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English Phonetics

(contrastive analysis of English and Ukrainian pronunciation)

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FOREWORD

The present textbook "English Phonetics" (a contrastive study of English and Ukrainian pronunciation), written by T.A. Brovchenko and T.M. Koroljova, is the second edition of the manual "English Phonetics", written by T. Brovchenko and I. Bant in 1964.

The period of the second half of the 20th century was characterized by intensive development of all the sciences and linguistics as well.

The achievements of the scientists in the sphere of the theory of linguistics, the new elaborations of difficult problems, the development of new methods and apparatuses of experimental phonetics made it necessary to revise the book and make additional theoretic and experimental investigations.

The method of contrastive phonetics, which began to be developed in Ukraine in 1950s-60s and the needs of the teachers of foreign languages who realized that the most successful way for adults to acquire the current pronunciation of a foreign language is to learn the phonetic structure of the given language in comparison with the mother tongue caused the necessity of systematic comparative scientific investigations of phonetic structure of the foreign and native language of the learner.

Consequently, all the chapters of the present book were revised and most of them written anew.

In the investigation of the speech sounds articulation in English and Ukrainian the experimental methods of palatograms, linguagrams and photography were applied, a detailed and exact position of the speech organs was obtained. Some specific peculiarities of the shape and the position of the speech organs, typical of each of the two languages and unknown before, were registered.

A new treatment of the acoustic nature of word stress was suggested.

It has been proved that the main acoustic characteristic of word stress in English and Ukrainian, as well as in other languages with the dynamic type of stress, is the total acoustic energy, which is defined as intensity over time, i.e. the result of coordination of two components of the total energy – intensity and duration.

It has been proved experimentally that the share of duration and intensity is not equal in English and Ukrainian and depends upon the peculiarities of the phonematic structure of the language.

These hypotheses were supported by the results of the experimental analysis of objective, relative and subjective parameters of stressed and unstressed syllables in English and Ukrainian.

The chapter devoted to the theory of syllables (Syllabics) was revised. The syllable was treated as an impulse of energy, retaining all the characteristics as a classical impulse of energy.

The chapter devoted to intonation was also revised. A review of development of the theory of intonation was given.

A thorough description of the components, functions and the intonation structure of the utterance in various communicative types of utterance and under various conditions of speech production were presented.

The book is intended as a textbook for the students of Philological departments of the Universities and other higher education institutions of Ukraine as well as for those who are interested in the problems of sounding speech.

“Introduction” and Part I of the present book “Segmental Units of Speech” were written by T.A. Brovchenko. Part II of the present book “Suprasegmental Units of Speech” were written by T.M. Koroljova.

We would like to express special thanks to our colleagues N.V. Lanchukovskaya and A.S. Shaljev for much assistance when preparing the book for publication.

CHAPTER 1

INTRODUCTION

1.1. PHONETICS – A SCIENCE OF SOUNDING SPEECH

Language – the object of linguistics is a unique peculiarity of mankind, a fundamental link among human beings and between the humanity and the world.

About three thousand languages, existing in the world, are exceptionally different in their sound system, word stress, intonation, lexical and grammatic systems.

There are universal features in the phonetic, grammatic, lexical means of all the languages or some groups of languages. There are features that are common for all the languages in the world – they are the **structure** of the language and its **function**. It is possible to single out two levels – lower and higher in the structure of the language. The units of the lower level, sounds for example, have no meaning of their own. The units of the higher semantic level, for example sense-groups, phrases, overphrasal unities, obtain some meaning.

Each linguistic unit of the semantic level has some definite sounding, connected with some meaning due to what communication among the people of a definite language society can be realized.

Communication is the essence of human life. All that exists in human society is built on the basis of communication. All the material objects created by people, everything spiritual, the inner development of a human being and of the human society in general is possible only on the basis of communication. The main basis of communication is language.

Language is the main system of communication between people, it is obviously the main system available for people for accumulating information for knowing the world and everything around them.

There are two main types of information – written and oral.

In this day and age, at the time of radio, television, the Internet and various talking devices, oral speech information acquires especially great significance.

People got interested in the nature of speech sounds centuries ago, but scientific study of speech sounds began at the end of the 19th and the beginning of the 20th century.

The factors that stimulated the development of phonetics as a science were:

1. more thorough acquaintance with the functioning of the human speech apparatus;
2. the investigation of many linguists who studied languages that had no alphabets;
3. the compiling of alphabets for such languages.

The definition of phonetics as the science of speech sounds, given by most linguists of that time (Sweet H., Jones D. in England, Vitomskaya A.N., 1948; Dikushina O.I., 1981 in the former USSR), was narrow and did not reveal the essence of the science of phonetics.

Segmental units – speech sounds and syllables are to be examined from physiological, acoustic and functional point of view but they constitute only one of the

elements of the phonetic system of the sounding speech.

Besides the sounds, the object of phonetics is suprasegmental units of speech – sense-groups, phrases, overphrasal unities and the text – the highest suprasegmental unit of speech.

The narrow definition of phonetics, which was acceptable at the early period of the development of phonetics, has become inadequate now.

Nowadays phonetics is understood as a science which studies all the phonetical means of semantic expression in oral speech – speech sounds, stress and intonation (Torsuyev G.P., 1950; Zinder L.R., 1979 and others).

Phonetics is a branch of linguistics that studies pronunciation, i.e. all the phonetic means of semantic expression in oral language – speech sounds, word stress and intonation and all the phonetic units of speech: speech sounds, syllables, phonetic words, sense-groups, phrases, overphrasal unities and the text. Their formation, physical acoustic nature, perception and their semantic, grammatic and lexical role and functions in speech are to be studied.

Several branches of phonetics are distinguished. The main of them are:

Articulatory phonetics is a branch of phonetics that studies the production and the articulation of sound means in oral speech.

Acoustic phonetics is a branch of phonetics that studies acoustic qualities of speech sounds, syllables, phonetic words, syntagmas, phrases, overphrasal unities and the text.

Auditory phonetics is a branch of phonetics which studies the perception of all the phonetic means of oral speech and their interpretation.

Phonology is a branch of phonetics which studies the semantic functions of speech sounds and other phonetic means of semantic expression in verbal communication – speech sounds (phonemes), word stress and intonation.

Speech sounds (phonemes), word stress and intonation are phonematically relevant in English and Ukrainian.

The substitution of one phoneme for another can change the meaning of the word or its grammatic function, e.g.

corn [kɔ:n] – cork [kɔ:k]
СІЛЬ [С'ІЛ'] – БІЛЬ [Б'ІЛ']

The position of word stress in English may change the meaning of the words. For example:

blackboard ['blækbo:d] класна дошка	black board ['blæk 'bɔ:d] чорна дошка
greenhorn ['gri:nhɔ:n] новак	green horn ['gri:n 'hɔ:n] зелений ріг
redwing ['redwɪŋ] дрізд	red wing ['red 'wɪŋ] червоне крило

Word stress in Ukrainian has the same phonematic function. This may be illustrated by the following examples:

близна [Б'ІЛІЗНА] – білизна [Б'ІЛІЗНА́]
важниця [ВАЖНИЦ'А] – важниця [ВАЖНІЦ'А]

In English the position of stress may distinguish parts of speech as well. The words given below differ in stress and at the same time their grammatical functions are different, e.g.

convoy ['kɒnvɔɪ] *n* – convoy [kɒn'vɔɪ] *v*
export ['eksɜ:t] *n* – export [eks'pɜ:t] *v*
import ['ɪmpɜ:t] *n* – import [ɪm'pɜ:t] *v*

In Ukrainian word stress is also one of the means of semantic expression in speech and the changes in its position may influence the meaning of words as well as their grammatical functions, for example:

брати [БРА́ТИ]	–	брати [БРАТИ́]
варений [ВА́РЕНИЙ]	–	варений [ВАРЕНИ́Й]

Any component of intonation (tone, sentence stress, tempo, timbre) can change (or add to) the meaning of a sentence and thus, fulfil its phonematic function.

Consequently, if we substitute the falling tone for the rising tone in such sentences as: *Open the window, please. Fetch the newspaper. Hand in the paper*, etc., the communicative type of the sentence will be changed. Pronounced with the falling tone (↘) it means an order, pronounced with the rising tone (↗) it will express a request:

<i>Order</i>	<i>Request</i>
Open the window, please.	Open the window, please.
[ˈəʊpən ðə ↘wɪndəʊ plɪːz.]	[ˈəʊpən ðə ↗wɪndəʊ plɪːz.]
Fetch the newspaper.	Fetch the newspaper.
[ˈfetʃ ðə ˈnjuːz ↘peɪpə.]	[ˈfetʃ ðə ˈnjuːz ↗peɪpə.]

In the same way a statement may be changed into a question by exchanging the falling tone for the rising one.

<i>Statement</i>	<i>Question</i>
Ready. [↘redɪ.]	Ready? [↗redɪ?]
The boy is here.	The boy is here?
[ˈðə ˈbɔɪ ɪz ↘hɪə.]	[ˈðə ˈbɔɪ ɪz ↗hɪə?]

Sentence stress, one of the main components of intonation, may be phonematically important changing to some extent the meaning of the utterance by emphasizing one or several of its words.

The difference in intensity, i.e. different degrees of sentence stress, can give a different shade of meaning to the whole sentence by emphasizing a certain word or words, for example:

Hand in your paper.	[↘hænd ɪn jə ˈpeɪpə.]
Hand in your paper.	[hænd ↘ɪn jə ˈpeɪpə.]
Hand in your paper.	[hænd ɪn ↘jɔː ˈpeɪpə.]
Hand in your paper .	[hænd ɪn jə ↘ˈpeɪpə.]

A change in the speed of utterance or in the intervals between the words can give a sentence a different emotional colouring.

The same sentence may express anger, irritation or wonder, making the speed with which it is uttered slower or quicker.

Therefore it may be asserted that a component of intonation – speed of utterance or tempo fulfils a phonematic function in speech.

The components of intonation are interdependent. In most cases several components are involved simultaneously to give a sentence a definite shade of meaning.

This phonetics studies all the phonetical means of semantic expression in speech. All the phonetical means – phonemes, word stress and intonation are important and neither of them should be underestimated in studying a language.

1.2. CONTRASTIVE LINGUISTICS

More close cooperation between the peoples of different countries after the Second World War and the difficulty of learning and teaching foreign languages, of translating and interpreting foreign texts were the cause of appearing of numerous comparative investigations of foreign and native languages – textbooks, manuals, articles and essays.

Centuries before, studying African and Indian languages of different tribes some of which existed in oral form, scientists compiling alphabets and writing grammar books for these languages, paid attention to some similarities of the phonetic and grammatical elements in the structure of some languages or all of them. As a result of the research into the specific and similar characteristics of African and Indian languages the first typological linguistic studies appeared.

Synchronous comparative contrastive investigations of two or more languages and typological investigations of a group of languages, which were vigorously developed in the second half of the 20th century, gave rise to a new branch of linguistics – **contrastive linguistics**.

Traditionally, contrastive linguistics is defined as a branch of general linguistics which reveals and studies specific individual linguistic characteristics of some phenomena of the given language and other languages and typological characteristics common to a group of languages.

It is essential to distinguish between comparative (contrastive) analysis and typology which are different parts of the same branch of linguistics. Yu.A. Zhluktenko points out that contrastive linguistics is not an independent science but a part of general linguistics. The object of its study is different languages, their structure, characteristics and individual peculiarities (Жлуктенко Ю.А., 1979). The close relation between comparative (contrastive analysis) and typology was emphasized by the assertion that contrastive linguistics is a part of general linguistics was stated by Y. Uhlich (1973) who wrote that contrastive analysis was the first step to typological analysis.

Contrastive linguistics is not a purely practical branch of linguistics, it is a theory of language types and classification of languages according to their types.

The problem of synchronous comparison of different languages attracts the attention of the linguists at present.

The first attempt to describe comparative characteristics of speech units of different European languages was registered at the beginning of the 20th century.

W. Więtor (1904) compared some phonetic characteristics of German, English and French.

A.I. Tomson, a professor of Odessa University, published some articles and essays devoted to the comparative description of Russian, Ukrainian and Armenian languages (Томсон А.И., 1912, 1922).

Russian scientists I.A. Baudouin-de-Kourtenay, V.A. Bogoroditsky, E.D. Polivanov and others outlined some principles of language comparison and compared

Russian with some other languages (Бодуэн-де-Куртенэ И.А., 1912; Боглродитский В.А., 1915; Поливанов Е.Д., 1928).

In 1936 V.M. Matesius, a representative of a well-known “The Prague Linguistic Circle”, pointed out the importance and the necessity of the synchronic comparative linguistic analysis. V.M. Matesius wrote that synchronic comparative method of investigations contributed to a more thorough analysis of the language.

In 1953 W. Weinrich, another representative of “The Prague Linguistic Circle”, put forward an important scientifically substantiated suggestion about differential description of the languages.

Another linguist, E. Naugen brought forward a new theoretical conception. E. Naugen in his two-volume monograph “Norwegian Language in America” (1953) brought up the concept of “dialinguistics” – synchronous comparative investigations of the individuals who have a complete command of two languages.

At the same time Daniel Jones, the “Father of English Phonetics”, was one of the first who systematically compared a foreign language with the pronunciation of the native tongue of his learners – French. In all the reprints and editions of his well-known book “An Outline of English Phonetics”, comparing English pronunciation with the French one, he recommends French learners how to avoid mistakes in English which is a foreign language for them.

The primary task of the explorer carrying out the comparative analysis of two or more languages is to choose the basis of comparison i.e. the model with the help of which the languages will be compared.

Two bases of contrastive analysis are usually mentioned by the linguists.

1. Contrastive analysis is termed **unilateral** when languages are compared on the basis of one of the analysed languages and one of them is used as a model. Unilateral contrastive analysis is widely used in the analysis of foreign languages comparing them with the learners’ native language.
2. Contrastive analysis, according to which both compared languages are studied from the point of view of some third language system, is termed **bilateral**.

The third language may be:

- a living language which may function as an intermediary in communication;
- a dead language which is fixed in the invariable state (Latin, Ancient Greek);
- an artificial language applied in the process of typological analysis of a number of languages;
- a special metalanguage created as a system of methods to ensure most objective and exact description of other languages.

A unilateral method of contrastive analysis is the most widespread one.

A bilateral method of contrastive analysis is less widespread than a unicentral method.

Semantic and grammatic characteristics of the metalanguage are used as a model of analysis in the case when the explorer is in great need of absolutely exact results of the comparison.

In Ukraine comparative (contrastive) linguistics and typological analysis of different languages began to be applied in the middle of the 20th century.

In 1952 systematic synchronous comparison of the foreign and the Ukrainian speech sounds, based on experimental investigations, were published: “Comparative analysis of consonants in contemporary Ukrainian and German languages” (Прокопова Л.И., 1952) and “Comparative analysis of systems of English and Ukrainian vowels and consonants” (Бровченко Т.А., 1952).

In 1957 the first contrastive manual, "Contrastive Grammar of the Ukrainian and English languages", a fundamental textbook written by a group of linguists appeared (Баймут Т.В., Бойчук М.К., Волинский М.К., Жовтобрюх М.А. и Самойленко С.П., 1957).

In the 1960s a fundamental textbook for teachers, "Comparative Grammar of Ukrainian and English languages" (Жлуктенко Ю.О., 1960) and the manual "English Phonetics", based on the experimental bilingual contrastive analysis of phonetic systems of English and Ukrainian languages (Brovchenko T., Bant I., 1964) were published.

The scientific works mentioned above, the results of original contrastive investigations, were valuable not only for the teachers and learners of English and German languages whose native language was Ukrainian, for translators and interpreters, but contributed to some extent to the theory of contrastive phonetics.

In the collective monograph, "Intonation of Speech" published by the Academy of Sciences of the Ukrainian Soviet Socialist Republic (1963) an article written by I.V. Borisjuk, "Intonation characteristics of rhetoric questions in Ukrainian and French dialogical speech" was the result of comparative experimental investigation of the intonation of rhetorical questions in French in comparison with the native language of the learners – Ukrainian (Борисюк И.В., 1968).

The intonation structure of English and Ukrainian utterances in dependence on the position of the semantic centre was investigated by T.A. Brovchenko in the article "Intonation contour of semantic centre in English and Ukrainian speech". The comparative analysis made it possible to reveal acoustic characteristics of the intonation structure of the utterances with different positions of the semantic centre common in English and Ukrainian and those specific in each of the analysed languages (Бровченко Т.А., 1979).

Some of the essays published in Ukraine were devoted to the role of contrastive linguistics in the process of teaching foreign languages in special higher schools (Михайленко В.А., 1979) and to some peculiarities of teaching foreign languages on the basis of contrastive linguistics (Розенбаум Е.М., 1979). In the collection of scientific articles, edited by the Academy of Sciences of the Ukrainian Soviet Socialist Republic in 1979, three of them were devoted to the problems of contrastive linguistics (Жлуктенко Ю.А., Бублик В.Н., Бровченко Т.А.).

Yu.A. Zhluktenko in his article, "Contrastive analysis as a method of speech investigations" (1979), emphasized that contrastive linguistics is not an independent science but is a branch of linguistics that has the same subject and aim, investigates the nature and peculiarities of different languages and differs from linguistics only in its method – synchronous comparative method.

Yu.A. Zhluktenko asserts that the main requirements to contrastive investigations are:

- the choice of the most important and effective language elements for the analysis;
- the choice of an adequate and reliable basis for comparative analysis;
- taking into consideration interlanguages equivalence, which as a rule is not connected with the equality of form (Жлуктенко Ю.А., 1979).

V.N. Bublic in his article, "Gnoseological basis of Contrastive analysis" analyses, from the point of gnoseology (theory of science), psychological treatment of the process of learning a foreign language on the basis of the native language and describes the peculiarities of this process, its difficulties and complexity (Бублик В.Н., 1979).

The collective monograph, "Comparative investigations of English, Ukrainian and Russian languages" published in 1980 by the Academy of Sciences of the Ukrainian Soviet Socialist Republic, edited by Yu.A. Zhluktenko, was devoted to the problems of

comparative analysis of phonological, morphological and syntactic peculiarities of the three languages.

In the introductory section, "The foundation of the contrastive analysis of speech", Yu.A. Zheluktenko gives a survey of the history of development of contrastive linguistics, discusses and develops further its main problems – the subject of contrastive linguistics, the discrimination between contrastive and typological studies, connection between theoretical and pragmatic aspects of contrastive and typological analysis, the choice of the model of contrastive analysis and others (Жлуктенко Ю.А., 1981).

In the section, "Comparative analysis of English, Ukrainian and Russian phonological systems", T.A. Brovchenko came to theoretically and practically well founded conclusions about the main specific and common phonetic peculiarities of the speech sounds characteristics of the phonematic systems of the two examined languages. A list of the most typical mistakes of Ukrainians learning English and the methods of avoiding them was presented (Бровченко Т.А., 1981).

In the monograph, "Typology of speech intonation", E.A. Nushikyan gave a detailed analysis of acoustic characteristics of various types of emotions in English in comparison with the corresponding emotional variants in Ukrainian, and presented an original classification of English and Ukrainian emotions (Нушикян Э.А., 1982).

In the monograph, "Intonation of modality in sounding speech", by T.M. Koroljeva the phonetic structure and functions of modal utterances in English and Ukrainian speech were investigated. Original systematic semantic approach and electronic experimental analysis made it possible to determine intonation peculiarities of the main types of modal utterances and their variants (Корольева Т.М., 1989).

Contrastive linguistics continued to be developed vigorously since the 1970s up to the end of the 20th century in different countries of the world. Similar rapid development was observed in the sphere of comparative phonetics as well.

Contrastive linguistic phonetic investigations may be divided into three main trends:

- a. the theory of contrastive linguistics;
- b. the methods of contrastive linguistic analysis of speech;
- c. comparative linguistic analysis of phonetic characteristics and the structure of different languages.

It should be taken into consideration that the division of comparative investigations is formal to some extent. On the one hand, systematic comparative researches may be not purely theoretical and are often supplied with some definite results of comparison between or among linguistic phonetic phenomena. On the other hand, systematic practical comparative descriptions may contain some theoretical considerations and conclusions.

For the sake of convenience some contrastive investigations of the 20th century may be divided into the three mentioned above groups.

I. Theory of contrastive linguistics

1. Weinreich U. Language in Contact. – Paris, 1970.
2. Nikel Y., Vagner K. Contrastive linguistics. 1971.
3. Кошечая И.В. Типологическая структура языка. – Киев, 1972.
4. Болинджер Д.Л. Интонация как универсалия. 1972.
5. Burschmidt E., Gotz D. Kontrastive linguistik. Deutch, Englisch. Theorie und Anwendug. – Munhen, 1974.

6. Ярцева В.И. Типология языка и проблемы универсалий. – Москва, 1976.
7. Haliday M. System and function in language. – London, 1976.
8. Білодід І.К. Типологія інтонації мовлення. – Київ, 1977.
9. Жлуктечко Ю.О. Контрактивный анализ – прием мовного дослідження. – Київ, 1979.
10. Николаева Т.М. Интонационно-типологическое изучение языковых контактов. – Новосибирск, 1986.
11. Кантер Л.А. Системный анализ речевой интонации. – Москва, 1988.
12. Петрянкина В.И. Функционально-сематический аспект интонации. – Москва, 1988.
13. Николаева Т.М. Фразовая интонация славянских языков. – Москва, 1988.
14. Аракин В.Д. Типология языка и проблема методического прогнозирования. – Москва, 1989.
15. Хромов С.С. Теоретические принципы изучения русской интонации. – Москва, 1989.

II. Methods of contrastive linguistics

1. Гак В.Т. К проблеме типологического построения высказывания. – Москва, 1966.
2. Виноградов В.В. Методы типологии. – Москва, 1972.
3. Ласка І.В. Деякі проблеми порівняльної іноземної і рідної мов. – Київ, 1972.
4. Опельбаум Е.З. Деякі проблеми контрастивного вивчення лексики далекоспоріднених мов. – Київ, 1972.
5. Кодзасов С.В. Комбинаторная модель фразовой просодии. – Москва, 1996.
6. Атабекова А.А. Когнитивный подход в рамках системного анализа интонации текста. – Москва, 1999.

