

Syllabic Structure of English Words.

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1. The syllable as a minimal pronounceable unit.

Speech continuum can be broken into syllables — minimal pronounceable units presenting a cluster or group of sounds. Syllables form language units of greater magnitude: morphemes, words and phrases, each of them characterized by a certain syllabic structure. Thus any meaningful language unit may be considered from the point of view of two aspects: syllable formation and syllable division, which form a dialectal unity.

Speaking about the definition of the syllable, it is perfectly obvious that no phonetician has so far succeeded in it. The attempts to define the concept of the syllable resulted in the existence of different approaches.

Some linguists treat the syllable as a purely articulatory unit universal for all languages, which lacks any functional value, because its boundaries do not always coincide with those of morphemes.

Still the majority of linguists regard **the syllable as the smallest pronounceable unit with a certain linguistic function which refers to the structure of a particular language**. In this case the definition of the syllable tends to single out **the following features**:

- a syllable is a chain of phonemes of varying length;
- a syllable is constructed on the basis of the contrast of its constituents, usually of vowel-consonant (VC) type;
- the nucleus of a syllable is a vowel, but there are languages in which this function is performed by a consonant;
- the presence of consonants in a syllable is optional;
- the distribution of phonemes in the syllable follows the rules of a particular language.

2. The main approaches to this unit from acoustic, articulatory, auditory and functional points of view.

Acoustically, the syllable is a group of sounds that are pronounced together (according to John Christopher Wells).

Articulatorily, the syllable is the minimal articulatory unit of the utterance,

Auditorily, the syllable is the smallest unit of perception: the listener identifies the whole of a syllable and after that the sounds which it contains.

Phonologically (from the functional point of view), it is a structural unit which consists of a sequence of one or more phonemes of a language in numbers and arrangements permitted by the given language.


3. The expiratory or chest pulse or pressure theory (теорія виходу) by Raymond Herbert Stetson.

The articulatory study of the syllable was presented in **the expiratory theory** (chest pulse theory, pressure theory) based by R.H. Stetson. According to it, speech is a pulsating expiratory process and every syllable corresponds to a single expiration. **So the number of syllables in an utterance should be determined by the number of expirations made in its production.** But the validity of the theory is fairly doubtful. It was strongly criticized by foreign linguists, because the number of syllables in a word and even the number of words in a phrase can be pronounced with a single expiration.

4. The sonority theory / the prominence theory (теорія відносної сонорності) by Otto Jespersen.

The acoustic level of the syllable is investigated in **the sonority theory** put forward by O. Jespersen. It is based on the assumption that **each sound is characterized by a certain degree of sonority which determines its perceptibility.** Thus it's possible to establish a ranking of speech sounds from the least sonorous to the most sonorous ones:

open vowels	the most sonorous
close vowels	
sonorants	
voiced fricatives	
voiced plosives	
voiceless fricatives	
voiceless plosives	the least sonorous



According to it any sound sequence presents a wave of sonority, which is formed with the most sonorous sound as the center of the syllable and the least sonorous sounds as marginal segments, like in the word *plant* [pla:nt].



p l a : n t

The most serious drawback of this theory is that many English syllables contradict it. For example, in this case a sound sequence like *stops* [stops] should have three syllables instead of the actual one.

Further experimental work resulted in a lot of other theories, but the question of the articulatory and acoustic mechanism of syllable formation is still open in phonetics. It might be fair to suppose that this mechanism is similar in all languages and can be regarded as a phonetic and physiological universal.

5. The theory of muscular tension (теорія м'язового напруження) by academician Lev Vladimirovich Shcherba.

The theory of muscular tension by L.V. Shcherba has prevailed for a long time in Russian linguistics. It states that the syllabic peak in most languages is formed with the help of a vowel or sometimes a sonorant, and the phonemes preceding or following the peak are marginal. **The syllable is defined as an arc of muscular tension in which the tension of articulation increases within the range of prevocalic consonants and then decreases within the range of postvocalic consonants.** This theory has been further modified by V.A. Vassilyev, who suggested that the physical parameters of pitch, intensity and length also vary within the range of the syllable. So on the speech production level the syllable can be treated as an arc of articulatory effort which combines the changes in the muscular tension of articulation and the acoustic data.



6. The loudness theory by N.I. Zhinkin.

N.I. Zhinkin (*Миколай Іванович Жинкін*) has made an attempt to combine the production and perception levels of analysis in the so-called **loudness theory**. His experiments showed that the loudness of sounds depends on the variations of the pharyngeal passage modified by the narrowing of its walls. Thus the increase of muscular tension results in the increase of actual loudness of a sound. So on the perception level the syllable is **the arc of loudness** which correlates with **the arc of articulatory effort** on the production level, since variations in loudness are due to the work of all speech mechanisms.

