – bɪt] bite - bit
- [bait - bʌt] bite - but
- [bait - bɔ:t] bite - bought

D. Jones

- diphthongs are unisyllabic gliding sounds
- in the articulation the organs of speech start from one position and then elide to another position.
- two vowels [i:, u:] may have a diphthongal glide where they have full length *(be, do)*
- tendency for diphthongization is becoming gradually stronger.

The position of the tongue

is characterized from two aspects:

- horizontal movement
- vertical movement

According to the horizontal movement

Russian phoneticians distinguish five classes:

- front: [i:], [e], [eɪ], [æ], [eə]
- front-retracted: [ɪ], [ɪə]
- central: [æ], [ə:], [ə], [eu]
- back: [ɔ], [ɔ:], [u:], [a:]
- back-advanced: [u], [uə].

British phoneticians

do not single out the classes of front-retracted and back-advanced vowels.

→ both [i:] and [ɪ] are classed as front

→ both [u:] and [u] are classed as back.

According to the vertical movement

British scholars distinguish three classes of vowels:

- high (or close),
- mid (or half-open),
- low (or open) vowels.

According to the vertical movement

Russian phoneticians → more detailed classification:

distinguishing two subclasses in each class, i.e. broad and narrow variations of the three vertical positions.

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six groups of vowels are distinguished

Lip position

Three lip positions are distinguished:

- spread,
- neutral,
- rounded.

Lip rounding

- is not relevant phonologically → no two words can be differentiated on its basis.
- takes place rather due to physiological reasons than to any other.

Lip rounding

- Any back vowel in English is produced with rounded lips
- the degree of rounding is different and depends on the height of the raised part of the tongue
- the higher it is raised the more rounded the lips are.

Character of the vowel end

- This quality depends on the kind of the articulatory transition from a vowel to a consonant.
- This transition (VC) is very closed in English unlike Russian.

→ all English short vowels are checked when stressed.

Character of the vowel end

- The degree of checkness may vary and depends on the following consonants.
- Before fortis voiceless consonant it is more perceptible than before a lenis voiced consonant or sonorant.
- All long vowels are free.

Vowel length or quantity

- A vowel like any sound has physical duration.
- Sounds are used in connected speech are influenced by one another.

Vowel length or quantity

Duration of a vowel depends on:

- its own length;
- the accent of the syllable in which it occurs;
- phonetic context;
- the position in a rhythmic structure;
- the position in a tone group;
- the position in an utterance;
- the tempo of the whole utterance;
- the type of pronunciation, etc.

Tenseness

characterizes the state of the organs of speech at the moment of vowel production

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historically long vowels are tense while historically short are lax