III. Comparative and typological phonetic description of different languages

1. Гак В.Г., Розенберг Е.В. Очерки сопоставительного изучения французского и русского языков. – Москва, 1965.
2. Бровченко Т.А. Словесное ударение в английском языке (в сопоставлении с украинским). – Одесса, 1971.
3. Delatre P. Comparing the phonetic features of English, German, Spanish. – Heldenberg, 1975.
4. Метлюк А.А. Взаимодействие просодических систем в речи билингва. – Минск, 1986.
5. Нушикян Э.А. Интерферирующее влияние родного языка при обучении. – Одесса, 1987.
6. Хромов С.С. Универсальные и типологические характеристики интонационных систем языков Африки (в сопоставлении с русским). – Москва, 1995.
7. Бубнова Г.И., Кардашина И.А., Кошелева Г.А. Контрастивная просодия русского и французского ударного слога. – Москва, 1999.
8. Михайлова О.Г. Сопоставление вокальных последовательностей и сочетаний с [j] русского и английского языков. – Москва, 1999.

In the 21st century theoretic and applied problems of contrastive linguistics have been elaborated as well. Theoretic and practical investigation of contrastive linguistics and the phonetic interference of the peculiarities of the native language into the characteristics of the foreign language pronunciation were emphasized by numerous linguists.

Some main problems of contrastive linguistics were put forward and discussed at the beginning of the 21st century. They are mentioned in the publications given below.

The methods of investigating the perception of phrase intonation (Светозарова Н.Д., СПб, 2001).

Acoustic and perceptual characteristics of native and foreign languages (Щербакowa Л.П., 2004); perceptual characteristics of word stress in Russian and Bulgarian (Строева Т.М., 2001).

Comparative analysis of phonetic peculiarities of male and female voices (Потапов В.В., 2004).

Prosodic structure of functional semantic types of text (Бровченко Т.А., Волошин В.Г., Григорян Н.Р., Петлюченко Н.В., 2004).

Prosodic Typology: The phonology of intonation and phrasing (Sun-Ah-Jun, 2004).

Dolores Ramires. The nature and patterning of native and non-native intonation, 2005.

1.3. EXPERIMENTAL METHODS IN PHONETICS

1.3.1. LABORATORIES OF EXPERIMENTAL PHONETICS

For ages people were dreaming of fixing and preserving sounds, surrounding them in the vast world they lived in. Thousands of legends about fixed sounds existed.

But only in the 19th century the dream of humanity was realized.

The American scientist and inventor Alva Mater Edison created the first pneumatic apparatus – phonograph, with the help of which sounds could be recorded and reproduced.

The appearance of the phonograph was of great importance for the development of experimental investigations of sounding speech. Pneumatic phonograph was the basis for the first pneumatic apparatuses for speech analysis.

At the end of the 19th century and the beginning of the 20th century the linguists I.P. Rousselot (France), V.A. Bogorodsky, L.V. Shcherba (Russia), A.I. Tomson (Ukraine) were the first to underline the importance of experimental study of the language and made a valuable contribution to the development of experimental phonetics.

Experimental methods in phonetics began to be systematically applied since the beginning of the 20th century.

The first laboratory of experimental phonetics was organized in Paris by I.P. Rousselot. At first the laboratory was equipped with experimental devices of that time – tuning forks, the simplest pneumatic apparatus.

The main object of investigations was speech sounds, especially vowels. The position of the organs of speech in producing speech sounds, the frequency characteristics of vowels and their perception were studied in that laboratory.

Experimental investigations of sounding speech began in Russia at that time too.

The first laboratories of experimental phonetics were organized in St. Petersburg and Moscow.

The laboratory of experimental phonetics in the St. Petersburg University, with L.V. Shcherba at its head, began active work in 1908-1909.

The laboratory was equipped with phonetic devices of that time – tuning forks, artificial palates, pneumatic kymograph.

The scientific interests of the St. Petersburg Laboratory of Experimental phonetics at that time were concentrated on phonetic correlates of functional units in European languages, on their phonetic characteristics.

Another speech investigating laboratory which began its work at the beginning of the 20th century was the laboratory of the experimental phonetics of the 1st Moscow Pedagogical Institute of Foreign Languages. The head of the laboratory was V.A. Artemov.

The main object of investigations was a comparative analysis of sound systems, stress and intonation of the languages of the former USSR and foreign languages of the learners.

One of the first laboratories of experimental phonetics in Odessa was opened and headed by A.I. Tomson at the so called then Novorosijsk University in 1897. The results of A.I. Tomson's investigations of Russian, Ukrainian, American sound systems were published in 1912, 1922, 1927 and later.

The Odessa laboratory of experimental phonetics stopped its existence in 1935 after professor Tomson's death as he had no followers and the laboratory resumed its work in Odessa nearly thirty years later in 1963.

Later, especially after the Second World War, numerous laboratories investigating oral speech were opened in different countries of the world and in different cities of the former USSR – in Kiev, Minsk, Odessa, Tbilisi, Yerevan, Novosibirsk and others.

Several laboratories of experimental phonetics in Ukraine began their work after the Second World War.

They are laboratories of experimental phonetics at the Shevchenko Kiev National University, at the National Academy of Sciences of Ukraine, at the Odessa National University and others.

The laboratories of experimental phonetics at the St. Petersburg (former Leningrad) State University and Moscow Humanitarian State University (former 1st Moscow Pedagogical Institute of Foreign Languages) became schools for training specialists in experimental phonetics for newly organized laboratories. They organized seminars, tutorials, consultations, helped to master new methods of experimental phonetics. The role of Moscow and St. Petersburg scientists in training young specialists of the newly organized laboratories in Kiev and Odessa was great. Prof. V.A. Artemov, Prof. S.J. Bernshtein, Prof. J.P. Torsuev, Prof. K.K. Barishnikova, Prof. Zhinkin and others helped selflessly the young researchers in their hard work.

The first laboratory of experimental phonetics in Ukraine was opened in the 1940s at the T. Shevchenko State University. Prof. J.P. Suntsova was the head of the laboratory for a long time till 1964, and from 1964 – Prof. P.I. Totskaya. The object of investigation in the laboratory were the methods of experimental investigations of speech, the way of production and perception of speech sounds and their phonological functions in different languages. Among the instruments and devices the first electric artificial palate was constructed in the laboratory and used for studying articulation of speech sounds.

The laboratory of experimental phonetics of the Academy of Sciences of Ukraine was organized in the 1960s. L.A. Bliznichenko was the head of the laboratory till 1972, and from 1973 – Prof. A.I. Bagmut.

The basic problems elaborated in the laboratory from the very beginning were the problems of the intonation structure of the utterance and its perception. The first electronic

apparatus of speech analysis (Martinov A.A.), carrying out automatic analysis of acoustic characteristics of speech signals and other apparatus, which were in the laboratory, made it possible to undertake rather extensive investigations of intonation structure of different communicative types of sentences in Ukrainian and in foreign languages. Nowadays the linguists of the laboratory, on the basis of new methodology and technology, continue to investigate the characteristic features of Ukrainian pronunciation – stress, intonation and other phonetic phenomena under different conditions of pronunciation, the problems of intonation expressiveness in mass media and many others.

The laboratory of Experimental Phonetics at the Odessa National University resumed its work in 1962. The organization work was realized by B. Shatuh. In 1963 T.A. Brovchenko was appointed the head of the Laboratory. At first the members of the Laboratory staff confined themselves to the small number of experimental devices the Laboratory had – artificial palates, tape recorders, oscillographs and later a self-made intonograph designed by V.G. Voloshin – an electronic device which analysed information uttered by a speaker or recorded on a magnetic tape and produced the oscillogram, the outline of the tone and the duration of the utterance.

Beginning from the 1980s new electronic devices appeared in the Odessa Laboratory of experimental phonetics, as well as in other laboratories in Ukraine, – a spectrograph and computers – electronic devices which store information on disks and automatically analyse it and produce required information.

Special linguistic phonetic programmes make it possible to receive segmental and supra-segmental characteristics of sounding speech automatically considerably shortening the analysis time.

Over a long period of time the basic problem of Ukrainian Laboratory of experimental phonetics was comparative, contrastive analysis of segmental and supra-segmental characteristics of native and foreign speech – contrastive analysis of sound systems of Ukrainian and English, word stress in English and Ukrainian, the comparative study of intonation of different communicative types of sentences and different types of texts.

1.3.2. METHODS AND APPARATUSES OF EXPERIMENTAL PHONETICS

Experimental phonetics nowadays is closely connected with other sciences. First and foremost it is connected with such sciences as psychology, physics, physiology, logic, medicine, radio-technology and others.

Some theoretical principles, methods and instruments of the above mentioned sciences are adopted by experimental phonetics.

One of the first methods of scientific research used in phonetics is observation. Instrumental methods came later with the development of technique. Though instrumental methods in phonetics are of great value, the method of observation has not lost its significance. It should be borne in mind that even now the method of observation remains one of the most important for a phonetician. It does not exclude, but presupposes instrumental methods. Speech should be investigated by the combined techniques.

Instrumental methods may be divided into methods investigating articulation and methods of physical analysis of speech sounds, the nature of stress and intonation.

Palatography is one of the earliest experimental methods. The aim of the palatogram method is to determine the areas of the palate with which the tongue comes into contact in pronouncing a certain sound, to reveal in a visual manner the actual tongue-palate contacts in the production of a sound.

Palatograms were obtained with the help of artificial palates. An artificial palate was made of vulcanite, cellulose or metal. The most suitable artificial palates were made of cellulose or vulcanite. Those materials made it possible to prepare a very thin palate (0.2-0.3 mm thick) which, made by a dentist for a definite individual, fitted his palate exactly. As a rule, artificial palates were preserved in special forms made of plaster when not in use to avoid their deformation (see fig. 1.1).

The traces of the contact of the tongue with the artificial palate while producing the sound made it possible to obtain the data about the position of the tongue in pronouncing a definite speech sound.

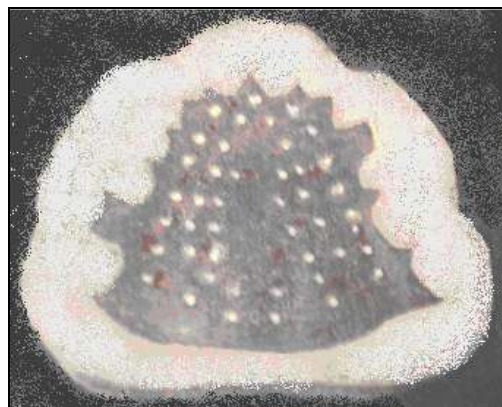


Fig. 1.1. An artificial palate

In order to produce a palatogram the artificial palate was dusted with powder and inserted into the mouth. When a sound was pronounced the places of the artificial palate from which the powder had been removed showed the areas of the palate with which the tongue came into contact in pronouncing the sound.

The artificial palate made it possible to obtain a linguagram, by which one could determine the parts of the tongue which made contact with the palate in pronouncing a sound (fig. 1.2).

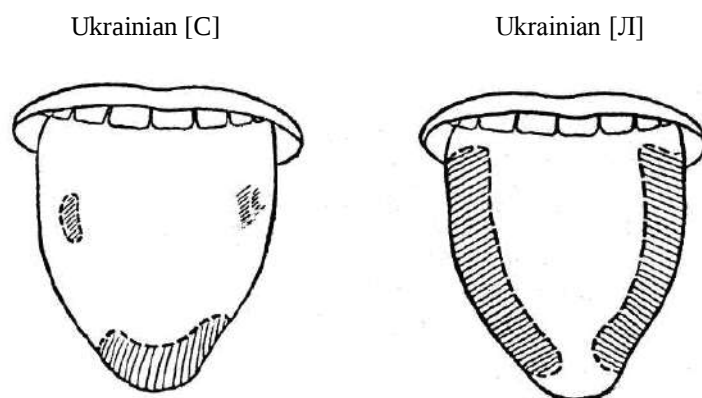


Fig. 1.2. Linguagrams

It should be mentioned that the traces of the tongue contact with the artificial palate can be registered only once and then the procedure should be repeated. Besides, static palatography gives no evidence about the changes in the position of the tongue during the pronunciation of the sound.

The first attempt to receive dynamic palatograms was done by R.U. Stetson (1951). He attached several very small balloons connected with capsules to the surface of the artificial palate. When a consonant was pronounced the tongue was pressed to some balloons at a definite place of the palate and correspondingly the contact was registered. Still, this method was not quite handy for the speaker and the explorer and rather laborious.

A new method of dynamic electric palatography was realized by a group of scientists of the I.P. Pavlov Institute of Physiology in St. Petersburg (Ju.I. Kuzmin, 1963; I.G. Chistovits, V.A. Kozhevnikov and others, 1965).

Electronic sensing elements (data units) were installed into the surface of the artificial palate that made it possible to register the contact of the tongue with the palate during the whole period of pronunciation with the help of an electronic device, connected with the sensing elements (fig. 1.3).

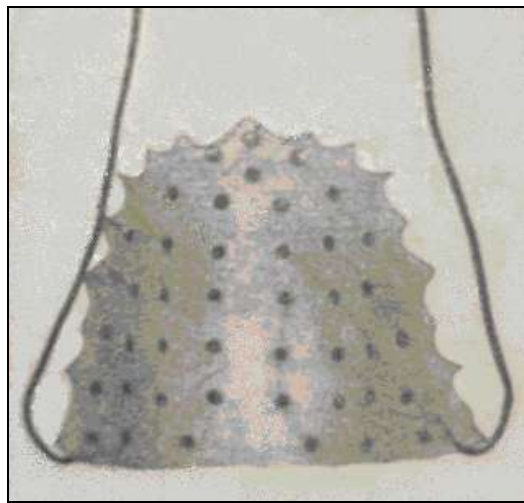


Fig. 1.3. Data units of dynamic palatography with sensing elements

A similar dynamic artificial palate was made and applied in the T. Shevchenko National University in Kiev.

The scientists of the I.P. Pavlov Institute of Physiology worked out the problem of complex analysis of the articulatory parameters of speech (Kozhevnikov V.A., Shuplyakov V.S., 1962). The experimental installation, including data units and electronic devices, made it possible to receive the articulatory characteristics of speech: the speed of air movement exhaled from the mouth, the movement of the lower jaw and the lips, dynamic palatograms, the vocal cords oscillations, etc (fig. 1.4).¹

¹ The photo is taken from the book "Speech, Articulation and Perception" under the edition of V.A. Kozhevnikov and L.A. Chistorich (1965).



Fig. 1.4. The subject with the main data units of articulatory parameters

Photography method is also one of the methods used in experimental phonetics. The aim of the photography method is to determine the position of the speech organs in pronouncing speech sounds and their combinations. This method includes: photography of the position of the lips and the shape of the mouth opening, filming the position of the lips, photography of the mouth cavity by means of a special camera and X-ray photography.

Lip position photography allows us to photograph the most typical lip position for a certain sound. One of its drawbacks is that it does not show the movement of the lips in articulating sounds.

Cinematography makes it possible to observe the movement of the lips in the articulation of sounds, it allows observation of the changes in the position of the lips for a given sound in different positions in the word, enables us to measure the time of the articulation of the sound and of its separate phases, to observe the changes in the position of the lips in connected speech.

The Feldshtain-Maksutov gastrograph is a specially designed very small camera, (30 mm long, 16 mm wide) (see fig. 1.5) which makes it possible to obtain photos of the speech organs position inside the mouth cavity. This camera is of special value as it is possible to investigate not only the position of speech organs but also the shape of the surface of the main articulating organ – the tongue. These facts can hardly be received by means of any other method.



Fig. 1.5. The Feldshtain-Maksutov gastrograph

Radiography (X-ray photography) applied in phonetic research, makes it possible to determine the position of the speech organs in the pronunciation of speech sounds, provides the investigator with adequate research tools to study the speaking mechanism.

At the present time, the basic radiographic techniques are applied in experimental phonetics. They are cephalometric röntgenography and cineradiography (“cephalometric” means head measurement). These principles create the possibility of accurate measurements. To obtain a clear picture of the tongue position on the röntgenogram a thin barium line may be drawn along the middle of the tongue. The subject should be placed in a precise position with a careful control of head and neck posture.

Articulation can be studied by either “lateral” or “frontal” radiography, but usually lateral is applied (fig. 1.6).

If radiography is to be applied as a research technique, investigators must be thoroughly familiar with its limitations. Besides, the judicious application of radiography to phonetic research requires cooperative effort of phoneticians, physiologists, individuals capable of obtaining, reading and measuring radiogram. Without this cooperative approach, more useful information may be overlooked.



Fig. 1.6. The röntgenogram of the English [ɪ]

Pneumatic kymograph was an apparatus which was used for the investigations of speech physical characteristics in the first laboratories of experimental phonetics.

By means of the pneumatic kymograph air oscillations caused by the sounding speech were transformed into mechanical vibrations of the stylus which left the traces of the recorded speech on the rotating drum of the kymograph, i.e. a kymogram was received. After that the kymogram was fixed, as the drum had been covered with smoke, and analysed. The method of pneumatic speech recording had a lot of shortcomings, but still the pneumatic kymograph was the first device with the help of which acoustic characteristics of speech could be analysed and therefore it was of great importance for the further development of experimental phonetics.

Soon the pneumatic kymograph was replaced by an **electronic kymograph** registering speech wave and singling out the main acoustic parameter of speech – fundamental tone (melody). The time marker below the kymogram made it possible to calculate the duration of the speech signal (fig. 1.7).

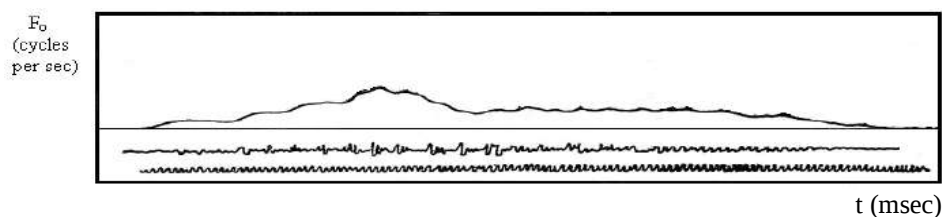


Fig. 1.7. The electro-kymogram of the English word *name* [næm]

Oscillographs as well as other electro-acoustic devices guarantee accurate recording. By means of electro-acoustic apparatus air oscillations are transformed into electric oscillations and recorded in the form of a sound wave (fig. 1.8).

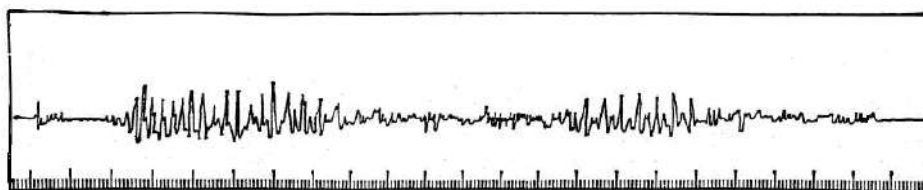


Fig. 1.8. The oscillogram of the English sentence *Take it* [teɪk ɪt]

Intonograph is an electronic device which registers speech signal as a sound wave and signals out the main acoustic characteristics of speech (fig. 1.9).



Fig. 1.9. The intonogram of the Ukrainian word *руки* [РУКИ]

With the help of the intonograph the following main physical characteristics of speech may be separated and registered on the intonogram:

1. Fundamental frequency (measured in cycles per second) is marked by a curve at the bottom of the intonogram. The higher the curve of the fundamental frequency rises, the higher is the meaning of the fundamental frequency. The control signs of the fundamental frequency are situated at the upper line of the intonogram.
2. Intensity (measured in mm, conventional units or db) is marked by a curve in the upper part of the intonogram. The lower the curve of intensity falls, the bigger is its meaning.
3. Time marker makes it possible to calculate the duration of the utterance or its parts, measured in msec.

The intonograph makes it possible to investigate intonation and stress as well as other phonetic phenomena.

The analogous electronic apparatus called “ОФСАРС” was designed in 1971 and used from that time in the Laboratory of experimental phonetics at the National Academy of science of Ukraine.

Spectrography offers the speech investigators remarkable opportunities for serious study of physical characteristics of speech, phenomena of acoustic process on the borders of sounds in speech, etc.

Among the first up-to-date electronic speech analysing apparatuses were **Kay sonographs**.

Modified sonograph is a speech workstation for speech analysis. It is a powerful tool for speech-scientists, or other speech professionals. It produces real time speech analysis on a high resolution display monitor.

One-screen waveform editing and speech parameter extraction help to analyse speech and select segments for further work.

Both narrow and wideband spectrographic analysis can be performed in real time. These analyses can be edited, stored and printed. The very good resolution monitor is capable of displaying 640x480 mm graphics.

The design includes the system electronics with built-in speech processing software of high resolution, video-monitor and printer (fig. 1.10).



Fig. 1.10. The Kay sonograph (Model 5500)

Electronic devices are widely used in acoustic investigations of speech and guarantee quick and precise analysis and registration of the experimental data.

The computer is an electronic device which can simultaneously acquire, store in memory, analyse and display speech signals and it also produces the required results from the stored data.

Computer speech programmes provide all the possibilities for phonetic professionals. They are a powerful tool for acoustic analysis of all the phonetic phenomena of speech.

Computer speech programmes make it possible to receive the results of two main types of analysis – intonographic and spectrographic.

In the upper part of the computer intonogram, speech is recorded in the form of a sound wave. In the middle part of intonograms overall fundamental frequency in the form of a curve is recorded. The higher the curve rises, the higher the meaning of the fundamental frequency (tone) is. In the lower part of the intonograms amplitude of the intensity of the speech signals is recorded. The bigger the intensity of the speech signal is, the higher the impulses of the intensity rise.

The time marks are registered by the time marker on all the bordering lines of intonograms and spectrograms (fig. 1.11, 1.12).