7. Syllable formation in English. The types of syllables.

The syllabic structure of all languages can be characterized from the point of view of **two aspects**: syllable formation and syllable division which are inseparable from each other.

Let us begin with the study of the first aspect.

Syllable formation in English is generally based on the phonological opposition **'vowel vs. consonant'**. Vowels are usually syllabic while consonants are not, with the exceptions of [l, m, n].

The English language possesses a great variety of **syllables types**.

V.A. Vassilyev classifies syllable formation in English on the basis of the type of phoneme the syllable ends in. He states the existence of *two types of syllables*:

- (1) *open syllables* ending in a vowel phoneme (I [a₁], me [mi:], spy [spa₁], spray [spre₁]);
- (2) *closed syllables* ending in a consonant phoneme (it [it], and [ænd], ants [ænts]).

The linguist underlines that these are phonetic syllables which distinguish the actual pronunciation of a word. They shouldn't be confused with orthographic syllables into which words are divided in writing and which are used in the system of reading rules.

M.A. Sokolova (Марія Соколова), V.D. Arakin (Володимир Дмитрович Аракін) and other linguists suggest another approach. They define **four types of syllables** in English on the basis of the number and arrangement of consonants with a vowel. These are:

(1) *fully open syllables*, which consist of a vowel sound only (**V type**): are [a:], or [o:], I [aɪ];

(2) *fully closed syllables*, in which a vowel is between consonants (**C)CVC(C) type**): cat [kæt], jump [dʒʌmp], plan [plæn];

(3) *syllables covered at the beginning*, in which a consonant or a sequence of consonants precede a vowel (**(CC)CV type**): so ['səʊ], spy [spaɪ], screw [skru:];

(4) *syllables covered at the end*, in which a consonant or a sequence of consonants follow a vowel (**VC(CC) type**): on [ɒn], old [əʊld], acts [æktʃ].

Certain peculiarities of the system of English phonemes admit the existence of types of syllables which consist of consonants only, with the nucleus [l, n, m]. These are:

(1) syllables of CC type (table [teɪbl], taken [teɪkn], rhythm [rɪðm]);

(2) syllables of CCC type (decent [di:snt], seldom [seldm]);

(3) syllables of CCCC type (students [stju:dnts];

(4) syllables of CCCCC type (functional ['fʌŋ(k)ʃ(ə)n(ə)l]).

The distribution of consonant sounds in the structure of syllables is fixed by certain rules and **restrictions**:

— sonorants [w, j] are always syllable initial (wheel [wi:l], yes [jes]);

— sonorants [n, l, m] are syllabic only in unstressed final positions if preceded by a noise consonant (bottle ['bɒt(ə)l], bottom ['bɒtəm], button ['bʌt(ə)n]);

— [s] is always initial in the syllables of CCCV type (straw [stro:]);

— [s/z] are usually included in the syllables of VC(CC) type as morphological indexes of the plural form of nouns or 3rd person singular form of verbs (casks [ka:sks], asks [a:sks]);

— [r] becomes syllabic in some accents (perhaps [præps]).

A single generalized formula of English syllables can be summarized as follows: (C)V/C(C). The brackets indicate the optional presence of consonants. This formula shows that the syllabic structure of the English language consists of a nucleus which may be accompanied with consonants.

The nucleus is the peak of the syllable which is presented by a vowel or a sonorous consonant. Consonant(s) preceding the nucleus make up **the syllable onset**. Consonant(s) following the nucleus make up **the syllable coda**. The combination of the nucleus and the coda makes up the rhyming property of a syllable.

The structure of the English syllable admits from 1 to 3 pre-vocalic consonants (*splay* [splɛɪ]) and from 1 to 5 post-vocalic consonants (*minstrels* ['mɪnstrlz]).

The number of syllables in English words can vary from 1 to 8 (day [deɪ], baby ['beɪbɪ], family ['fæmɪli], generation dʒenə'reɪʃ(ə)n, liberality [ˌlɪbə'ræləti], responsibility [rɪˌspɒnsɪ'bɪlɪti], irresponsibility [ɪrɪspɒnsɪ'bɪlɪti], incomprehensibility [ɪnˌkɒmpriˌhensə'bɪlɪti].

The basis of syllable formation in the English language is the open type of syllable in case of long or diphthongized vowels, and the closed type of syllable in case of short vowels.