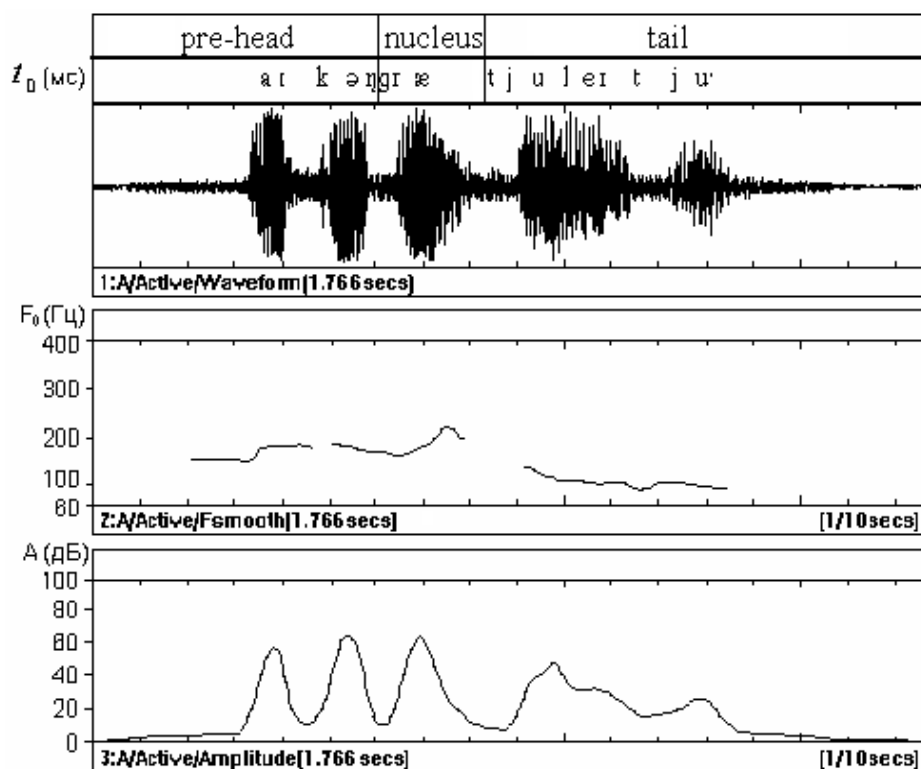


Fig. 1.11. The computer intonogram of the phrase “I congratulate you”
(the speaker – Englishman, EM1)

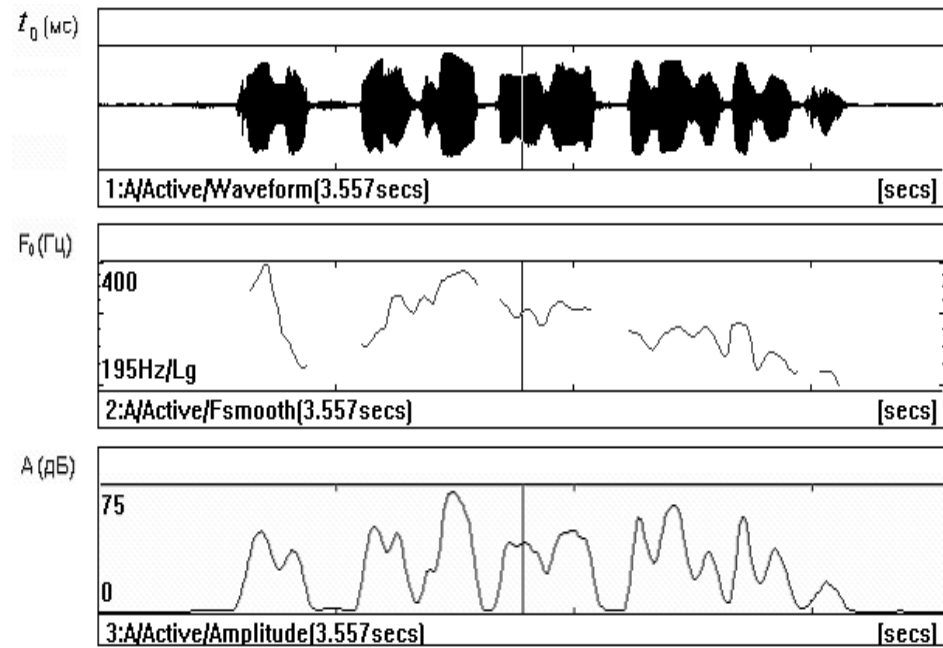


Fig. 1.12. The computer intonogram of the Ukrainian declarative phrase
 “Треба не розвіяти його як полону за вітром.”
 (the speaker – Ukrainian woman, UW3)

In the upper part of the spectrograms an overall amplitude frequency (Fsmooth) was registered.

The special structure of the utterance spectrogram (SpGram) was registered in the middle part of the spectrograms.

The formant structure of the utterance (Formants) was registered in the lower part of the spectrograms (fig. 1.13).

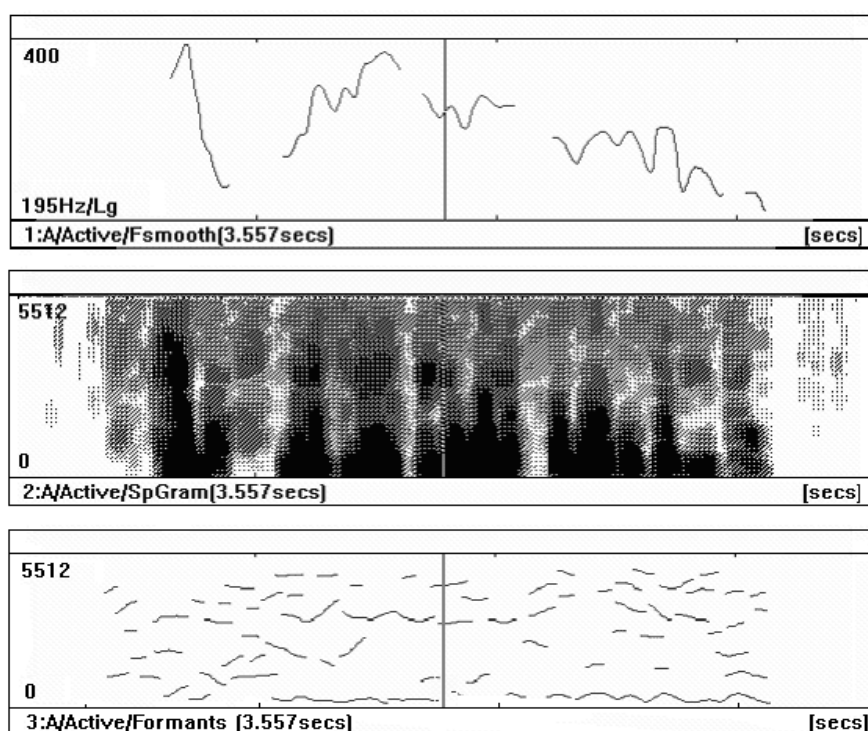


Fig. 1.13. The computer spectrogram of the Ukrainian declarative phrase “Треба не розв’язати його як полову за вітром.” (the speaker – Ukrainian woman, UW3)

Computer analysis enables the researcher to receive the main acoustic characteristics of sounding speech, its spectral and formant structure.

For the investigation of phonetic phenomena in the present book two computer programmes were applied.

With the help of WINCECIL V 2.2. programme which was developed in Great Britain all the main acoustic characteristics of speech were analyzed – wave form and overall amplitude of fundamental frequency, intensity and duration, as well as formant and spectral characteristics. It was possible to examine the intonation structure, the spectral and formant structure of different communicative types of sentences and the text as a whole.

The Prado programme was applied for the analysis on segmental level – a detailed acoustic analysis of speech sounds and the processes on their borders.

The examples of some more intonograms and spectrograms are given below (fig. 1.14, 1.15, 1.16).

With the help of computer programmes all the acoustic characteristics of speech signal may be calculated, registered and singled out.

The computer automatic acoustic analysis of the experimental material makes it possible to receive exact results of the measurements of acoustic characteristics in a considerably shorter time and consequently to enlarge the experimental data under investigation.

The results of automatic computer analysis may be calculated directly from the computer display or from the printed intonograms and spectrograms with the help of a metric ruler.

Nowadays experimental methods in phonetics are applied more and more widely, new apparatuses and new methods continue to appear.

Uw3i4

Title:

Length: 39216 bytes / 3.557secs

Sampling frequency: 11025Hz

Date digitized: 17 October 2002 (+f) Source: uw3i4.utt

Calculation parameters: Calc range: 40-500Hz Voicing threshold: 20

Percent change: 10

Group size: 6

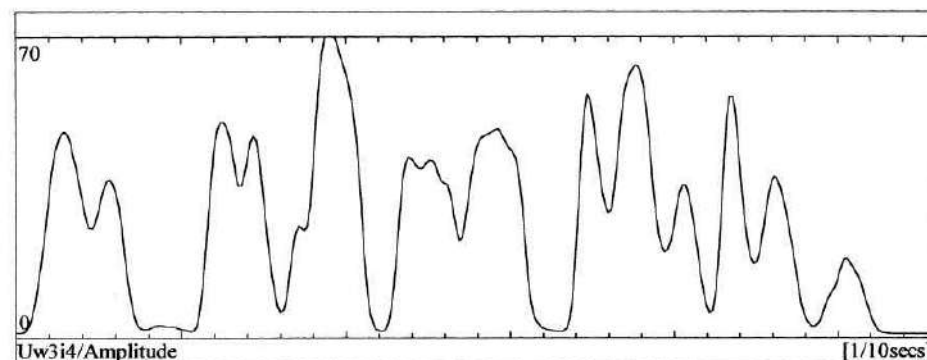
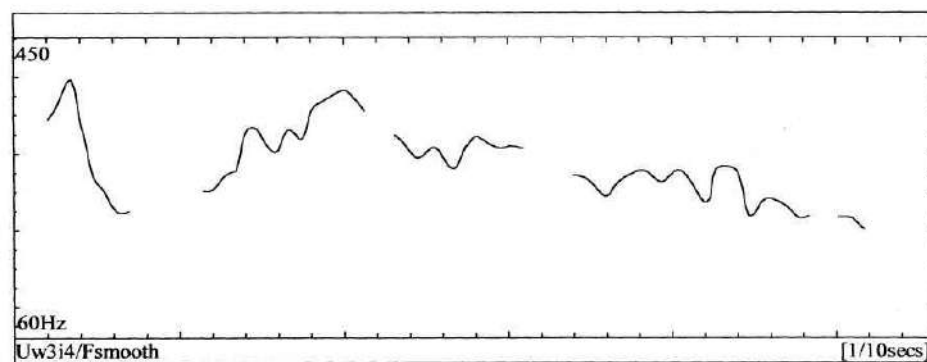
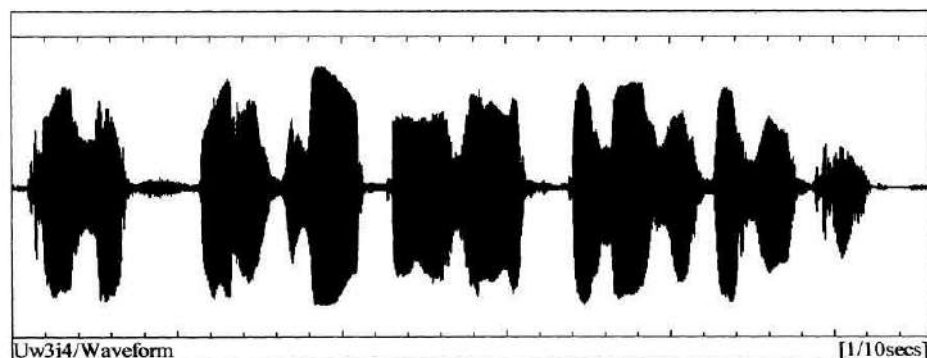


Fig. 1.14. The intonogram of the Ukrainian phrase “Треба не розвіяти його як полону за вітром.” (the speaker – Ukrainian woman, UW3)

Uw3i4
 Title:
 Length: 39216 bytes / 3.557secs Sampling frequency: 11025Hz
 Date digitized: 17 October 2002 (+f) Source: uw3i4.utt
 Calculation parameters: Calc range: 40-500Hz Voicing threshold: 20
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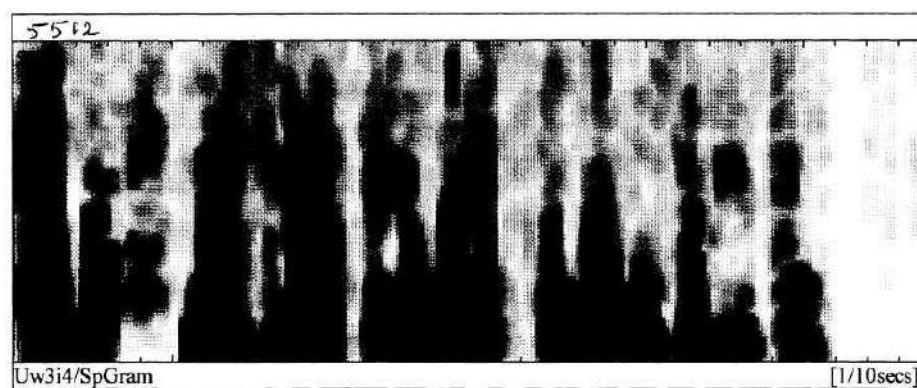
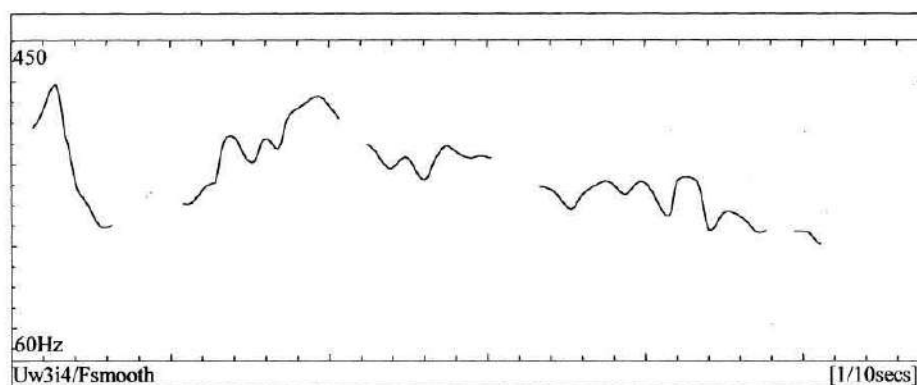
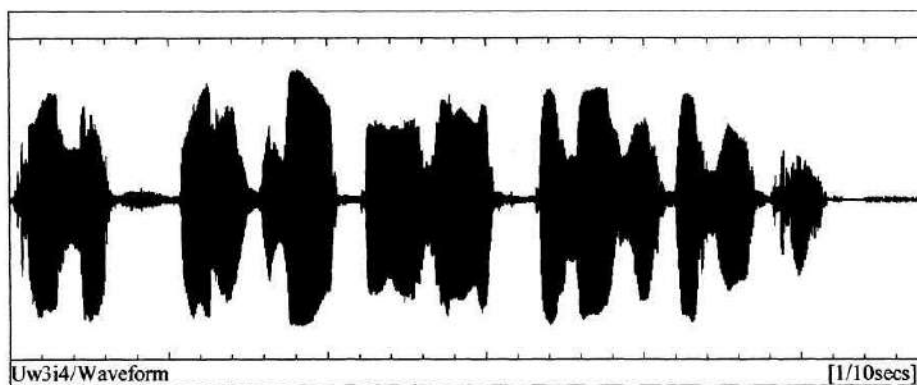


Fig. 1.15. The spectrogram of the Ukrainian phrase “Треба не розвіяти його як поліву за вітром.” (the speaker – Ukrainian woman, UW3)

Uw3i4

Title:

Length: 39216 bytes / 3.557secs

Sampling frequency: 11025Hz

Date digitized: 17 October 2002 (+f) Source: uw3i4.utt

Calculation parameters: Calc range: 40-500Hz Voicing threshold: 20

Percent change: 10 Group size: 6

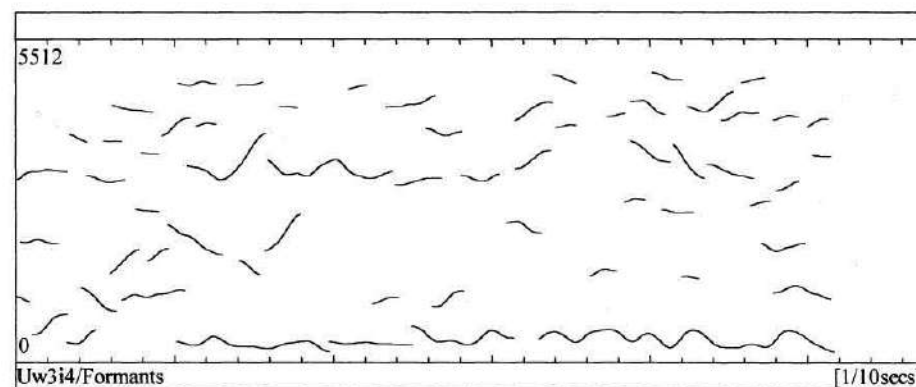
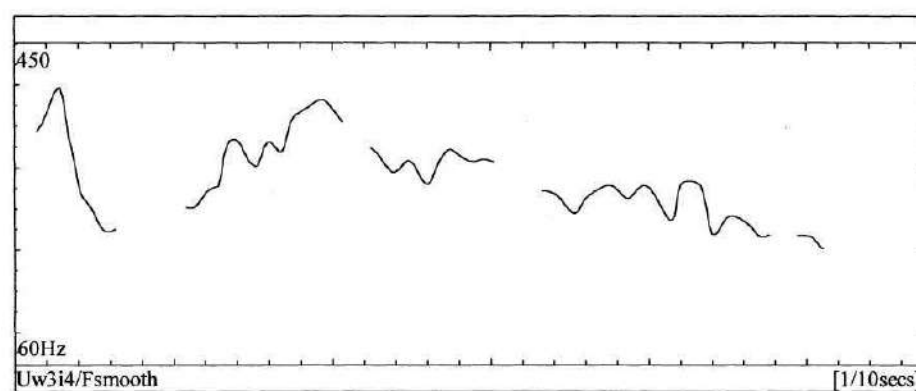
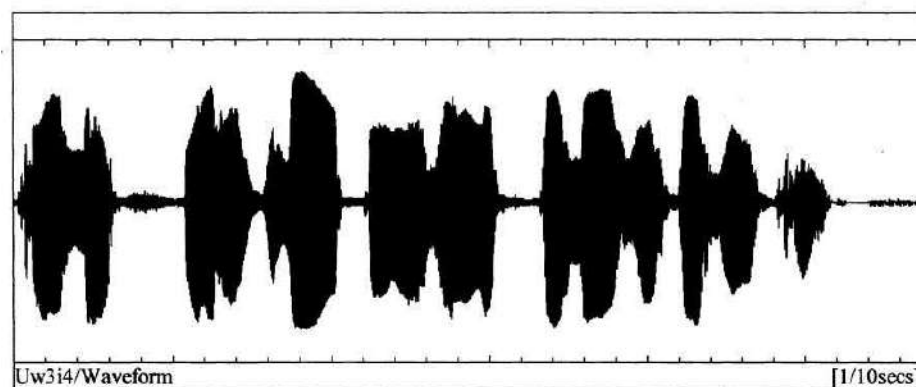


Fig. 1.16. The spectrogram (formant structure) of the Ukrainian phrase “Треба не розв’язати його як полоу за вітром.” (the speaker – Ukrainian woman, UW3)

1.4. THE THEORY OF PHONEME

The theory of phoneme was first expounded by Baudouin de Courtenay, professor of the Kazan University in the 1880s. In his treatise "On the Comparative Study of the Grammar of Slavonic Languages" he clearly defined the difference between a phoneme and a speech sound. He treated a phoneme as a semantically differentiating unit, and a speech sound as an anthropophonic unit of speech, not connected with any meaning. This differentiation proved to be highly fruitful and made it possible to establish mutual relations between the sound and the phoneme. Baudouin de Courtenay went on developing the theory of phoneme in his "Versuch einer Theorie der Phonetischen Alternationen" (1917) and other works.

One should not underestimate the importance of Baudouin de Courtenay's theory. He was the first in the history of the development of linguistics to elaborate the theory of the phoneme, to consider human speech sounds from the viewpoint of their functions and thus, created the teaching of the grammatical part of phonetics.

The theory of the phoneme was further developed by L.V. Shcherba. He studied the theory in his «Русские гласные в качественном и количественном отношении» published in 1912. In this book he defined the phoneme as the smallest general phonetic unit of a given language which can be associated with sense notions and can differentiate words.

In 1955 in his book devoted to phonetics of the French language, L.V. Shcherba wrote that in the spoken language a much greater number of various sounds are pronounced than we usually think and these sounds in every given language unite to form a system of a comparatively small number of sound types capable of differentiating words and their forms, that is, capable of serving the purposes of human intercourse. Such sounds he called phonemes.

Developing the theory of the phoneme L.V. Shcherba comes to the conclusion of the social nature of the phoneme as a speech sound used by people in their intercourse.

The teaching about the sense differentiating function of the phoneme is one of the most important parts of the theory of the phoneme.

The main importance of this definition lies in the fact that L.V. Shcherba speaks of the sense-differentiating function of the phoneme, which proved to be a turning point in the understanding of the phoneme.

For a number of years there were two main trends in linguistics concerning the concept of the phoneme. One of them was headed by Leningrad linguists, the followers of L.V. Shcherba (Матусевич М.С., 1951; Зиндер Л.Р., 1960). The second trend comprised the representatives of the so-called Moscow phonological school (Яковлев Р.Ф., Кузнецов П.С., Реформацкий А.А., Сидоров В.Н., Аванесов Р.И. and others).

The main difference between the schools was in their conception of the phoneme. The followers of L.V. Shcherba proceeded from the word, while Moscow linguists proceeded from the morpheme. These different points of view determined their treatment of the phoneme, their understanding of the phonetic system as a whole.

R.I. Avanesov (1956) pointed out that the two theories were correct and compatible, as they reflect different language facts. Accordingly, he suggested distinguishing two notions – "phoneme" and "phonematic family".

L.R. Zinder in his General Phonetics (1960) further developed the teaching of the variants of the phoneme, the problem of phonematic structure and other problems, and supported R.I. Avanesov's notion of the "phonematic family".

In the 1950s a new theory of the phoneme was suggested by S.K. Shaumyan "Двухступенчатая теория фонем", 1952.

All these theories developed many complicated questions of the phoneme but the problem has not been solved yet. Many points need strict proof and completion.

The theory of the phoneme was also being treated by many linguists abroad. It was investigated by the scientists of "The Prague Linguistic Circle" (Trubetskoy N.S., 1929; Якобсон Р., Халле М., 1962). Some foreign linguists (Sapier E., Twaddell W.F.) treated the phoneme apart from its real sound value. As a result the real human speech sounds were replaced by abstract properties of sounds. The phoneme figured as a symbol of a certain quality of the sound.

The English linguist D. Jones fell in another extreme, treating the phoneme as a sound fully disconnected from its sense-differentiating function. D. Jones treated the phoneme as a group of sounds united by similar articulation features. "A phoneme is a group of sounds consisting of an important sound together with other related sounds" wrote D. Jones in his "Phoneme, its Nature and Use" (Jones D. Outline of English Phonetics, 8th ed.).

1.5. THE SYSTEMS OF ENGLISH AND UKRAINIAN PHONEMES

The problem of the number of phonemes in English was treated by D. Jones, L. Bloomfield and others, as well as by the Russian linguists A.F. Birshert, G.P. Torsuyev, O.I. Dikushina and others.

There is no discordance of the opinion as to the phonematic independence of all the 24 English consonants.

They are: [p], [b], [m], [w], [f], [v], [t], [d], [n], [tʃ], [dʒ], [s], [z], [θ], [ð], [ʃ], [ʒ], [l], [r], [j], [k], [g], [ŋ], [h].

The above sounds belong to the phonetic means of semantic expression in speech and can change the meaning of the words or their grammatical forms.

Their phonematic independence may be confirmed by numerous cases when the substitution of one consonant for another changed the meaning of the word or its grammatical form.

Opinions differ as to the system of vowels.

In his "Phoneme, its Nature and Use" D. Jones acknowledged the sense-differentiating function of the phoneme, suggested by L.V. Shcherba, but his acknowledgement remained formal and he nevertheless combined a short and a corresponding long vowel phoneme into one, ruled by their physical resemblance and underestimating the role of the semantic factor.

Though D. Jones considers length which is independent of the position of the vowel in the word to be one of the main characteristics of a separate phoneme, he does not mention the phonematic independence of length in the case of the English long vowel phonemes [i:], [ɔ:], etc.

Thus, D. Jones treats the English [i:] and [ɪ] as members of the English i-phoneme, the English [ɒ] and [ɔ:] as members of the English ɔ-phoneme, etc., while each of these vowels presents a separate phoneme.

The combination of long and short vowels into one phoneme is considered wrong since:

1. length is semantically important here;
2. length of vowels here does not depend upon their position in the word;
3. long and short vowel phonemes differ not only in quantity but in quality as well.

Actually, though D. Jones treats long and short vowels as members of the same phoneme, he describes them as separate sounds in his "Outline of English Phonetics" (8th ed.).

A critical analysis of D. Jones' viewpoint on the phonematic structure of the English language was given by A.F. Birshert, G.P. Torsuyev and others.

A.F. Birshert proved the phonematic independence of the neutral sound [ə] (1940).

In the books by G.P. Torsuyev and O.I. Dikushina we find proof of the phonematic independence of English diphthongs.

Thus, most of the phoneticians come to the conclusion that in English there are twelve monophthongs which are independent vowel phonemes. They are: [i:], [ɪ], [e], [æ], [ɑ:], [ʌ], [ɔ:], [ɒ], [u:], [ʊ], [ɜ:], [ə].

As to the English diphthongs, eight of them are considered to be independent phonemes. They are: [aɪ], [eɪ], [ɔɪ], [aʊ], [əʊ], [ɪə], [eə], [ʊə].

The diphthong [ɔə] may be replaced in all cases in modern literary English by the phoneme [ɔ:], and therefore there is no reason to consider it as an independent phoneme.

Some phoneticians (Lloyd J., 1946; Torsuyev G.P., 1950) acknowledged the existence of the ninth diphthong [ɔə] as in some cases the substitution of the English [ɔə] for [ɔ:] changes the meaning of the word, e.g.

sore [sɔə] – saw [sɔ:]
pore [pɔə] – paw [pɔ:]

But still as the English [ɔə] may be replaced by the phoneme [ɔ:] in nearly all the cases in modern literary English it is not considered an independent phoneme by most scientists.

The problem of the number of phonemes in Ukrainian was treated by O. Sinyavsky, M.S. Kalinovitch, I.P. Suntsova, G.F. Shilo and others.

Most linguists acknowledge the existence of six vowel phonemes in Ukrainian [ɪ], [E], [ɪ], [A], [O], [Y].

There are many debatable points in the problem of Ukrainian consonant phonemes and the question is not yet settled.

The phonematic independence of the Ukrainian hard consonants [ɪ], [ɛ], [M], [B], [Φ], [T], [ɹ], [H], [ʧ], [ɹʒ], [C], [ʒ], [ɹ], [ɹʒ], [ɹ], [ʒ], [ɹ], [P], [ɹ], [K], [X], [ɹ] was proved by M.S. Kalinovitch, I.P. Suntsova, T.A. Brovchenko and others.

The most difficult is the problem of the Ukrainian palatalized and long consonant phonemes.

It should be mentioned that though all the Ukrainian consonants may be palatalized, palatalization is not always phonematic.

Labial consonants in Ukrainian are slightly palatalized only under definite conditions, namely before [ɪ] and sometimes before [A].

There is not a single pair of words having different meaning in Ukrainian which differ only by the presence of a soft labial consonant in one word and a corresponding hard consonant in the other.

Hence the Ukrainian palatalized labial consonants may be considered as variants of the corresponding non-palatalized labial consonant phonemes.

The same can be said about the Ukrainian soft consonants [ɹʲ], [ʒʲ], [ʧʲ], [ɹʒʲ], [Kʲ], [Gʲ], [Xʲ], [ɹʲ], which are not independent phonemes, but only variants of the corresponding hard phonemes.

The Ukrainian soft forelingual consonants [ɹʲ], [ɹʲ], [Hʲ], [Cʲ], [ʒʲ], [ɹʲ], [ɹʲ], [ɹʲ] occur in all the positions, at the beginning, at the end and in the middle of the word and

before any vowel. The replacement of any of these phonemes by a corresponding hard consonant gives a new word and therefore they may be considered independent phonemes in Ukrainian.

Examples:

повід [П'ОВ'ІД]	повідь [П'ОВ'ІД']
лук [ЛУК]	люк [Л'УК]
знати [ЗНАТИ]	зняти [ЗН'АТИ]
саду [САДУ]	сяду [С'АДУ]

The Ukrainian soft forelingual consonants [T'], [D'], [H'] are independent phonemes of the Ukrainian language too.

The use of the Ukrainian [P'] is rather limited. It is used only before [I] and before back vowels. But even in such positions a new word will be formed if it is replaced by the non-palatalized [P].

Examples:

рад [РАД]	ряд [P'АД]
друк [ДРУК]	дрюк [ДP'УК]

The Ukrainian soft forelingual consonant [P'] is therefore an independent phoneme.

The question of Ukrainian long consonant phonemes is not settled yet.

Though the existence of long consonants is mentioned by a number of linguists, only few of them treat the question of phonematic independence of long consonants.

To prove that long consonants are independent phonemes most of the authors apply the method of interchanging long and the corresponding short consonants in a pair of words differing only in these consonants.

In this way the phonematic independence of the Ukrainian long consonants [Д̄], [Н̄], [С̄], [Л̄], [Л̄'] has been proved.

Comparing words differing only in one sound, comparing long and corresponding short consonants in similar positions in a word, it is possible to conclude that there are eight more long consonant phonemes in Ukrainian besides the above-mentioned. They are: [М̄], [Т̄], [Т̄'], [Н̄'], [Р̄], [З̄'], [Ж̄'], [Ч̄'].

The phonematic independence of these phonemes may be illustrated by the following examples:

Митю [М'ІТ'У]	миттю [М'ІТ̄'У]
у Вані [У ВА́Н'І]	у ванні [У ВА́Н̄'І]
мото [МО́ТО]	мотто [МО́Т̄О]
міра [М'ІРА]	мірра [М'ІР̄А]
гама [Г'А́МА]	гамма [Г'А́М̄А]
галузі [Г'А́ЛУЗ'І]	галуззю [Г'А́ЛУЗ̄'У]
подорожі [ПО́ДОРОЖ'І]	подорожжю [ПО́ДОРОЖ̄'У]
у вічі [У В'ІЧ'І]	увіччя [УВ'ІЧ̄'А]

Though we failed to find examples in which long [C̄], [Ī], [Ū] and the corresponding short consonants are interchangeable, they may be treated as independent phonemes because their length does not depend upon their position in the word, the morphological border always passes before or after the long consonant, not within it. Each of the above mentioned features may be considered an evidence of the phonematic status of these sounds.

1.6. THE ORGANS OF SPEECH

It should be mentioned that the human being does not possess the organs which are exclusively used for producing speech sounds. All the organs involved in pronunciation of speech sounds, and human speech in general, primarily fulfil other functions – the functions of swallowing and digesting food, respiratory functions, etc.

The organs of speech began to be used by human beings for the production of speech sounds in the course of their development as *Homo sapiens*.

It is most important for a learner of a foreign language to know the functioning of the speaking apparatus.

When a thought which is to be communicated arises in the cortex an impulse is transmitted through the nervous system to the organs of speech. The organs of speech, obeying this impulse, produce speech sounds by which the thought is expressed.

The human speaking apparatus consists of the following main parts which participate in the formation of speech sounds.

The air exhaled from the lungs passes through the bronchi, then through the windpipe (trachea) and gets into the upper part of the windpipe which is called the **larynx**.

The larynx is a rather wide pipe which is made up of two main cartilages. The lower cartilage, which is called the **cricoid**, is firmly connected with the windpipe. The form of the cricoid resembles a signet ring, the signet of which is turned to the rear. The second cartilage, which is called the **thyroid** cartilage, lies on the cricoid and resembles two shields connected at an angle.

Inside the larynx, on the upper part of the signet there are two small movable cartilages which are called **pyramidal**. The bundles of elastic muscles called **vocal chords** are stretched horizontally across the larynx from the bases of pyramidal cartilages.

Owing to the mobility of the pyramidal cartilages, to which the vocal chords are attached, and to the elasticity of the vocal chords, the latter can occupy different positions. They may be tense or lax drawn together to different degrees or drawn apart, forming an opening. The opening between the vocal chords is called the **glottis**.

An erect cartilage at the root of the tongue which lowers during swallowing to cover the glottis is called the **epiglottis**.

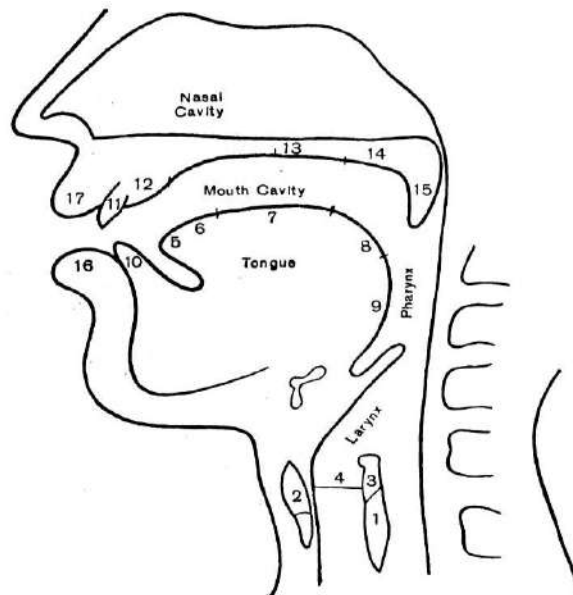


Fig. 1.17. The organs of speech

1. Cricoid 2. Thyroid 3. Pyramidal Cartilages 4. Vocal Chords 5. Tip of the Tongue 6. Blade of the Tongue 7. Front of the Tongue 8. Back of the Tongue 9. Root of the Tongue 10, 11. Teeth 12. Alveoli 13. Hard Palate 14. Soft Palate 15. Uvula 16. Lower Lip 17. Upper Lip

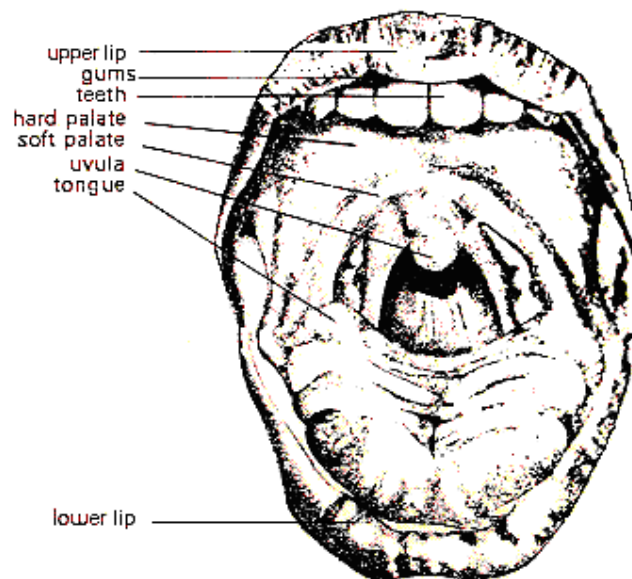


Fig. 1.18. The mouth cavity

For practical purposes it is enough to consider three main positions of the vocal chords:

1. The pyramidal cartilages are drawn wide apart, the vocal chords are lax and do not vibrate, the glottis is broad. Neither voice nor noise is produced. This is the position typical of breathing. The glottis is wider while inhaling and narrower while exhaling. Speech sounds in English, as well as in most other languages, are produced while exhaling.

The above described position of the vocal chords is also characteristic of the formation of voiceless consonants (see fig. 1.19 - A).

2. The pyramidal cartilages are brought together, the vocal chords are tense and vibrate when the air is exhaled from the lungs and passes between them. This position is characteristic of vowels and voiced consonants (see fig. 1.19 - B).

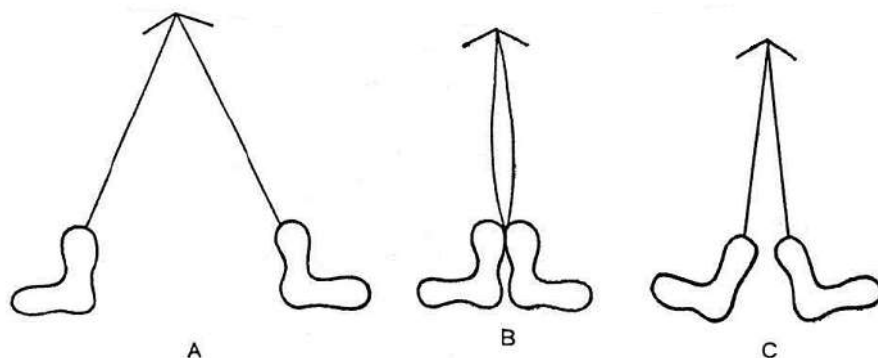


Fig. 1.19. The position of the vocal chords

3. The pyramidal cartilages are slightly drawn apart, the glottis is narrowed but the vocal chords are not tense. This is the position characteristic of a whisper (see fig. 1.19 - C).

Having passed the larynx the air passes through the pharynx (the cavity above the larynx) and gets into the mouth cavity or the nasal cavity.

The following organs of speech participate in the formation of speech sounds: the tongue, the hard and the soft palate, the upper and the lower lips, the upper and the lower teeth and the lower jaw.

The tongue may be conventionally divided into blade, front, back and root. The very front part of the tongue is called the tip. The roof of the mouth is divided into the alveoli (situated immediately behind the upper teeth), the hard palate and the soft palate ending in the uvula.

The mouth and the nasal cavities, as well as the larynx, serve as resonance chambers.

Sounds may be oral or nasal depending on the cavity through which the air passes. In English and Ukrainian, as well as in Russian, there are no nasalized vowels.

The volume of the nasal resonance chamber remains unchanged. The volume of the mouth resonance chamber depends on the position of the tongue, the lips, the soft palate with the uvula and the size of the mouth opening.

Those organs of speech which, owing to their mobility, take an active part in the production of speech sounds are called **active**.

The active organs of speech are: the vocal chords, the tongue, the soft palate with the uvula, the lips and the lower jaw. The most movable organ of speech is the tongue.

The immovable organs of speech are called **passive**. They are: the upper jaw, the alveoli, the teeth and the hard palate.

The tongue is the main organ of producing speech sounds – consonants and vowels, and speech in general.

The mouth cavity, the pharynx and the nasal cavity serve as resonance chambers.

The main organ of hearing is the **ear**, with the help of which speech is heard and interpreted.

The human ear may be conventionally divided into three sections – the outer ear, the middle ear and the inner ear.

The outer ear plays a protective role for the middle ear and functions as a resonator.

The middle ear is a cavity within the skull and plays an important role as a protector of the inner ear and transmits the mechanic vibrations of the membrane further to the inner ear.

The inner ear is the most complicated section of the ear.

The main elements of the inner ear are the **semicircular canals** with the **cochlea**, filled with liquid. Inside the cochlea there are two membranes, one of them with the numerous cells of the highly sensitive **organ of Corty** converts the vibrations into neural signals and transmits them by the auditory nerves to the brain.

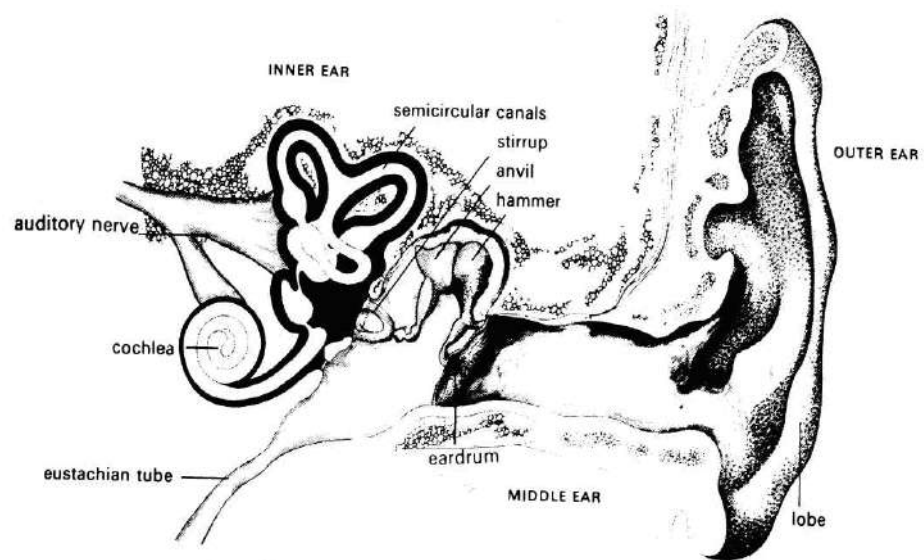


Fig. 1.20. The organs of hearing (the ear)

1.7. SPEECH SOUNDS

Speech sounds from the physical point of view are sound waves. They are the result of the vocal chords vibration and the noise which arouse in the process of speech production.

Understanding the “voice” as characteristics of the category which is the source of voice and the specific types of speech oscillations, from the viewpoint of the type of the source, speech sounds may be classified into the following groups (Фарт Г., 1964):

- a. absence of the source of oscillations (pause);
- b. exclusively the voice source (vowels);
- c. voice and noise sources simultaneously (voiced consonants);
- d. one or more noise sources (voiceless consonants).

Traditionally, speech sounds are divided into two classes: **vowels** and **consonants**.

Speech sounds are divided into vowels and consonants according to the specific character of the work of the speech organs, especially according to the presence or absence of the obstruction.

The most substantial difference between vowels and consonants is that in the articulation of vowels the air passes freely through the mouth cavity, while in making consonants an obstruction is formed in the mouth cavity or in the pharynx and the flow of the air meets a narrowing or a complete obstruction.

Therefore the flow of the air is weaker in pronouncing vowels and stronger in pronouncing consonants.

Vowels have no fixed place of articulation, the whole of the speaking apparatus takes part in their formation, while the articulation of consonants can be localized and an obstruction or a narrowing for each consonant is formed at a definite place of the speaking apparatus.

In producing vowels all the organs of speech are more tense, whereas while in the production of making consonants the active organs of speech are tense only in the place of obstruction. Voice prevails in vowels while in most consonants noise prevails over voice.

Vowels are syllable forming sounds while consonants are not, as a rule.

Besides these two main types of speech sounds there is an intermediate type called **sonants**. Sonants have features common to both vowels and consonants.

Like a consonant, a sonant is characterized by an obstruction as well as by the concentration of muscular tension in the place of obstruction. However, the air passage is rather wide. In forming [m], [n], [ŋ] the air passes through the nasal cavity, in forming [w], [r], [l], [j] the air passage between the tongue and the roof of the mouth is wider than in producing other consonants.

Producing sonants the voice prevails over noise; while in all the other consonants (both voiced and voiceless), noise prevails over voice. This is why under certain conditions sonants [m], [n] and [l] become syllabic.

However, since sonants are more often non-syllabic, they are usually considered among consonants.

There exist a definite number of the main acoustic sounds in any language, called speech sounds.

In the process of speech under the influence of different conditions (the influence of the neighbouring sounds, physiological and other reasons), speech sounds may change their characteristics to some extent or receive some additional acoustic qualities but the main linguistic characteristics of each of the speech sounds in each language remain unchanged what makes it possible to recognize it in the act of communication.

Such speech sounds – the main linguistic elements, B. Bloch and G.L. Trage called phonemes (1942).

Speech sounds create syllables – the minor units of speech, from which all the higher speech units of suprasegmental level, including the text, are originated.

1.8. PHONETIC TRANSCRIPTION

In some languages spelling does not reflect the phonetic structure of a word. This is especially true of the English language in which, owing to the peculiarities of its historical development, there is a great difference between the spelling of a word and its pronunciation.

The distance existing between the pronunciation of the word and its spelling creates a special problem in English which is unknown in Ukrainian where spelling is based on the phonematic principle.

The problem could be solved by creating a system of sounds, representing pronunciation – phonetic transcription.

Henry Sweet (1877) described two types of phonetic transcription in English: **broad** and **narrow**.

The **narrow** transcription symbolizes all the speech sounds and all their shades and could be used in different languages.

The **broad** transcription was derived from the narrow transcription for each particular language.

Henry Sweet laid down the principle of symbolizing in Broad transcription only those sounds which were capable of distinguishing one sound from another, i.e. he proposed the method of selection phonetic symbols which is now called phonematic.

D. Jones wrote (1962) that the broad transcription which represents only the problems of a definite language, using for this purpose the minimum number of the letter shapes, comprising a limited number of ordinary Roman letters, may be termed phonematic.

Broad and narrow types of transcription are used for different purposes.

Narrow transcription is usually applied for scientific investigations. Broad (phonematic) type of transcription is widely used in English in teaching pronunciation, especially to foreign students.

In teaching English to Ukrainian learners a broad type of transcription is applied, that is a transcription based on phonematic principals.

In English a separate sign represents a separate phoneme. To achieve it, Roman letters were used in phonetic transcription with the additional signs of the narrow form of transcription, adopted by the International Phonetic Association. Thus, all the English short and long vowel phonemes have different signs: [ɪ] – [i:]; [ʌ] – [ɑ:]; [ɒ] – [ɔ:]; [ʊ] – [u:]; [ə] – [ɜ:].

The signs of the transcription are enclosed in square brackets. Additional diacritical signs used in transcription in English are:

the sign (ː) or (ˑ) denoting length of vowel phonemes, e.g.

girl [gɜ:ɪ], he [hi:], [hiˑ];

the sign (ˈ) placed before and above a syllable, denotes a primary stress, e.g.

a boy [ə ˈbɔɪ];

the sign (ˌ) placed before and below a syllable, denotes a secondary stress, e.g. competition [ˈkɒmpɪˌtɪʃn].

Ukrainian phonetic transcription is also based on the phonematic principle. In dealing with Ukrainian sounds the Ukrainian capital letters are used, enclosed in square brackets, and one additional sign [G] as in [GAHOK] is added.