8. The rules of phonetic (spoken) syllable division. Syllable division in writing.

Syllable division is another aspect of the syllabic structure of any language. It helps to establish the structure of meaningful language units (morphemes and words) and thus determines the syllabic characteristics of the language. The rules of syllable division are studied by a **special branch of phonetics — phonotactics**. It determines the patterns according to which phonemes are grouped into syllables. Both open and closed syllables form morphemes and words in English, but due to the specific structure of the language it is difficult in some cases to define the syllable boundary. It is predetermined by word stress in conjunction with the free or checked character of vowels.

There are the following rules for syllable division in the English language.

I. Syllable division concerning stressed long monophthongs, diphthongs and diphthongoids doesn't present any difficulty.

These are free vowels which occur in a phonetically open syllable and the point of syllable division is right after them: carpet ['ka:-pɪt], greeting ['gri:-tɪŋ], taming ['teɪ-mɪŋ].

II. Syllable division in case of short vowels manifests their checked character under stress.

A short stressed vowel separated from the next vowel by a consonant or a consonant cluster always occurs in a closed syllable in order to retain its checked character: city ['sɪtɪ], ekstra ['ekstrə].

The difficulty is to find the point of syllable division. It greatly depends on the number of consonant phonemes following the vowel.

1) When a short stressed vowel is followed by one consonant, there are two possibilities to determine the point of syllable division. It may be after or inside the intervocalic consonant: city ['sɪt-ɪ] or ['sɪtɪ]. The results of instrumental analysis show that the point of syllable division in such words is inside the intervocalic consonant. It can be marked in transcription by putting a syllable boundary after the consonant serving as the point of syllable division and adding an apostrophe sign to the next consonant in order to fill the gap in notation: ['sɪt-'ɪ].

2) When a short stressed vowel is followed not by a single consonant, but by a consonant cluster, the rule for syllable division is different. In words like extra there may be several possibilities to determine syllable boundaries:

['ek-strə], ['eks-trə], or ['ekst-rə].

The division ['ek-strə] seems to be more natural. Instrumental analysis proves that a new pronunciation effort begins after the first consonant. Therefore such syllable division is fixed in pronunciation dictionaries.

It should be kept in mind that the pronunciation of the stressed short vowel in this case is checked, the transition from a vowel to a consonant is very close and there is no weakening of an articulatory effort towards the end of the syllable. Thus the syllable is closed. This rule for syllable division in the English language is very important for language teaching.

III. Syllable division concerning English pre-tonic unstressed vowels also depends on the number of consonants separating them from the next stressed vowel, no matter whether it is a monophthong, a diphthong or a diphthongoid.

1) When an unstressed short vowel is separated from a succeeding stressed one by a single consonant, the syllable it belongs to is always open (before [bɪ - 'fə:], idea [aɪ - 'dɪə]).

2) The case when vowels are separated by a cluster of two consonants is more difficult. The point of syllable division is determined with the help of phoneme distribution. If a consonant cluster is possible in the initial position, the syllable boundary lies before the cluster and the syllable is open; if it does not, the point of syllable division is between the consonants and the syllable is closed.

For example, the words *agree*, *abrupt* should be divided into syllables in the following way: [ə - 'gri:], [ə - 'brʌpt], because clusters [gr], [br] are possible at the beginning of English words (great, cry, break). The syllable boundary of the word *admit* is between [d] and [m]: [əd-'mit] as the sound sequence [dm] doesn't occur at the beginning of English words.

IV. Syllable division of post tonic vowels (monophthongs, diphthongs and diphthongoids) separated from the following vowel by a consonant is a matter of no practical importance for language learners. Still most linguists state that it should be before the consonant: history ['hɪs - t(ə) - ri].

Any syllable as a part of a word has double representation. Its phonetic image is shown in transcription (phonemic or allophonic) and its written notation is shown in spelling (orthography). But the problem is that parts of phonetic and orthographic syllables do not always coincide (let-ter ['let-'k], sin-ging ['sɪŋ-'ɪŋ]).

According to *Longman English Dictionary (2000)* the following **rules of phonetic (spoken) syllable division** are adopted:

1. A syllable boundary is found wherever there is a word boundary, and also coincides with the morphological boundary between elements in a compound:

Displace |dɪs - 'pleɪs| CVC – CSVC

Become |bɪ - 'kʌm| CV – CVS

Countless |'kaʊnt - ləs| CVSC – SVC

Hardware |'hɑ:d - wɛ:| CVC – SV

2. Consonants are syllabified with whichever of the two adjacent vowels is more strongly stressed:

Farmer |'fɑ:m - ə|

Agenda |ə - 'dʒɛnd - ə|

If they are both unstressed, it goes with the leftward one:

Cinema |'sɪn - ɪm - ə|

Delicious |dɪ - 'lɪʃ - əs|

Deliberate |dɪ - 'lɪb - əɪ - ət|

3. The English diphthongs are unisyllabic, they make one vowel phoneme, while the triphthongs are disyllabic, because they consist of a diphthong + the neutral vowel/schwa:

Table |'teɪ - bl|

Science |'saɪ - əns|

Flower |'flaʊ - ə|

4. The English affricates [tʃ] and [dʒ] cannot be split:

Catching |'kætʃ - ɪŋ|

Syllable division in writing may follow the rules which have already been stated above. An orthographic syllable is a group of letters in spelling, called syllabographs (according to John Christopher Wells). Then the division of the syllabic structure in orthography is made according to phonological principles (*fa-mi-ly, re-gu-lar*).

Still such a division is not always possible. For example, in the words *body* ['bɒd - i], *money* ['mʌn - i], the consonant letter representing the point of syllable division should be added to the next vowel letter in order to escape notation gaps: *bo-dy, mo-ney*.

Syllable division in writing may be also based on the morphological principle. In this case prefixal and suffixal morphemes are divided from the root one (*ir-regular*), no matter whether they belong to the same phonetic syllable or not.

Graphic representation of syllables in orthography is relevant for language learning only when it is necessary to carry some of the letters over to the next line. This process is usually called syllable separation. Special attention is necessary in order to exercise it correctly.

There are the following rules of syllable division in writing:

— a word can be separated only if it consists of more than 5 letters and contains more than one syllable;

— the number of separated letters should be more than one;

— the parts of a word subjected to separation are derivational morphemes used in word-building, but not inflexional ones used in word-changing (*be-come, friend-ship, commit-ment, sports-man, volley-ball*);

— the suffix *-ing* can be separated with the preceding consonant if there is a consonant cluster before it: *hand-ling*;

— suffixes consisting of two syllables can't be broken and should be separated as a whole: *vulner-able*;

— suffixes consisting of two letters can't be separated with the exception of *-ly*: *surprised, teacher, graphic*, but: *correct-ly*.

9. The functions of the syllable.

The syllable is a phonological unit that performs the following closely connected functions: constitutive, distinctive and identificatory.

1. The constitutive function of the syllable lies in its ability to be a word or a part of it. In this respect the syllable exercises the connection of smaller and greater language units.

On the one hand, it represents the correlation of the distinctive and acoustic features of phonemes. On the other hand, it realizes the prosodic characteristics of speech within the stress pattern of words, the rhythmic and intonation structures of utterances. Thus the syllable sums up specific minimal features of both segmental and suprasegmental levels.

2. The distinctive function of the syllable lies in its ability to differentiate words and word-forms taken separately or in combinations.

This statement can be illustrated with the following distinctive oppositions: nitrate [naɪ-'treɪt] vs. night-rate [naɪt-'reɪt]; lightning ['laɪt-nɪŋ] vs. lightning ['laɪt-nɪŋ]. In these minimal pairs syllable division changes the allophonic contents of words and thus helps to distinguish between them.

The similar distinction is found within language units of greater magnitude: an aim [ən 'eɪm] vs. a name [ə 'neɪm]; we loan [wɪ 'ləʊn] vs. we'll own [wɪl 'əʊn]. These oppositional pairs present differentiation of syllables concerning word combinations.

Sometimes syllable division may even be the basic ground for sentence differentiation: I saw her rise [aɪ 'so: hə 'raɪz] vs. I saw her eyes [aɪ 'so: hə 'aɪz]; I saw the meat [aɪ 'sɔ: ðə 'mi:t] vs. I saw them eat [aɪ 'sɔ: ðəm 'i:t].

3. The identificatory function of the syllable is conditioned by the pronunciation of the speaker. The listener's ability to perceive and identify the exact meaning of a word or a combination of words depends on the speaker's ability to establish the correct syllabic boundary: pea stalks ['pi: 'stɔ:ks] vs. peace talks ['pi:s 'tɔ:ks]; my train [maɪ 'treɪn] vs. might rain [maɪt 'reɪn].

The realization of the distinctive and identificatory functions of the syllable is closely connected with *the notion of juncture*, kept by the speaker and taken in by the listener. Close juncture (conjuncture) occurs between the sounds of the same syllable. Open juncture (disjuncture) occurs between the sounds of two different syllables.

Some linguists state that word juncture should be marked in a phonetic transcription with [+]. In this case the differentiation between the oppositional pairs will look as follows: ice cream [aɪs + kri:m] vs. I scream [aɪ + skri:m].