Diacritical signs are more numerous than in English.

Thus, the sign (˘) is placed after a consonant to denote palatalization. The sign (–) placed above consonants denotes that they are long.

Diacritical signs are of greater importance in Ukrainian than in English. Having been added to a sound in phonetic transcription they may change the meaning of the word.

Thus, the phonetic sign (–) above the sound “Н” denotes another phoneme. Compare the words *причина* [ПРИЧІНА] – *cause, reason* and *причина* [ПРИЧІНА] – *mad, crazy*.

The enormous gap between the spelling and the pronunciation in English makes the application of transcription in teaching English pronunciation essential and even inevitable.

1.9. GRAPHICAL REPRESENTATION OF INTONATION

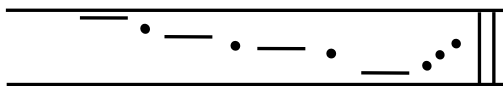
For practical purposes intonation may be represented by a system of special signs. These signs are usually placed on a staff of two lines, the upper and lower lines representing the upper and lower limits of the voice. Graphic representation of intonation was first introduced by H. Klinghardt and later revised by L. Armstrong and I. Ward. The following are the signs generally adopted for the purpose:

- stressed syllables in this notation are represented by dashes “—”;
- unstressed syllables are represented by dots “.”;
- a falling tone is represented by a downward curve “↘”;
- a rising tone is represented by an upward curve “↗” when there are no unstressed syllables after the last stressed one;
- if a sentence is pronounced with the rising tone, the rise takes place within the last stressed syllable if it is final, but if the last stressed syllable is not final, it has the lowest pitch and the unstressed syllables following it rise from that low level, e.g.

Is that true?
[‘ɪz ‘ðæt ↗ tru:ʔ ||]



Have you ever said a word in private to her?
[‘hæv ju ‘evə ‘sed ə ‘wɜ:dɪn ↗ praɪvət tu həʔ ||]

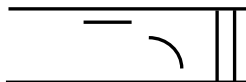


- the falling-rising tone is represented by the curve “↗↘”;
- the rising-falling tone is represented by the curve “↘↗”;
- the distance between the signs reflects to some extent, the speed of utterance;
- the level of the signs between the staves reflects the level of the voice or its pitch.

The characteristic features of the intonation structure of the English speech are:

- The first stressed syllable, as a rule, has the highest pitch, e.g.

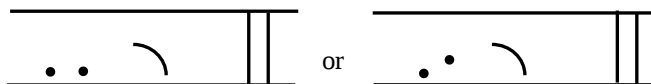
Tom’s out.
[‘tɒmz ↘aʊt. ||]



- Unstressed syllables before the first stressed syllable are either pronounced on

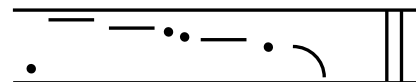
a low level or may rise gradually to the pitch of the first stressed syllable.

He has gone.
[hɪ hæz ɡɒn. ||]



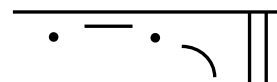
3. Stressed and unstressed syllables following the first stressed syllable form a descending scale until the last stressed syllable is reached, e.g.

We set out for the town of Blight.
[wɪ 'set 'aʊt fə ðə 'taʊn əv ˈblaɪt. ||]



4. If a sentence is pronounced with the falling tone, the pitch of the voice falls to a low level within the last stressed syllable, e.g.

I'll bring him back.
[aɪl 'brɪŋ hɪm ˈbæk. ||]



Thus, the main characteristic features of English intonation structure are a regularly descending scale, the high position of the first stressed syllable in statements, orders, etc., a sharp and low fall of the final tone in statements, etc. and gradually rising final tone in general questions, requests and so on.

The characteristic features of the intonation structure of the Ukrainian speech are:

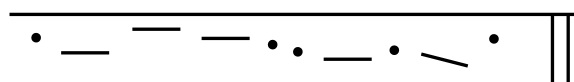
1. As a rule, the stressed syllable in the word which is logically emphasized has the highest pitch, e.g.

Я не розумію його.
[jɑ nɛ rɔzʊm'ijʊ jo ˈɲɔ. ||]

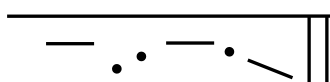


2. Unstressed syllables between the stressed ones gradually descend or ascend to the level of the following stressed syllable, e.g.

Хіба він не підійшов до нього?
[xɪbɑ vɪn nɛ pɪd'ijʃɔv dɔ ˈnʲɔ. ||]



Він не знайшов його.
[vɪn nɛ znajʃɔv jo ˈɲɔ. ||]



3. Stressed and unstressed syllables seem to form an irregular scale, a regular descending scale is observed rather seldom in Ukrainian. If a sentence is pronounced with the falling tone the pitch of the voice irregularly descends to a low level within the last stressed and unstressed syllables, e.g.
Він сьогодні виїхав на Урал.

[В'ІН С'ОГОДНІ ВИЙІХАВ НА УЇРАЛ. ||]



Вона передумала.
[ВОНА ПЕРЕЇДУМАЛА. ||]



PART I

SEGMENTAL UNITS OF SPEECH

CHAPTER 2

VOWELS IN ENGLISH AND UKRAINIAN

2.1. CLASSIFICATION OF VOWELS

The quality of a vowel depends upon the shape of the resonance chamber, including the shape of the mouth cavity. The shape of the mouth cavity may be changed by movements of the tongue, the lower jaw, the soft palate and the lips. Different positions of these active organs of speech cause differences in the shape of the resonance chamber and thus, in the quality of a vowel.

Contrary to consonants, vowels have no fixed place of articulation (no obstruction). Therefore, describing a vowel, it is necessary not only to give an accurate description of the position of the speech organs, but also to compare the vowel with other vowels of the same language, as well as with the similar vowels of the learners' native language.

As the main organs of speech which modify the shape of the resonance chamber are the tongue and the lips, vowels are generally classified according to the position of the tongue and the lips.

2.1.1. THE POSITION OF THE TONGUE

The tongue may move vertically (i.e. it may be raised to various heights in the mouth) or horizontally (i.e. forward and backward).

According to the vertical movement of the tongue vowels are divided into the following groups:

1. When the tongue comes rather close to the palate and the air flows through the passage without causing audible friction, the resulting vowels are called **close**. In pronouncing close vowels the air passage between the tongue and the palate is rather narrow.

Examples:

The English [i:], [u:].

The Ukrainian [I], [Y].

2. When the tongue is lowered and a wide air passage is formed between the tongue and the roof of the mouth, the resulting vowels are called **open**.

Examples:

The English [æ], [ɒ], [ɑ:], [ɔ:].

The Ukrainian [A].

3. Half-open vowels are those in the production of which the tongue is raised half way between the close and open positions, i.e. the tongue is in a position intermediate between those of open and close vowels.

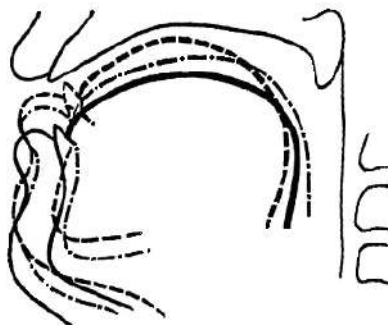
Examples:

The English [ə], [ɜ:], [ʌ], [e].

The Ukrainian [E], [O].

Fig. 2.1.
Tongue-position

of an open vowel	—————
of a close vowel	—————
of a half-open vowel	— · — · — · — ·



It is possible to get several intermediate positions between these three extreme ones. G.P. Torsuyev in his book “Phonetics of the English Language” suggests a supplementary subdivision into narrow and wide varieties.

There are two well-defined classes of vowels – front and back, and several intermediate groups which are distinguished according to which part of the tongue is articulating – back, front, etc., i.e. according to the horizontal movement of the tongue.

1. When the front of the tongue is raised more or less towards the hard palate, the air passing through the mouth produces vowels that are called **front vowels**. In the articulation of front vowels a large resonance chamber is formed in the back part of the mouth cavity (fig. 2.2).

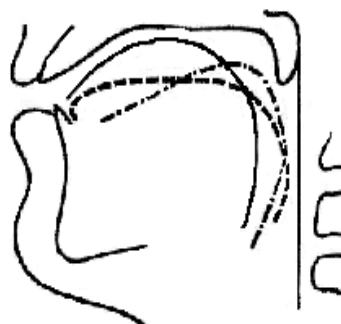
Examples:

The Ukrainian [I].

The English [i:], [e], [æ].

Fig. 2.2.
Tongue-position characteristic

of a front vowel	—————
of a mixed vowel	—————
of a back vowel	— · — · — · — ·



2. When the front but somewhat retracted part of the tongue is raised more or less towards the hard palate, the air passing through the mouth produces vowels that are called **front retracted vowels**.

Examples:

The Ukrainian [H], [E].

The English [ɪ].

3. When the tongue lies more or less flat, the air passing through the mouth results in vowels that are called **mixed vowels**.

Example:

The English [ə], [ɜ:].

There are no mixed vowels in the Ukrainian language.

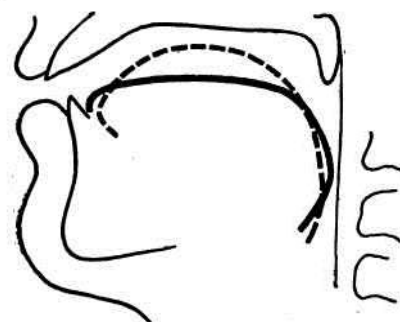
4. When the front part of the tongue is more or less raised towards the roof in the centre of the mouth, the air passing through the mouth produces vowels that are called **central vowels**.

Example:

The Ukrainian [A] after palatalized consonants.

Fig. 2.3.
Tongue-position characteristic

of a mixed vowel —————
of a central vowel - - - - -



There are no central vowels in the English language.

5. When the back part of the tongue is more or less raised towards the soft palate, the air passing through the mouth produces vowels that are called **back vowels**. In pronouncing back vowels a large resonance chamber is formed in the front part of the mouth cavity.

Examples:

The Ukrainian [O].

The English [ɒ], [ɔ:], [ɑ:], [u:].

6. When the back but somewhat advanced part of the tongue is more or less raised towards the soft palate, the air passing through the mouth produces vowels that are called **back advanced vowels**.

Examples:

The Ukrainian [Y].

The English [ʌ], [ʊ].

2.1.2. THE POSITION OF THE LIPS

The movements of the lips also change the volume of the mouth resonance chamber, as well as the mouth opening, which has a part in determining the quality of the vowel. In pronouncing vowels the lips may be either spread or neutral, or rounded to

a certain extent and protruded. According to the position of the lips, vowels are divided into rounded and non-rounded (labialized and non-labialized).

Rounded vowels are those in the production of which the lips are more or less rounded. The rounding may be accompanied by protrusion. Protrusion of the lips is not characteristic of English pronunciation.

Examples:

The English [u:], [ʊ], [ɔ:], [ɒ].

The Ukrainian [O], [Y].

Non-rounded vowels are those in the production of which the lips are spread or neutral.

Examples:

The English [i:], [ɪ], [e], [æ], [ɜ:], [ə], [ʌ], [ɑ:].

The Ukrainian [I], [И], [E], [A].

2.1.3. STABILITY OF THE VOWELS ARTICULATION

According to the stability of articulation and their quality, vowels are divided into monophthongs and diphthongs.

For example:

The English [ɪ], [i:], [e], [æ], [ɜ:], [ə], [ʊ], [u:], [ʌ], [ɔ:], [ɒ], [ɑ:] are monophthongs.

The English [aɪ], [eɪ], [ɔɪ], [əʊ], [aʊ], [ɪə], [eə], [ʊə] are diphthongs.

There are no diphthongs in the Ukrainian language.

Various systems of vowel classification have been introduced by different phoneticians.

The system of the so-called “cardinal vowels” was introduced by D. Jones.

The aim of the Cardinal Vowel Diagram is to give a common standard of comparison of vowel sounds in all languages.

The system of “cardinal vowels” was very popular as it helped the teacher to explain the articulation of English vowels to students of many nationalities, whose native languages he did not know. Therefore D. Jones considered the system of “cardinal vowels” to be the only way of making the written description of vowels intelligible to a large circle of foreign learners.

According to D. Jones “cardinal vowels” have to be articulated as remote as possible from “neutral” position. He selected 8 such vowels and called them “cardinal”.

Thus, for example, cardinal vowel No. 1 [ɪ] is described by D. Jones as the sound in which the raising of the tongue is as far forward as possible and as high as possible consistently with its being a vowel, the lips being spread.

But still the system of “cardinal vowels” does not form a convenient basis for describing vowels of a foreign language.

Cardinal vowels are artificial vowels which exist neither in English nor in any other language. It is difficult to try to acquire the pronunciation of foreign sounds on the basis of the sounds unknown to the students and therefore when it is possible foreign vowels should be compared to the vowels of the native language of the learner. Therefore, the way D. Jones proposes to use it is to place on the Diagram both the vowels of the language studied and those of the native language.

Describing English vowels according to the horizontal movement of the tongue and its height, D. Jones compares them with the corresponding cardinal vowels.

Henry Sweet classifies vowels according to the movements of the tongue: the movement of the tongue in the horizontal direction and various degrees of height between the tongue and the palate.

He maps out the mouth schematically into nine squares:

high-back	high-mixed	high-front
mid-back	mid-mixed	mid-front
low-back	low-mixed	low-front

Each of these nine squares may be again subdivided into nine small ones.

The system of vowels by H. Sweet is based on real properties of English sounds and gives minute characteristics of each vowel.

Sweet's classification of vowels is very valuable for scientific comparison of vowels of different languages (Sweet's table of vowels contains 81 divisions).

For practical purposes it is too complicated and overloaded.

A classification of vowels which is most suitable for practical purposes and makes it possible to introduce English vowels on the basis of native vowels is the classification introduced by G.P. Torsuyev in his "English Phonetics" (1950). His classification is based on a phonematic principle and successfully serves the aims of comparative analysis.

G.P. Torsuyev classifies vowels according to the horizontal movements of the tongue into front, front retracted, mixed, back advanced, back and according to the vertical movement of the tongue into high, medium and low vowels. In addition G.P. Torsuyev introduces broad and narrow varieties within each group.

The principles of this classification are applied to the comparative tables of English and Ukrainian vowels, given below.

According to the place occupied by a vowel in a square of the table, one can describe the articulation of a foreign vowel and compare it with the articulation of the corresponding vowel of the native language.

If we take, for example, the English [i:] we see that it occupies the extreme high and front position in the table, i.e. it may be described as a narrow variety of a front close vowel. Though the Ukrainian [I] is also a narrow variety of a front close vowel it occupies a slightly lower position, which means that in pronouncing the Ukrainian [I], the tongue is lower and more retracted in comparison with the English [I] (see table 2.1). English vowel phonemes are placed in brackets.

Table 2.1.

English and Ukrainian vowel phonemes

According to the horizontal position of the tongue According to the height of the tongue		Front	Front retracted	Mixed	Back advanced	Back
	Narrow variety	[i:] I				[u:]

Close	Wide variety		[ɪ] И		ʏ [ʊ]	
-------	--------------	--	----------	--	----------	--

Table 2.1.
(continued)

Half open	Narrow variety			[ɜ:]		
	Wide variety	[e]	E	[ə]	[ʌ]	O
Open	Narrow variety					[ɔ:]
	Wide variety	[æ]			A	[ɒ] [ɑ:]

2.2. ARTICULATION OF ENGLISH AND UKRAINIAN VOWELS PHONEMES IN DETAIL

2.2.1. ENGLISH FRONT VOWELS IN COMPARISON WITH UKRAINIAN FRONT VOWELS

The English Vowel [i:]

In pronouncing the English [i:] the tongue moves forward and upward.

The front of the tongue is raised high in the direction of the hard palate. The air passage between the tongue and the hard palate is narrow. The tip of the tongue is near the lower teeth. The resonance chamber is enlarged in the back part of the mouth cavity. In the production of the English [i:], as in that of all the other English vowels, the soft palate is raised and the air, exhaled from the lungs, passes freely through the mouth cavity. The lips are spread, slightly revealing the upper and lower teeth.

In pronouncing the English [i:] and other front vowels a deep depression is formed along the central line of the tongue. The sides of the tongue are raised in comparison with the central line, as may be clearly seen on lateral and frontal radiograms.

At the beginning of 1960s the articles by H.M. Truby (Sverige), J.D. Subtelny and J.D. Subtelny (USA) were published, containing reproductions of radiograms which also prove the existence of the above mentioned depression along the central part of the tongue.

The articulation of the English [i:] is not the same at the beginning and at the end of it. At the beginning of the articulation of this sound the tongue occupies a somewhat lower position while at the end the front part of the tongue is raised higher towards the hard palate.

The end of the English [i:] is more advanced than its beginning (fig. 2.4).

The English [i:] is a comparatively long vowel. It is especially long at the end of words, before sonants and voiced consonants.

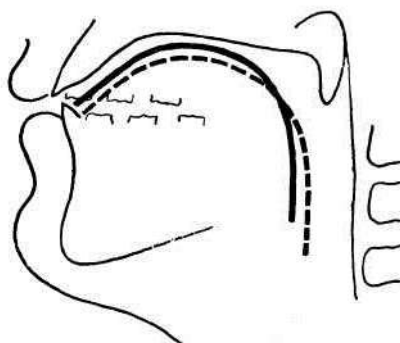
The English [i:] is a long tense non-labialized front close vowel phoneme of the narrow variety.

The English [i:] as well as the Ukrainian [I] is a non-labialized front vowel of high elevation. But its articulation differs from that of the Ukrainian [I].

1. The Ukrainian [I] contrary to the English [i:] is equally close during the whole period of its articulation.
2. The Ukrainian [I] is nearer to the final position of the English [i:], than to its beginning, however it is not so forward.

Fig. 2.4.
Tongue-position of English [i:]

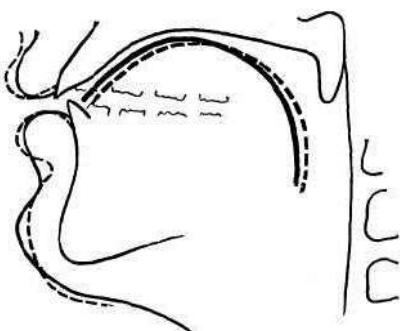
the beginning of articulation —————
the end of articulation - - - - -



In producing the Ukrainian [I] the front of the tongue is lower than in that of the English [i:], i.e. the Ukrainian [I] is more open than the English [i:] (fig. 2.5).

Fig. 2.5.
Tongue-position:

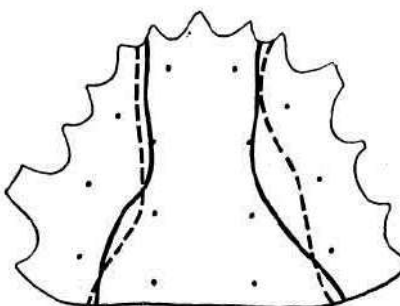
English [i:] —————
Ukrainian [I] - - - - -



The difference in the articulation between the English [i:] and the Ukrainian [I] is illustrated by the palatograms of these sounds (fig. 2.6).

Fig. 2.6.
Palatograms:

English [i:] —————
Ukrainian [I] - - - - -



Comparing the palatograms it should be mentioned that they show the narrowest phase of articulation of the English [i:] while the wider beginning of the sound is not reflected on the palatograms.

The English [i:], only at the end of its pronouncing is a more close sound than the Ukrainian [И], at the beginning of its articulation it is somewhat wider than the Ukrainian [И].

At the beginning of the English [i:] the tongue is approximately in the same position as in pronouncing the Ukrainian [И] in the words *лихо* [ЛИХО], *тихо* [ТИХО], *ми* [МИ].

3. The Ukrainian [И] contrary to the English [i:] is a short vowel.

4. In pronouncing the English [i:] the lips are usually spread or neutral. They are also neutral in the Ukrainian [И]. But the English neutral position of the lips does not allow protrusion, which is characteristic of the Ukrainian pronunciation.

A very near approach to the correct quality of the English [i:] is obtained by starting from the Ukrainian [И] in such words as *ми*, *тихо*.



Fig. 2.7.

Lip-position of English [i:]



Fig. 2.8.

Lip-position of Ukrainian [И]

The absence of palatalization of the consonant preceding [И] in Ukrainian helps the students to avoid palatalization of the preceding consonant in English. The articulation described above refers only to the beginning of the sound, and the tongue instantly takes a somewhat higher position.

The correct articulation of the English [i:] can be acquired by raising the tongue still higher to the hard palate than in pronouncing the Ukrainian [И].

There must not be the slightest protrusion of the lips. Though the lips may be spread or neutral, the spread position of the lips is more desirable for the students, whose native language is Ukrainian.

Many students, whose native language is Ukrainian, have a tendency:

1. to palatalize the preceding consonant;
2. to make the beginning of the English [i:] too close;
3. to make the English [i:] short.

Palatalization of the preceding consonant and a too close beginning of the English [i:] may be rectified by remembering that the sound to aim at resembles the Ukrainian [И].

The English [i:], as well as all the other English long vowels, is especially long at the end of a word, before sonants and voiced consonants.

Before voiceless consonants it is considerably shorter but still longer than the corresponding Ukrainian vowel.

The English Vowel [ɪ]

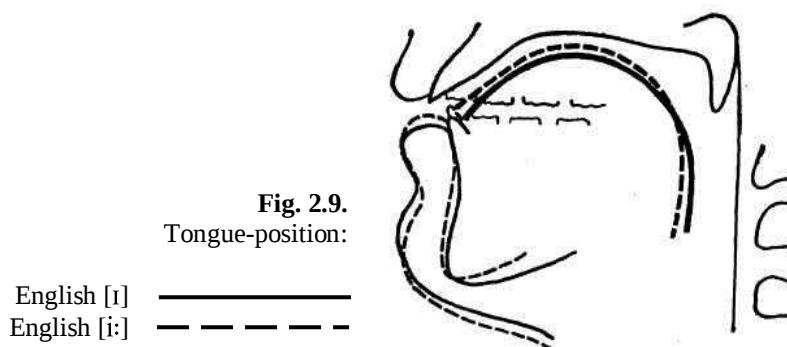
In pronouncing the English [ɪ], the tongue in comparison with its neutral position is moved forward and upward, but occupies a rather more backward and lower position than in pronouncing the English [i:].

The blade and the front of the tongue are raised high towards the hard palate. The air passage between the tongue and the hard palate is narrow but a little wider than in the English [i:]. The tip of the tongue is near the lower teeth.

A large resonance chamber is formed in the back part of the mouth cavity. The soft palate is raised and the air, exhaled from the lungs, passes through the mouth cavity (fig. 2.9).

The lips are spread or neutral, the jaw is lowered, the distance between the jaws being bigger than for [i:].

The English [ɪ] is short. It is always shorter than [i:] in similar pronunciation positions, that is, when preceded and followed by the same sounds and pronounced with the same degree of stress.



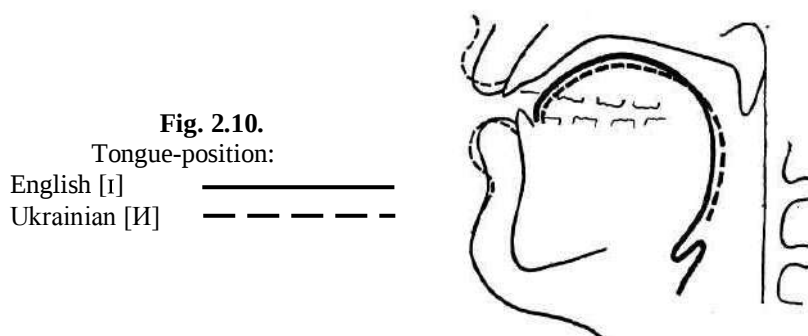
Consequently, the English [ɪ] is a short lax non-labialized front retracted close vowel phoneme of the wide variety.

The English [ɪ] has approximately the same quality as the Ukrainian [ɪ] at the beginning of the word when under stress as for example in *muxo*, *mu*.

The Ukrainian [ɪ], as well as the English [ɪ], is a short lax non-labialized front retracted vowel of high elevation and wide variety. But it slightly differs from the English [ɪ].

1. In articulating the English [ɪ] the front of the tongue is raised higher in the direction of the hard palate than in articulating the Ukrainian [ɪ], i.e. the English [ɪ] is narrower.

2. The English [ɪ] is more front than the Ukrainian [ɪ] (fig. 2.10).



3. In pronouncing the English [ɪ] the lips are spread and are not protruded as in pronouncing the Ukrainian [ɪ] (fig. 2.11, 2.12).



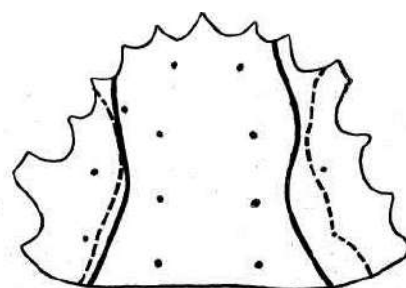
Fig. 2.11.
Lip-position of English [ɪ]



Fig. 2.12.
Lip-position of Ukrainian [I]

The palatograms of the English [ɪ] and Ukrainian [I] show clearly the difference between the articulation of the two vowels in the height of the tongue. It is also seen that in forming the English [ɪ] the front of the tongue is raised to a more front part of the palate (fig. 2.13).

Fig. 2.13.
Palatograms:
English [ɪ] —————
Ukrainian [I] - - - - -



In pronouncing the English [ɪ] the resonance chamber in the front part of the mouth cavity is smaller than in pronouncing the corresponding Ukrainian vowel.

To pronounce the English [ɪ] correctly one should move the tongue rather more forward than in pronouncing the Ukrainian [I] and raise it a little higher. The tongue takes the position intermediate between the Ukrainian [I] and [I].

The lips may be spread or neutral, but special attention should be paid to keep the lips flat without any trace of protrusion.

Students whose native language is Ukrainian have, as a rule, no difficulty in acquiring the proper pronunciation of the sound. The only mistake which is made is to replace the English [ɪ] by a more close and front Ukrainian [I], but this mistake is rather rare.

Sometimes students are inclined to lengthen the English [ɪ]. It should remain very short in all positions in a word.

The English Vowel [e]

In pronouncing the English [e] the tongue, in comparison with its neutral position, moves forward and upward, a large resonance chamber is formed in the back of the mouth cavity.

In pronouncing the English [e] the front of the tongue is raised towards the hard palate but not so high as in forming the English [i:] and [ɪ].

The air passage is rather wide, the jaw is lowered and the distance between the upper and lower teeth is wider than in pronouncing the English [ɪ].

In pronouncing the English [e] a depression is formed along the central line of the tongue, though the depression is not so deep as in the case of the English [i:] and [ɪ].

The English [e] is short and lax. The soft palate is raised.

The English [e] is a short lax non-labialized front half-open vowel phoneme of the narrow variety.

The articulation of the English [e] varies, there exists more open and more close variations of it.

Fig. 2.14.
Tongue-position:
English [e] _____
English [ɪ] - - - - -

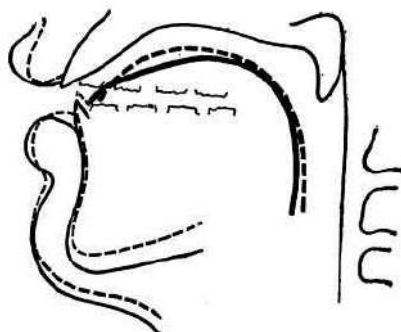


Fig. 2.15.
Lip-position of English [e]

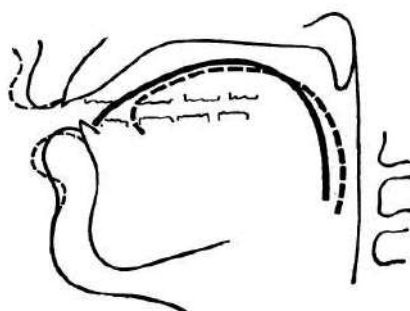


Fig. 2.16.
Lip-position of Ukrainian [E]

English [e] greatly differs from the Ukrainian [E].

1. In forming the English [e] the tongue occupies a more forward position than in forming the Ukrainian [E]. The tip of the tongue in pronouncing the English [e] approaches the lower front teeth. In pronouncing the Ukrainian [E] the tip of the tongue is slightly withdrawn from the lower front teeth (fig. 2.17).

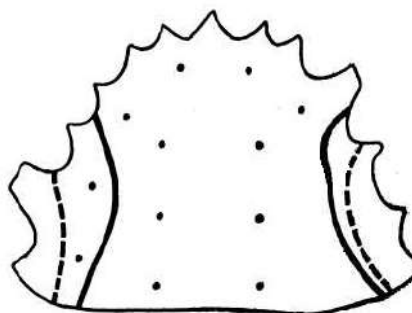
Fig. 2.17.
Tongue-position:
English [e] _____
Ukrainian [E] - - - - -



2. The English [e] is of higher elevation than the corresponding Ukrainian [E] in the isolated position and at the beginning of a word before a hard consonant when under stress.

The difference in the degree of elevation is clearly seen on the palatograms (fig. 2.18).

Fig. 2.18.
Palatograms:
English [e] —————
Ukrainian [E] - - - - -



To pronounce the English [e] correctly, students whose native language is Ukrainian, should raise the tongue slightly higher than in making the Ukrainian [E], moving it forward. The tip of the tongue is pressed against the lower front teeth. The lips may be spread or neutral but without any protrusion.

A wider shade of the English [e], which is met before dark [ɪ], has very nearly the same quality as the Ukrainian [E] between palatalized consonants.

To avoid the most typical mistake – a too wide variation of the English [e] – the students must bear in mind the above described difference between the English [e] and the Ukrainian [E].

The English Vowel [æ]

In pronouncing the English [æ] the tongue moves forward, the tip of the tongue is near the lower teeth. A large resonance chamber is formed in the back part of the mouth cavity.

The front of the tongue is slightly raised towards the hard palate. The air passage is appreciably wider than in the case of the English [e]. The jaw is lowered. The lips are spread (fig. 2.20, 2.21).

Fig. 2.19.
Tongue-position:
English [æ] —————
English [e] - - - - -

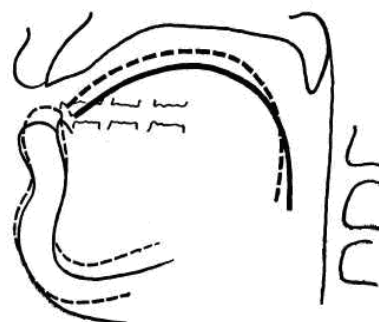




Fig. 2.20.
Lip-position of English [æ]



Fig. 2.21.
Lip-position of Ukrainian [E]
at the end of a word

In the production of the English [æ] as in that of other front vowels a depression is formed along the central line of the tongue, but it is not so deep as in the production of the English [i:], [ɪ], [e].

The English [æ] is rather lengthened under certain conditions. It is especially long before sonants and voiced consonants.

The English [æ] is a non-labialized tense front open vowel phoneme of the wide variety.

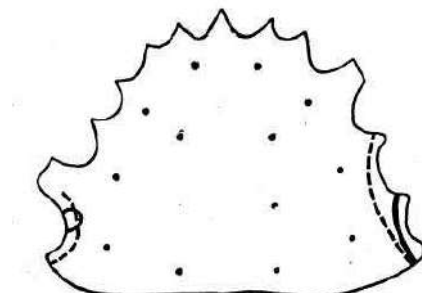
The English [æ] is intermediate in quality between the Ukrainian [E] at the end of a word (e.g. *nace* [ПІАЦЕ]) and a variety of the Ukrainian [A] which occurs between soft consonants under stress (e. g. *лялька* [Л'АЇЛ'КА]).

The position of the organs of speech in pronouncing the English [æ] differs from the position for the Ukrainian [E] at the end of a word.

In forming the English [æ] the tip of the tongue comes near the front lower teeth, the tongue is more advanced, and its blade is raised towards the hard palate but not so high as in forming the Ukrainian [E].

The difference between the position of the tongue for the English [æ] and the Ukrainian [E] at the end of a word is shown in palatograms (fig. 2.22).

Fig. 2.22.
Palatograms:
English [æ] — — — — —
Ukrainian [E] —————



The English [æ] differs from the Ukrainian [A]. The Ukrainian [A] is not so forward and more open. Therefore, the Ukrainian [A], even between soft consonants, gives no traces on the artificial palate.

To pronounce the English [æ] correctly it is possible to start from the Ukrainian [E] as pronounced at the end of the word. But the distance between the jaws must be greater, the tongue moves forward, the tip of the tongue approaches the lower teeth.

One may also improve the sound by starting from the Ukrainian [A]. In this case the tongue should be raised a little higher and the tip of the tongue should be brought nearer to the lower teeth.

Ukrainian students are liable to replace the English [æ] by the more close [E] of their mother tongue. In this case the tongue should be slightly lowered. The lips should be neutral without the slightest trace of protrusion.

2.2.2. ENGLISH BACK VOWELS IN COMPARISON WITH UKRAINIAN BACK VOWELS

The English Vowel [ɑ:]

In pronouncing the English [ɑ:] the tongue, compared with its neutral position, is retracted. The tip of the tongue is also retracted from the lower teeth. The tongue is very low down in the mouth. A large resonance chamber is formed in the front part of the mouth cavity. The back of the tongue is slightly raised towards the soft palate. The jaw is considerably lowered (fig. 2.23). The lips are neutral (fig. 2.24).

The soft palate is raised as in the production of all the English vowels, the air passes through the mouth. This sound gives no palatogram.

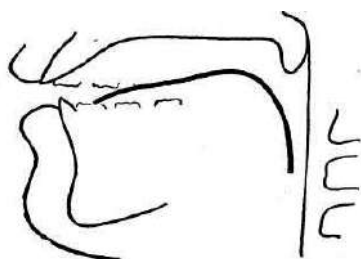


Fig. 2.23.
Tongue-position of English [ɑ:]

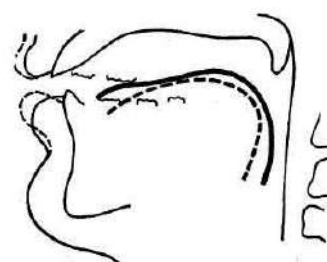


Fig. 2.24.
Lip-position of English [ɑ:]

The English [ɑ:] is a long tense non-labialized back vowel phoneme of the wide variety.

The English [ɑ:] greatly differs from the Ukrainian [A]. In pronouncing the Ukrainian [A] at the beginning of a word when under stress, not only the back but also the front of the tongue is raised towards the roof of the mouth (approximately to the border between the hard and the soft palate), the tongue is held concave to the palate (fig. 2.25).

Fig. 2.25.
Tongue-position:
English [ɑ:] —————
Ukrainian [A] - - - - -



The Ukrainian [A] is short less tense and more advanced than the English [ɑ:].

Many students, whose native language is Ukrainian, have a tendency:

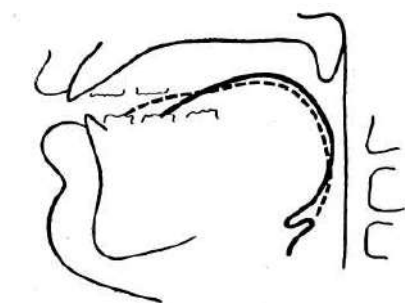
1. to replace the English [ɑ:] by the Ukrainian [A];
2. to make the English [ɑ:] short.

A too front formation of the English [ɑ:] may be rectified by starting from the Ukrainian [A]. But in this case the tongue should be retracted from the lower teeth. The length of the vowel, which is especially long at the end of words, before sonants and voiced consonants, should be carefully observed.

The English Vowel [ɒ]

In pronouncing the English [ɒ] the tongue, in comparison with its neutral position, is retracted and lowered. The back of the tongue is raised towards the back part of the soft palate (fig. 2.26).

Fig. 2.26.
Tongue-position:
English [ɒ] —————
English [ɑ:] - - - - -



The resonance chamber is considerably enlarged in the front and middle parts of the mouth cavity.

The jaw is also lowered and occupies approximately the same position as for the English [ɑ:].

The lips are flat and slightly rounded, forming a wide oval-shaped opening.

The English [ɒ] is a short lax slightly labialized back open vowel phoneme of the wide variety.

The English [ɒ] resembles the Ukrainian [O]. The Ukrainian [O], like the English [ɒ], is a short labialized back vowel phoneme.

But in spite of the common features of articulation there is a considerable difference between them.

1. The English [ɒ] is more open than the Ukrainian [O] (fig. 2.27).

Fig. 2.27.
Tongue-position:
English [ɒ] —————
Ukrainian [O] - - - - -



2. The position of the lips for these two sounds differs.

In the production of the Ukrainian [O] the lips are rounded and protruded, forming a round opening, which is smaller than for the English [ɒ].

In articulating the English [ɒ] the lips are not protruded and their rounding is flat (fig. 2.28, 2.29).



Fig. 2.28.
Lip-position of English [ɒ]



Fig. 2.29.
Lip-position of Ukrainian [O]

The correct pronunciation of the English [ɒ] can often be acquired by starting from the corresponding Ukrainian vowel. The tongue is to be moved forward and placed a little lower than in pronouncing the Ukrainian [O]. The lips are to be slightly rounded without any protrusion.

The English [ɒ] may be also acquired by starting from the Ukrainian [A] as pronounced between non-palatalized consonants. The tongue should be somewhat retracted, the distance between the jaws should be narrowed.

Flat rounding of the lips is to be carefully observed. This method may be advised only to the students who replace the English [ɒ] by the Ukrainian [O].

If students are apt to pronounce the English [ɒ] like an [A]-sound they should start from the Ukrainian [O], observing carefully the difference between the English [ɒ] and the Ukrainian [O].

The English Vowel [ɔ:]

In pronouncing the English [ɔ:] the back of the tongue is raised still higher towards the soft palate than in pronouncing the English [ɒ], the tongue is more retracted. The English [ɔ:] is more retracted and close than the English [ɒ]. A large resonance chamber is formed in the front part of the mouth cavity. The tip of the tongue is retracted from the lower teeth (fig. 2.30).

In articulating the English [ɔ:] the lips are noticeably rounded, leaving a smaller opening than that for the English [ɒ].

The English [ɔ:] is a long tense labialized back open vowel phoneme of the narrow variety.

The sound of the English [ɔ:] resembles the Ukrainian [O], but the English [ɔ:] is more back and open.

The position of the lips for the English [ɔ:] also differs from that for the Ukrainian [O].

Fig. 2.30.
Tongue-position:
English [ɔ:] —————
English [ɒ] - - - - -



Fig 2.31.
Lip-position of English [ɔ:]



In forming the English [ɔ:] the lips are not protruded, the opening between them is smaller.

In producing the English [ɔ:] the tongue is retracted, a rather big resonance chamber is formed in the front part of the mouth cavity. Owing to the protrusion of the lips in pronouncing the Ukrainian [O] the resonance chamber is also increased in the front part of the mouth (fig. 2.32).

Fig. 2.32.
Tongue-position:
English [ɔ:] —————
Ukrainian [O] - - - - -



To pronounce the English [ɔ:] correctly one may start from the Ukrainian [O], retracting the tongue and keeping the lips in a position of open rounding but without any protrusion. The distance between the jaws must be approximately the same for the two vowels.

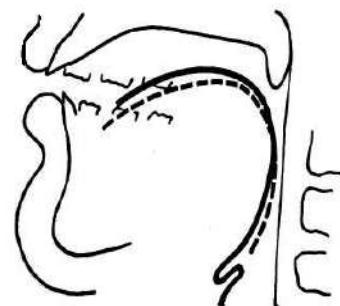
Many students whose native language is Ukrainian, tend to make the English [ɔ:] too front and close.

To avoid this mistake the above described difference between the sounds is to be observed.

The English Vowel [ʊ]

In pronouncing the English [ʊ] the back of the tongue is raised towards the soft palate. It is raised higher and towards a more front part of the soft palate than in pronouncing the English [ɔ:], therefore the sound [ʊ] is defined as more advanced and more close than [ɔ:]. The tip of the tongue is retracted from the lower teeth (fig. 2.33).

Fig. 2.33.
Tongue-position:
English [ʊ] —————
English [ɔ:] - - - - -



The resonance chamber is increased in the frontal part of the mouth cavity.

In producing the English [ʊ] the lips are more rounded than for the English [ɒ] and [ɔ:] and the oval-shaped opening between the lips is smaller. The lips are not protruded.



Fig. 2.34.
Lip-position of English [ʊ]



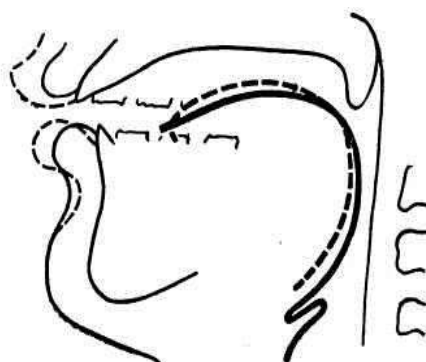
Fig. 2.35.
Lip-position of Ukrainian [Y]

The English [ʊ] is a short lax labialized back advanced close vowel phoneme of the wide variety.

The articulation of the English [ʊ] resembles that of the Ukrainian [Y], but there is some difference between them:

1. The English [ʊ] is wider and more back.
2. The position of the lips for these two sounds differs.

Fig. 2.36.
Tongue-position:
English [ʊ] —————
Ukrainian [Y] - - - - -



In pronouncing the Ukrainian [Y] the lips are not only rounded but also protruded.

Students whose native language is Ukrainian are sometimes apt to replace the English [ʊ] by a more front and close Ukrainian [Y] which occurs between soft consonants.

This mistake is easily avoided provided that the students are told either to lower the tongue and retract it a bit or endeavour to pronounce the English [ʊ] like the Ukrainian [Y] in the isolated position or at the beginning of words.

Many students whose native language is Ukrainian tend to protrude the lips in pronouncing the English [ʊ]. To avoid this mistake one should keep the lips flat without the slightest trace of lip protrusion.

Sometimes learners lengthen the English [ʊ]. One must remember that in any position in the word the English [ʊ] remains short.

The English Vowel [u:]

In pronouncing the English [u:] the back of the tongue is raised high in the direction of the soft palate. The resonance chamber is considerably increased in the front part of the mouth cavity. The soft palate is raised. The tip of the tongue is retracted from the lower teeth. The sound [u:] is more retracted and close than the English [ʊ], the distance between the jaws is narrower (fig. 2.37).

Fig. 2.37.
Tongue-position:
English [u:] —————
English [ʊ] - - - - -



In pronouncing the English [u:] the lips are rounded but not protruded, the opening between the lips is smaller and the degree of rounding is greater than for the English [ʊ].

Fig. 2.38.
Lip-position of English [u:]

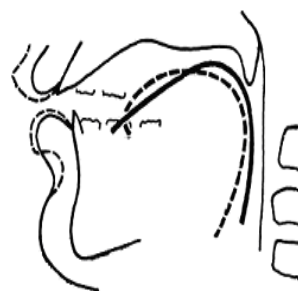


The English [u:] is a long tense labialized back close vowel phoneme of the narrow variety.

The corresponding Ukrainian back vowel is [Y] but it differs considerably from the English [u:].

1. The English [u:] is long, while the Ukrainian [Y] is short.
2. The English [u:] is more back and more close than the Ukrainian [Y] (fig. 2.39).

Fig. 2.39.
Tongue-position:
English [u:] _____
Ukrainian [ʏ] - - - - -



3. The English [u:], like the Ukrainian [ʏ], is labialized but the position of the lips is different. In pronouncing the English [u:] the flat rounded lips form a narrow oval-shaped opening. In articulating the Ukrainian [ʏ] the rounded lips are protruded forming a round opening (fig. 2.35, 2.38).

The correct pronunciation of the English [u:] can be acquired by starting from the Ukrainian [ʏ]. The tongue should be retracted and raised a little higher towards the soft palate, flat rounding of the lips should be carefully observed.

The above described articulation of the English [u:] is observed in all positions except when it is preceded by [j]. When preceded by [j] it becomes more advanced and has much in common with the quality of the Ukrainian [ʏ], but with flat rounding of the lips.

The English Vowel [ʌ]

In pronouncing the English [ʌ] the back of the tongue is raised towards the roof of the mouth. The resonance chamber is increased in the front part of the mouth. The tip of the tongue is retracted from the front lower teeth. The lips are neutral.

The English [ʌ] is more advanced and narrow than the English [ɒ]. In pronouncing the English [ʌ] the lips are slightly spread without any trace of protrusion (fig. 2.42).

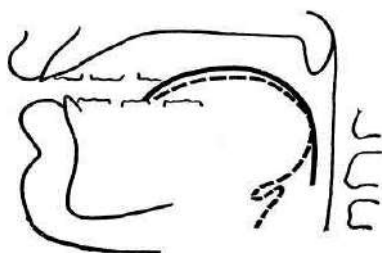


Fig. 2.40.
Tongue-position:
English [ʌ] _____
English [ɒ] - - - - -

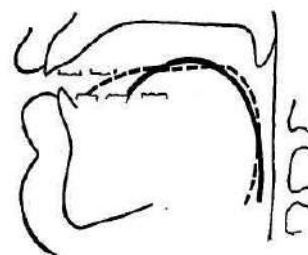


Fig. 2.41.
Tongue-position:
English [ʌ] _____
English [ɑ:] - - - - -

Fig. 2.42.
Lip-position of English [ʌ]



The English [ʌ] is a short lax non-labialized back advanced half-open vowel phoneme of the wide variety.

The articulation of the English [ʌ] resembles the articulation of the Ukrainian [O].

The English [ʌ] differs from the Ukrainian [O] in the more advanced position of the tongue and the flat position of the lips. The Ukrainian [O] is labialized – the lips are rounded and protruded.

To make the English [ʌ] sound genuine one should start from the articulation of the Ukrainian [O].

The tongue is to be moved a little forward. The English [ʌ] is somewhat shorter than the Ukrainian [O].

The English [ʌ] differs greatly from the Ukrainian [A] which is much more open and more advanced (fig. 2.44).

Fig. 2.43.
Tongue-position:

English [ʌ] —————
Ukrainian [O] - - - - -

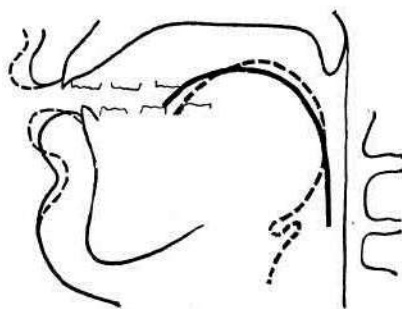
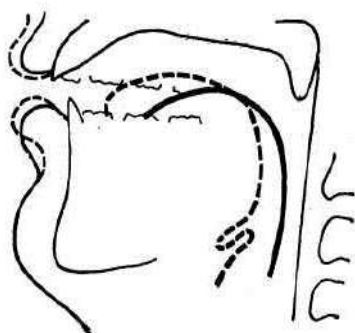


Fig. 2.44.
Tongue-position:

English [ʌ] —————
Ukrainian [A] - - - - -



Many students whose native language is Ukrainian have a tendency:

1. to substitute the English [ʌ] with a vowel which is more open and advanced than the English [ʌ]; but this mispronunciation may be rectified by making the English [ʌ] more advanced and less open than the Ukrainian [A];
2. to lengthen the vowel;
3. to replace the English [ʌ] by the labialized vowel [ɒ].

In this case the correct pronunciation of the English [ʌ] may be obtained by starting from the position for the Ukrainian [A] but not [O].

2.2.3. ENGLISH MIXED VOWELS IN COMPARISON WITH UKRAINIAN VOWELS

The English Vowel [ɜ:]

In pronouncing the English [ɜ:] the tongue is in the middle part of the mouth cavity. The air passage between the surface of the tongue and the roof of the mouth is of almost the same width along the whole length of the tongue though slightly wider in the front part of the mouth cavity because of the hard palate being higher than the soft palate.

In pronouncing the English [ɜ:] the whole tongue is slightly raised. The tip of the tongue is near the lower teeth, the jaw is slightly lowered (fig. 2.45). The lips are neutral (fig. 2.46).

Fig. 2.45.
Tongue-position of English [ɜ:]

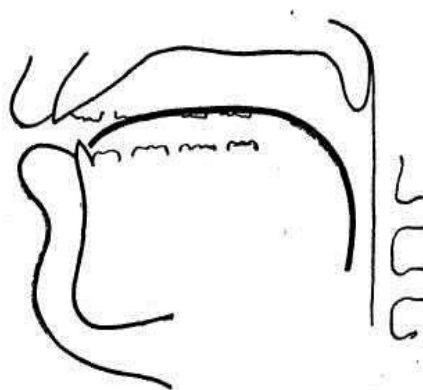


Fig. 2.46.
Lip-position of English [ɜ:]



Thus, the English [ɜ:] is a long tense non-labialized mixed mid-open vowel phoneme of the narrow variety.

The English [ɜ:] has very nearly the same quality as the Ukrainian [O] between palatalized consonants (e.g. *люля* [ʎ'Óʎ'A]) but still it considerably differs from the Ukrainian [O]. In pronouncing the Ukrainian [O] the back of the tongue is raised to the soft palate, the front of it is lowered. In articulating the English [ɜ:] the front of the tongue is raised too, resembling the articulation of the Ukrainian [E], but the tongue is more flat and lower in the mouth. The position of the lips somewhat recalls the position of the Ukrainian [E], but without the characteristic Ukrainian protrusion (fig. 2.47, 2.48).

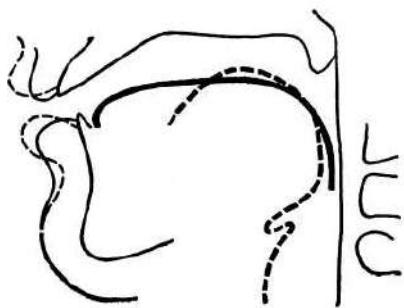


Fig. 2.47.

Tongue-position:
English [ɜ:] —————
Ukrainian [O] - - - - -

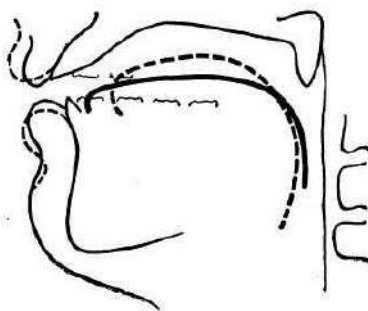


Fig. 2.48.

Tongue-position:
English [ɜ:] —————
Ukrainian [E] - - - - -

The pronunciation of the English [ɜ:] may be acquired by starting from the Ukrainian [O]. The distance between the jaws should be slightly diminished, the lips should not be protruded and care should be taken to keep the tongue more or less flat.

Many students whose native language is Ukrainian have a tendency:

1. to replace the English [ɜ:] by the Ukrainian [E];
2. to replace the English [ɜ:] by a sound close to the Ukrainian [A].

To achieve the correct sound of the English [ɜ:] special attention is to be paid in both cases to the position of the tongue and the lips.

If there is a mistake in pronouncing the English [ɜ:] like [E] the students should pronounce it with the tongue flat and low in the mouth and the lips neutral, as spread lips give an [e]-like shade to the English [ɜ:].

If there is a mistake in pronouncing the English [ɜ:] like [O] the tongue should be advanced and flat, the lips should be spread.

The English Vowel [ə]

In pronouncing the English [ə] the position of the tongue and the lips resembles that of [ɜ:], but the tongue is lower (fig. 2.49). The lips are neutral (fig. 2.50).

The English [ə] is a short lax non-labialized mixed mid-open vowel phoneme of the wide variety.

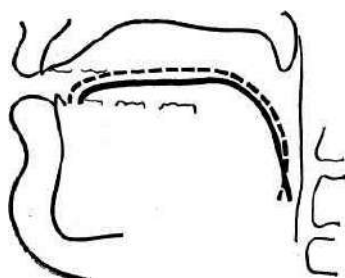


Fig. 2.49.

Tongue-position:
English [ə] —————
English [ɜ:] - - - - -



Fig. 2.50.

Lip-position of English [ə]

The articulation of the English [ə] depends on its position in a word, i.e. on the preceding and following sounds.

The radiograms show there is some difference in the articulation of the English [ə] at the beginning of the word, at the end of the word and before the plural ending -s [z].

All these differences depend on the succeeding or following sounds. The sound [ə] is neutral and therefore it is more easily influenced positionally than any other vowel.

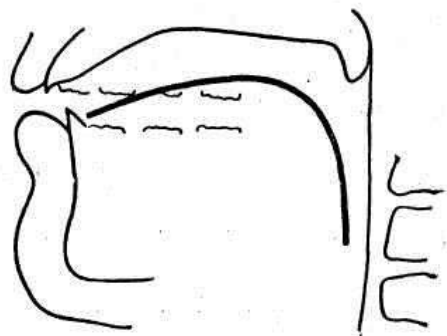
In pronouncing the English [ə] at the beginning of the word the tip of the tongue approaches the lower teeth, and a depression is formed along the blade and the front of the tongue (fig. 2.51).

At the end of the word the English [ə] is more retracted and the air passage is somewhat narrower (fig. 2.52).

Fig. 2.51.
Tongue-position of English [ə]
at the beginning of a word



Fig. 2.52.
Tongue-position of English [ə]
at the end of a word



The English [ə] has very much the same quality as the Ukrainian unstressed final [A] in such words as *сина* [СИНА], *школа* [ШИКОЛА].

The English [ə] differs from the Ukrainian unstressed [A] in being more close, the tongue being flat and the lips being neutral without any trace of protrusion.

The correct pronunciation of the English [ə] can often be acquired by imitation, provided that care is taken not to protrude the lips.

It should be borne in mind that the English [ə] is always unstressed.

Ukrainian students often replace the English [ə] by a more open and retracted [A] or a more advanced [E].

To avoid the [A]-like pronunciation of the English [ə] special attention should be paid to keep the tongue flat, though raised higher, than in pronouncing the Ukrainian

[A]. The distance between the jaws should be smaller. A flat and more retracted position of the tongue should be adopted.

2.2.4. ENGLISH DIPHTHONGS

According to the stability of their quality vowels are divided into monophthongs and diphthongs.

In pronouncing a monophthong its quality remains more or less stable. In pronouncing a diphthong its quality is changed: the end of the diphthong differs from its beginning.

A diphthong is a close combination of two vowel elements pronounced as one vowel with gliding articulation. A diphthong forms one syllable.

As there are no diphthongs in Ukrainian, students often find it difficult to pronounce English diphthongs.

Diphthongs are generally divided into falling and rising.

Those diphthongs, the first element of which is stronger than the second, that is, the initial tension of articulation falls towards the end, are called falling.

Those diphthongs, the second element of which is stronger than the first, that is, the tension of articulation grows towards the end, are called rising.

There are no rising diphthongs in English.

There also exists a group of level diphthongs, the two elements of which are equally strong. But level diphthongs are very rare and are not met in the English language.

All English diphthongs are falling, i.e. the beginning of the English diphthongs (the nucleus) is strong, clear and distinct. The second element (the glide) is very weak.

There are eight diphthongs in the English language [eɪ], [aɪ], [ɔɪ], [ɪə], [eə], [ʊə], [aʊ], [əʊ]. Some linguists consider that there are nine diphthongs in English, the ninth being [ɔə].

English diphthongs may be divided into three groups:

1. Three of them [ɪə], [eə], [ʊə] are called centring. The second element of all these diphthongs is a mixed vowel [ə].
2. The second group includes diphthongs, the common glide of which is towards the English [ɪ]. They are three: [eɪ], [aɪ], [ɔɪ].
3. The third group includes the following diphthongs: [aʊ], [əʊ], i.e. the glide of these diphthongs is towards a weak unstressed [ʊ].

The nuclei of the English diphthongs differ to a greater or lesser extent from the English pure vowels. Thus, the nucleus of the diphthong [aʊ] is more advanced than [ɑ:], the nucleus of the diphthong [aɪ] is much more advanced than the English [ɑ:] or even [ʌ].

Moreover, within the same group of diphthongs the nuclei differ according to the direction of the glide. Thus, [a] in [aɪ] is more advanced than in [aʊ]. The nucleus of the diphthong [ɔɪ] is intermediate in quality between [ɒ] and [ɔ:]. The nucleus of the diphthong [eɪ] is more open than the English [e], etc.

The English Diphthongs [ɪə], [eə], [ʊə]

The so-called centring diphthongs start at different sounds [ɪ], [e], [ʊ] and immediately proceed in the direction of [ə] (in the position at the end of the word).

Diphthong [ɪə]. The English diphthong [ɪə] starts as a short non-labialized front retracted close vowel [ɪ], which has very nearly the same quality as the Ukrainian [И] and immediately proceeds in the direction of [ə] (fig. 2.53, 2.54).

The correct pronunciation of the English [ɪə] may be acquired by starting from the Ukrainian [И].



Fig. 2.53.
Lip-position of English [ɪə]
(beginning)



Fig. 2.54.
Lip-position of English [ɪə]
(end)

Many students whose native language is Ukrainian have a tendency:

1. to make the nucleus of [ɪə] too close; and this mispronunciation can be easily rectified by starting from the Ukrainian [И];

2. to replace the glide of the diphthong [ɪə] by Russian or Ukrainian [А] or [Е].

This is a most frequent mistake and special care must be taken to avoid it.

Students should pronounce the glide as a very weak sound, paying special attention to keep the tongue flat, which is decisive in this case.

Diphthong [eə]. The English diphthong [eə] starts as [e], a short lax non-labialized front half-open vowel of wide variety and immediately proceeds in the direction of [ə].

To acquire the correct pronunciation of the nucleus of the diphthong [eə] one may start at the Ukrainian [Е] in the word *nace* [ПАСЕ́].

The lips are slightly spread for the nucleus and move to a neutral position during the glide (fig. 2.55, 2.56).

As a rule, the beginning of this diphthong causes no difficulty as the nucleus is rather wide and is about the same as the Ukrainian [Е].

Students whose native language is Ukrainian often make mistakes replacing the glide by the Ukrainian [А]. To avoid this mistake the same precautions are to be taken as with the articulation of the diphthong [ɪə].



Fig. 2.55.
Lip-position of English [eə]
(beginning)



Fig. 2.56.
Lip-position of English [eə]
(end)

Diphthong [ʊə]. The English diphthong [ʊə] starts as a short labialized back-advanced close vowel [ʊ] and immediately proceeds in the direction of the English [ə].

In pronouncing the nucleus of the diphthong [ʊə] the lips are slightly rounded. In pronouncing the glide the lips become neutral and the distance between them somewhat increases (fig. 2.57, 2.58).



Fig. 2.57.
Lip-position of English [ʊə]
(beginning)



Fig. 2.58.
Lip-position of English [ʊə]
(end)

The correct pronunciation of the diphthong may be acquired without much difficulty, provided that care is taken not to protrude the lips.

Some students whose native language is Ukrainian have a tendency:

1. to protrude the lips, while pronouncing the diphthong and care should be taken not to add the slightest trace of lip protrusion;
2. to replace the glide by the Ukrainian [A] or [E].

The English Diphthongs [eɪ], [aɪ], [ɔɪ]

The English diphthongs [eɪ], [aɪ], [ɔɪ] begin as the sounds [e], [a], [ɔ] respectively and immediately proceed in the direction of the English [ɪ].

While pronouncing the glide of all these diphthongs special care should be taken to observe the correct position of the tongue. The tongue should not be raised too high, it must be considerably lower than for the Ukrainian [ɪ].

Diphthong [eɪ]. The English diphthong [eɪ] begins as [e], a short non-labialized front half-open vowel and immediately proceeds in the direction of the English [ɪ].

The nucleus of the English [eɪ] has several variants, some of which are more close and some more open. It approaches the quality of the Ukrainian [E]. To pronounce the English [eɪ] correctly one should start from the Ukrainian [E], though care should be taken not to make the nucleus too wide.

In pronouncing the English [eɪ] the lips are spread for the nucleus and move to a closer position during the glide. The distance between the jaws, which is rather wide at the beginning of the articulation, becomes narrower during the glide (fig.2.59,2.60).



Fig. 2.59.
Lip-position of English [eɪ]
(beginning)



Fig. 2.60.
Lip-position of English [eɪ]
(end)

Many students whose native language is Ukrainian have a tendency:

1. to make the beginning of [eɪ] too wide and to avoid this mistake one

should raise the tongue somewhat higher and diminish the distance between the jaws;

2. to replace the glide by the sonant [j].

Sometimes students pronounce the glide as [j], making it too distinct and consonantal.

To avoid these mistakes the tongue should not be raised too high, the glide must be very short and less tense than the nucleus.

Diphthong [aɪ]. The English diphthong [aɪ] begins as [a], a short lax non-labialized front retracted open vowel [a] and immediately proceeds in the direction of the English [ɪ].

The nucleus of [aɪ] resembles the Ukrainian [A] between palatalized consonants but is more advanced and less open. The lips are neutral. The distance between the jaws is wider at the beginning of the articulation and rather narrow at the end (fig. 2.61, 2.62).



Fig. 2.61.
Lip-position of English [aɪ]
(beginning)



Fig. 2.62.
Lip-position of English [aɪ]
(end)

Some students whose native language is Ukrainian have a tendency:

1. to replace the nucleus [a] by a back vowel [A], but such a mistake can be corrected by starting from the Ukrainian [A] between palatalized consonants;
2. to replace the glide by the sound [j].

Diphthong [ɔɪ]. The English diphthong [ɔɪ] begins as a short lax labialized back open vowel, resembling the English [ɒ], but more advanced and close, and immediately proceeds in the direction of [ɪ] (fig. 2.63, 2.64).



Fig. 2.63.
Lip-position of English [ɔɪ]
(beginning)



Fig. 2.64.
Lip-position of English [ɔɪ]
(end)

The nucleus of the English [ɔɪ] resembles the Ukrainian [O] and to achieve the correct sound of the English [ɔɪ] it is possible to start from the Ukrainian [O], making the nucleus more open and advanced and not noticeably rounding the lips.

In pronouncing the nucleus of the English [ɔɪ] the lips are slightly rounded and not at all protruded, while in pronouncing the Ukrainian [O] the lips are rounded and protruded.

Many students whose native language is Ukrainian have a tendency:

1. to make the nucleus of [ɔɪ] too much like the Ukrainian [O] which can be corrected by lowering the tongue and making the distance between the jaws wider;
2. to replace the glide [ɪ] by a [j] sound which may be avoided by the same precautions as those for the articulation of the English diphthong [eɪ].

The English Diphthongs [əʊ], [aʊ]

The English diphthongs [əʊ], [aʊ] begin as the sounds [ə] and [a] respectively and immediately proceed in the direction of the English [ʊ].

Diphthong [əʊ]. The English diphthong [əʊ] begins as [ə] which is more close and advanced than the Ukrainian [O] and immediately proceeds in the direction of the English [ʊ]. It should be noted that the glide is very weak and short as in all English diphthongs. It should also be mentioned that the tongue only approaches the [ʊ]-position so that the end of the glide is not a distinct [ʊ]. In pronouncing the English [əʊ] the lips start from a slight rounding and rather a large opening. At the end of the articulation the lips are considerably rounded, forming a rather small oval opening (fig 2.65, 2.66).



Fig. 2.65.

Lip-position of English [əʊ]
(beginning)



Fig. 2.66.

Lip-position of English [əʊ]
(end)

To pronounce the English diphthong [əʊ], one should start from the position of the speech organs for the Ukrainian [O] between palatalized consonants. This is immediately followed by the retraction of the tongue to a position resembling that of the Ukrainian [Y].

Care should be taken to avoid the slightest trace of lip protrusion. The lips must be flat.

Many students whose native language is Ukrainian have a tendency:

1. to make the nucleus of [əʊ] too back and wide, that's why taking into consideration the articulation of the English [ʊ], one should move the tongue forward and raise it a little higher;
2. to make the glide [ʊ] too distinct and strong;
3. to protrude the lips, but to avoid this, one should keep the lips slightly rounded without any trace of protrusion.

Sometimes the students go to extremes and make the nucleus of [əʊ] too front or replace it by the Ukrainian [E]. But these mistakes are rarely made.

Diphthong [aʊ]. The English diphthong [aʊ] begins as the front open [a] and proceeds in the direction of the English [ʊ] (fig 2.67, 2.68). The lips are neutral. The nucleus of [aʊ] resembles the Ukrainian [A] between palatalized consonants.

Under the influence of the following [ʊ] the nucleus becomes more retracted than in [aɪ].

Care should be taken not to protrude the lips.



Fig. 2.67.
Lip-position of English [aʊ]
(beginning)



Fig. 2.68.
Lip-position of English [aʊ]
(end)

Students are often inclined to make the nucleus of the diphthong [aʊ] too back. To avoid this mistake the tongue is to be moved forward, the tip of the tongue coming close to the front lower teeth.

Table 2.2.

English diphthongs

Glide \ Nucleus		
	Front	Back
ɪ-glide diphthongs (front)	eɪ, aɪ	ɔɪ
ə-glide diphthongs (centring)	ɪə, eə	ʊə
ʊ-glide diphthongs (back)	aʊ	əʊ

The English Sound Combinations [aɪə], [aʊə]

The so-called “triphthongs” [aɪə], [aʊə] are not separate phonemes but combinations of a diphthong and the neutral [ə].

Many students of English are apt to replace the intermediate sound [ɪ] in [aɪə] by the English [j] or the corresponding sonant of their native language. To avoid the mistake it is necessary to make the intermediate sound [ɪ] very weak.

SUMMARY

The systems of English and Ukrainian vowel phonemes differ in many points.

1. The number of phonemes is not the same in the two languages.

There are 20 vowel phonemes in the English language, 12 of them are monophthongs, 8 diphthongs.

Vowel phonemes: [i:], [ɪ], [e], [æ], [ɑ:], [ɒ], [ɔ:], [ʊ], [u:], [ʌ], [ɜ:], [ə].

There are only 6 vowel phonemes in the Ukrainian language [I], [H], [E], [A], [O], [Y].

2. Besides the difference in quality, English vowel phonemes differ from Ukrainian vowel phonemes in length.

In the English language there are long and short vowel phonemes while in Ukrainian long vowel phonemes do not exist.

3. According to the stability of the articulation and quality English vowel phonemes are divided into monophthongs and diphthongs.

All the Ukrainian vowel phonemes are monophthongs, there are no diphthongs in Ukrainian.

4. The division of vowel phonemes into different groups according to the position of the tongue is not the same in the English and Ukrainian languages.

In the English language there are front, back and mixed vowel phonemes. In Ukrainian there are no mixed vowel phonemes.

The English front and back vowel groups include a considerably greater number of phonemes than those of the Ukrainian language.

5. Phonematic systems of the English and Ukrainian languages differ also in the articulation of vowel phonemes belonging to the same group.

Thus, the English front vowel phonemes [i:], [I], [e] are closer and more front than the corresponding Ukrainian [I], [H], [E].

The English back vowel phonemes [ɒ], [u:], [ɔ:] are more retracted than the Ukrainian back vowel phonemes [O], [Y].

6. The position of the lips is not the same in forming English and Ukrainian labialized vowel phonemes. In forming English labialized sounds the lips are rounded but not protruded. In Ukrainian the rounding of the lips is accompanied by considerable protrusion.

The position of the lips is not the same in pronouncing English and Ukrainian non-labialized vowels either. In pronouncing English non-labialized vowels the lips are flat and not protruded. In making Ukrainian non-labialized vowels the lips move noticeably forward from the teeth.

CHAPTER 3

CONSONANTS IN ENGLISH AND UKRAINIAN

3.1. CLASSIFICATION OF CONSONANTS

The quality of consonants is determined by the following four conditions:

1. the active organs of speech which form the obstruction (consequently, the place of the obstruction);
2. the manner of the production of noise (the way of forming the obstruction);
3. the work of the vocal chords;
4. the position of the soft palate.

3.1.1. CLASSIFICATION OF CONSONANTS ACCORDING TO THE ACTIVE ORGANS OF SPEECH

According to the active organs of speech consonants are divided into labial, lingual and pharyngeal.

Labial. In pronouncing labial consonants the obstruction is formed by the lips.

Labial consonants are subdivided into bilabial and labiodental.

1. **Bilabial.** In articulating bilabial consonants the obstruction is formed by the two lips being brought together.

Examples:

The English [p], [b], [m], [w].

The Ukrainian [П], [Б], [М], [В].

2. **Labiodental.** In pronouncing labiodental consonants the obstruction is formed by the lower lip being pressed against the upper teeth.

Examples:

The English [f], [v].

The Ukrainian [Ф], [В] before [И], [Е].

Lingual. In pronouncing lingual consonants the obstruction is formed by the tongue.

Lingual consonants are divided into forelingual, mediolingual and backlingual.

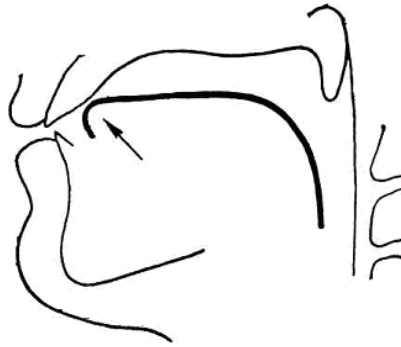
1. **Forelingual.** In articulating forelingual consonants the obstruction is formed by the front part of the tongue.

Though the active organ of speech is the same (the blade of the tongue) in pronouncing all the forelingual consonants both the shape of the tongue and the place of obstruction differ.

According to the shape of the tongue forelingual consonants are subdivided into apical, dorsal and cacuminal.

- a. **Apical.** In articulating apical forelingual consonants the obstruction is formed by the blade of the tongue, including the tip, against either the upper teeth or the teeth ridge (fig. 3.1).

Fig. 3.1.
Tongue-position characteristic of
an apical consonant



Examples:

The English [θ], [ð], [t], [d], [n], [l], [s], [z], [ʃ], [ʒ].

b. **Dorsal.** In articulating dorsal forelingual consonants the obstruction is formed by the blade and the front of the tongue (excluding the tip) against either the upper teeth or the teeth ridge (alveoli).

The tip of the tongue is lowered (fig. 3.2).

Fig. 3.2.
Tongue-position characteristic of
a dorsal consonant



Ukrainian palatalized consonants are dorsal. In English the consonant phonemes [ʃ], [ʒ], [tʃ], [dʒ] are considered by some scientists to be dorsal.

c. **Cacuminal.** In articulating cacuminal forelingual consonants the obstruction is formed by the tip of the tongue while a spoon-shaped depression is formed in the central part of the tongue.

For cacuminal consonants the tip of the tongue is directed towards (or touches) the front upper teeth, or the alveoli (fig. 3.3).

Examples:

The Ukrainian [Т], [Д], [Н], [С], [З], [Ш], [Ж], [Р].

The English [r].

Fig. 3.3.
Tongue-position characteristic of
a cacuminal consonant



According to the passive organ of speech, that is, to the place of obstruction, forelingual consonants are subdivided into dental and alveolar.

a. **Dental** (which are subdivided into interdental and dental). In articulating forelingual dental consonants the obstruction is formed by the tongue and the back of the teeth, while in pronouncing forelingual interdental consonants the tip and the blade of the tongue are placed between the teeth.

Examples:

The English [θ], [ð] (interdental or dental).

The Ukrainian [Т], [Д], [Н] (dental).

b. **Alveolar** (which are subdivided into alveolar proper and palato-alveolar).

Alveolar forelingual consonants are articulated by the tip or the front of the tongue against the alveoli.

Examples:

The English [t], [d], [n], [l], [s], [z] (alveolar);

[ʃ], [ʒ], [tʃ], [dʒ], [r] (palato-alveolar).

The Ukrainian [С], [З], [Ш], [Ж] (alveolar);

[П], [Ч], [ДЖ] (palato-alveolar).

2. **Mediolingual**. Mediolingual consonants are articulated by the front of the tongue raised towards the hard palate.

Examples:

The English [j].

The Ukrainian [Й].

3. **Backlingual**. Backlingual consonants are articulated by the back of the tongue against the soft palate.

Examples:

The English [k], [g], [ŋ].

The Ukrainian [К], [Г], [Х], [Г].

Pharyngeal. In pronouncing pharyngeal consonants the narrowing is formed in the pharynx which is slightly contracted.

Example:

The English [h].

There are no pharyngeal consonants in the Ukrainian language.

3.1.2. CLASSIFICATION OF CONSONANTS ACCORDING TO THE MANNER OF THE PRODUCTION OF NOISE

According to the manner of production of noise consonants are divided into 4 large groups: occlusive or stop consonants, constrictive consonants, affricates and rolled consonants.

Occlusive Consonants. In making occlusive consonants the active organs of speech form a complete obstruction. Occlusive consonants are subdivided into plosives and occlusive (or nasal) sonants.

1. **Plosives.** In pronouncing plosives the articulating organs form a complete obstruction which is suddenly broken by the pressure of the air exhaled from the lungs and a kind of “explosion”, called plosion, is heard.

Examples:

The English [p], [b], [t], [d], [k], [g].

The Ukrainian [П], [Б], [Т], [Д], [К], [Г].

2. **Occlusive sonants.** In making occlusive sonants the active organs of speech form a complete obstruction: the air passage through the mouth is blocked, the soft palate is lowered and the air passes through the nasal cavity.

Examples:

The English [m], [n], [ŋ].

The Ukrainian [М], [Н], [М'], [Н'].

Constrictive Consonants. In making constrictive consonants the active organs of speech do not block the air-passage completely, but form a narrowing of the air-passage.

Constrictive consonants are divided into fricative consonants and sonants.

1. **Fricative consonants.** In making fricative consonants the active organs of speech form a narrowing through which the air passes with audible friction. Fricative consonants may be **unicentral** (sounds which are articulated with one centre of obstruction) and **bicentral** (sounds which have two centres or places of obstruction or narrowing).

Unicentral fricative consonants may be produced:

a. with a flat narrowing of the air-passage:

Examples:

The English [f], [v], [θ], [ð], [h].

The Ukrainian [Х], [Г].

b. with a rounded narrowing of the air-passage.

Examples:

The English [s], [z].

The Ukrainian [С], [З].

Bicentral fricative consonants may be produced with a secondary focus:

a. in the front of the mouth, i.e. a secondary obstruction is formed by the front of the tongue raised towards the hard palate.

Examples:

The English [ʃ], [ʒ].

The Ukrainian [Ч], [Ж].

c. in the back of the mouth, i.e., a secondary obstruction is formed by the back of the tongue raised towards the soft palate.

Examples:

The Ukrainian [Ш], [Ж].

2. **Constrictive sonants.** In pronouncing constrictive sonants the active organs of speech form an obstruction or a narrowing of the air-passage wide enough for the air to pass through without producing audible friction. Constrictive sonants may be:

a. **Central.** In articulating central sonants the flow of the air passes through the mouth along the central line of the tongue.

Examples:

The English [j], [r], [w].

The Ukrainian [Й].

b. **Lateral.** In articulating lateral sonants the tongue forms a complete obstruction against the alveoli and the air escapes along the sides of the tongue.

Examples:

The English [l].

The Ukrainian [Л], [Л'].

Affricates. In pronouncing affricates the articulating organs form a complete obstruction at first and then they are slowly released, forming a narrow air-passage.

The air, blocked at first by the complete obstruction, then escapes with a hissing sound.

Examples:

The English [tʃ], [dʒ].

The Ukrainian [Ч], [ДЖ], [Ц'], [Ч'], [ДЖ'], [ДЗ].

Rolled Consonants. Rolled consonants are formed by the vibration of the tip of the tongue against the alveoli.

In the Ukrainian language there is a rolled sonant [P] articulated by the tip of the tongue vibrating against the alveoli. The English [r] is a constrictive sonant.

3.1.3. CLASSIFICATION OF CONSONANTS ACCORDING TO THE WORK OF THE VOCAL CHORDS

According to the work of the vocal chords consonants are divided into two groups – voiced and voiceless.

1. In pronouncing voiceless consonants the vocal chords are not made to vibrate.

The voiceless consonants are as follows:

in English: [p], [t], [f], [s], [tʃ], [θ], [ʃ], [k], [h];

in Ukrainian: [П], [Ф], [Т], [Т'], [Т̄], [C], [C'], [C̄], [C̄'], [У], [У'], [Ӯ], [Ч], [Ш], [Ш̄], [K], [X].

2. In pronouncing voiced consonants the vocal chords are made to vibrate, so that “voice” is produced during their articulation.

The voiced consonants are as follows:

in English: [b], [d], [m], [w], [v], [n], [z], [dʒ], [ð], [ʒ], [l], [r], [j], [g], [ŋ];

in Ukrainian: [Б], [М], [М̄], [В], [Д], [Д'], [Д̄], [Н], [Н'], [Н̄], [ДЗ], [ДЗ'], [З], [З'], [З̄], [П], [П'], [П̄], [Л], [Л'], [Л̄], [Ж], [Ж'], [Ж̄], [Й], [Г], [Г̄].

There are various systems of classification of consonants introduced by different phoneticians.

One of the most detailed classifications of consonants was introduced by H. Sweet. According to H. Sweet consonants admit a twofold division: 1) according to form; 2) according to place.

By “form” H. Sweet means the manner of the production of noise, by “place” – the active organ of speech and the place of obstruction.

In his "Sounds of English" – a detailed and distinct description of different possible groups of consonants is given. But the division of sounds into the groups according to all those minute characteristics of the sounds makes the system rather complicated.

D. Jones divides consonants according to the place of articulation into bilabial, labio-dental, dental, alveolar, post-alveolar, palatoalveolar, palatal, velar and glottal consonants (Jones D., 1962). The role of the active organs of speech is underestimated. According to the manner of the production of noise (according to "the state of the air-passage at the place of articulation", as D. Jones defines it) consonants are divided by him into ten separate classes – plosive, affricates, nasal, lateral, rolled, flapped, fricative, frictionless, continuant consonants and semi-vowels.

Dealing with the classification of consonants D. Jones introduces the term of "cardinal consonants". But he himself understands their uselessness saying that "Fortunately most consonants either cannot be or don't require to be referred to cardinal consonants. Consonants can as a rule be learnt from plain description of the actions which have to be performed by the organs of speech."

G.P. Torsuyev, O.I. Dikushina, V.A. Vassilyev and others give detailed classifications of English consonants in comparison with the Russian ones. They suit well the aims of comparison of English consonants with the corresponding Russian consonants.

Dealing with the main principle of classification of consonants it is advisable to mention the place of obstruction as it helps in comparative study of the sounds of English and the mother tongue.

A classification of consonants with graphic illustrations of different positions of speech organs was introduced by A.L. Trakhterov (Трахтеров А.Л., 1948).

The table makes it easier for students to realize the formation of English and Russian sounds and see the difference between a foreign and a similar native sound.

The comparative chart of English and Ukrainian consonants given in this book contains English and Ukrainian consonant phonemes and is based on the phonematic principle (see table 3.1, page 106).

Such details as classification of consonants according to the shape of the tongue, the form of the narrowing, etc. are not always necessary for practical purposes, therefore no reference is made in the chart as to the division of forelingual consonants into apical, dorsal and cacuminal (as it is known all the English forelingual consonants but [r] are apical, all the Ukrainian non-palatalized forelingual consonants are cacuminal, and the Ukrainian palatalized forelingual consonants are dorsal).

No reference is made as to the form of the narrowing of the air-passage and the existence of a secondary focus of articulation. The English [w] is the only consonant which is formed with a back secondary focus and one can easily remember it. There are four consonant phonemes with the front secondary focus in English. They are: [f], [ʒ], [tʃ], [dʒ]. All the Ukrainian palatalized consonant phonemes are formed with a front secondary focus.

Table 3. 1.

Table of English and Ukrainian consonant phonemes

According to the active organ of speech and the place of obstruction		Labial		Lingual								Medio-lingual	Back-lingual	Glottal (Pharyngeal)
				Forelingual						Cacuminal				
				Apical		Dorsal		Dental	Alveolar					
According to the manner of the production of noise and the type of obstruction		Labiodental		Alveolar		Post-alveolar	Interdental	Post-dental	Post-alveolar	Dental	Alveolar	Palato-alveolar	Palatal	
		Bilabial												
Occlusive/Stop consonants	Noise consonants (plosives)	p, b П, Б		t, d				Т, Д, $\bar{Т}$ $\bar{т}$, $\bar{д}$		Т, Д, $\bar{Т}$				k, g К, Г
	Nasal sonants	m М, $\bar{М}$		n				Н, $\bar{Н}$		Н, $\bar{Н}$				ŋ
Constrictive consonants	Noise consonants (fricatives)	f, v Ф, В		s, z Ш, Ж		θ, ð Ш, Ж, $\bar{Ш}$, $\bar{Ж}$		С, З $\bar{С}$, $\bar{З}$	III, Ж III, Ж	С, З, $\bar{С}$			Х, Г	h
	Sonants	w										r	Ј	
		Central/Medial			l									Щ
Affricates	Lateral									Ц, $\bar{Ц}$				
										Ц, $\bar{Ц}$				
Rolled consonants														

3.2. ARTICULATION OF ENGLISH AND UKRAINIAN CONSONANTS IN DETAIL

3.2.1. ENGLISH LABIAL CONSONANTS IN COMPARISON WITH UKRAINIAN LABIAL CONSONANTS

The English Consonants [p], [b], [m]

In pronouncing the English [p], [b] a complete obstruction is formed by the lips. The lips are pressed together and immediately after that the tension of the lip muscles becomes weaker and the air compressed in the mouth cavity breaks through this obstruction with plosion.

The soft palate is raised and the air passes through the mouth cavity.

The vocal chords are not in vibration when [p] is pronounced. When [b] is pronounced the vocal chords are made to vibrate.

X-ray photography shows that in pronouncing English labial consonants, as in that of the corresponding Ukrainian ones, the tongue is not in its neutral position. It is retracted, the front of the tongue is lowered (fig. 3.4-3.5).



Fig. 3.4.
Tongue-position:
English [p] —————
Neutral position - - - - -

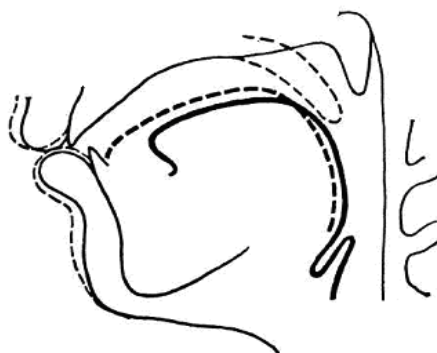


Fig. 3.5.
Tongue-position:
Ukrainian [II] —————
Neutral position - - - - -

In pronouncing the English [m] the tongue is also retracted, the front part being lowered. But the tongue occupies a somewhat higher position than for the English [p], [b]. The soft palate is lowered and the air exhaled from the lungs, passes through the nasal cavity (fig. 3.6).

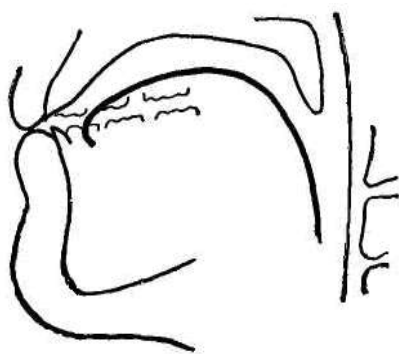


Fig. 3.6.
Tongue-position of English [m]

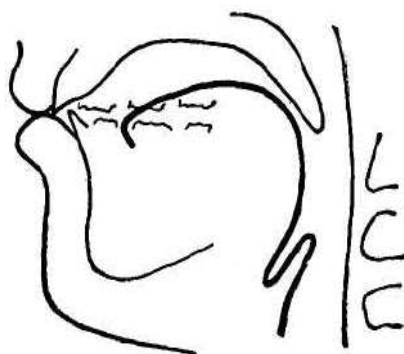


Fig. 3.7.
Tongue-position of Ukrainian [M]

The English [p] is a bilabial plosive voiceless consonant phoneme.

The English [b] is a bilabial plosive voiced consonant phoneme.

The English [m] is a bilabial occlusive (nasal) sonant.

The English [p], [b], [m] differ from the corresponding Ukrainian consonants. In pronouncing the English [p], [b], [m] the lips are more tense and spread. In forming the Ukrainian [П], [Б], [М] the lips are not so tense as in the case of the English [p], [b], [m] and slightly protruded (fig. 3.8, 3.9).



Fig. 3.8.
Lip-position of English [p]



Fig. 3.9.
Lip-position of Ukrainian [П]

In forming the English [p], [b], [m] the tongue occupies a more forward position, the tip of the tongue is nearer to the lower teeth.

The English [p] is aspirated, especially before stressed vowels, while the Ukrainian [П] is not.

To acquire the correct pronunciation of the English labial consonants [p], [b], [m] one may start from the corresponding Ukrainian consonants. The lips should be more tense.

Many students whose native language is Ukrainian have a tendency:

1. to mispronounce the English [p], [m] by not making them energetic enough, and what is more this applies especially to the English [p] at the end of words;
 2. to protrude the lips while pronouncing the English [p], [b], [m], but such mistakes can be corrected by observing the energetic articulation of the English [p], [m] and the flat and tense position of the lips pronouncing [p], [b], [m];
 3. to pronounce the English [p] without any aspiration before stressed vowels.
- To acquire aspiration one must increase the force of exhalation.

Sometimes, the students run to extremes and make the aspiration too strong, pronouncing a [h]-sound after it.

In order to avoid this mistake one should pay attention not to raise the back of the tongue.

The English Consonant [w]

In pronouncing the English [w] the lips are more or less protruded and rounded forming a small round or oval-shaped opening through which the air escapes.

At the same time the tongue is in the back part of the mouth cavity, its tip is retracted from the lower teeth. The back of the tongue is raised towards the soft palate forming the second back focus. The soft palate is raised. The vocal chords are in vibration.

From this initial position the tongue and the lips immediately glide into the positions for the following vowel.

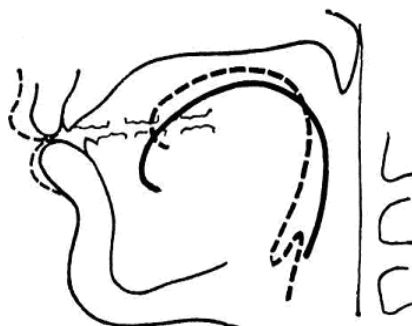
The position of the lips in pronouncing the English [w] is somewhat influenced by the following sound. Before labialized vowels, especially before the English [u:] the lips are rounded and pushed forward. The opening between the lips is round and very small. Before non-labialized vowels the lips are less protruded and rounded, the opening between the lips is bigger and oval-shaped.

The English [w] is a bilabial constrictive central sonant with a secondary back focus.

The articulation of the English [w] resembles the articulation of the Ukrainian bilabial [B].

1. In pronouncing the English [w] and the Ukrainian [B] the back part of the tongue is raised to the soft palate. But in forming the Ukrainian [B] the tongue is raised somewhat higher (fig. 3.10).

Fig. 3.10.
Tongue-position:
English [w] —————
Ukrainian [B] - - - - -



2. The position of the lips while pronouncing the English [w] is similar to that of the Ukrainian bilabial [B]. In pronouncing the Ukrainian [B] the position of the lips is also changed under the influence of the following vowel. But in pronouncing the Ukrainian [B] the lips are less protruded, not so closely rounded, and not so tense (fig. 3.11, 3.12).

The English [w] remains bilabial in all the positions in the word, the Ukrainian bilabial [B] becomes labio-dental before the sounds [И], [Е].



Fig. 3.11.
Lip-position of English [w].



Fig. 3.12.
Lip-position of Ukrainian [B]

3. The English [w] occurs only before vowels at the beginning and in the middle of a word, the Ukrainian [B] occurs both before vowels and consonants in all positions in a word.

The correct pronunciation of the English [w] can be acquired by starting from the Ukrainian bilabial [B]. In this case one must articulate more energetically with the lips and the necessary position of the tongue must be observed.

The English Consonants [f], [v]

In pronouncing the English [f] the lower lip is raised to the upper front teeth and a narrowing of the air-passage is formed between the lower lip and the teeth. The air passes through this narrowing producing audible friction.

X-ray photography shows that the position of the tongue in pronouncing the English [f] is nearly the same as in forming the English [p].

The front part of the tongue is somewhat lowered, the tongue is slightly retracted from the lower teeth. The soft palate is raised and the air escapes through the mouth cavity (fig. 3.13). The vocal chords are not made to vibrate.

The English [f] is a labio-dental fricative voiceless consonant phoneme.

The English [f] has nearly the same quality as the Ukrainian [Φ]. It differs from the latter by a more energetic articulation and by a somewhat more front position of the tongue (fig. 3.13).

To acquire the correct pronunciation of the English [f] one may start from the Ukrainian [Φ] making the lips more tense and the articulation more energetic.

The English [v] is formed like the English [f] except that the vocal chords are made to vibrate and the tongue occupies a somewhat lower position (fig. 3.14).

The English [v] is a labio-dental fricative voiced consonant phoneme.

The correct pronunciation of the English [v] may be acquired by starting from the Ukrainian labio-dental [B] as pronounced before the sounds [И], [Е].

If students pronounce the Ukrainian [B] before [И], [Е] as a bilabial consonant it is not advisable to start from it. In such cases one should start from the Ukrainian [Φ], provided that care is taken to make it voiced.

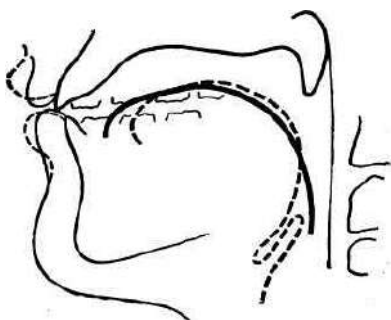


Fig. 3.13.

Tongue-position:
English [f] _____
Ukrainian [Φ] - - - - -

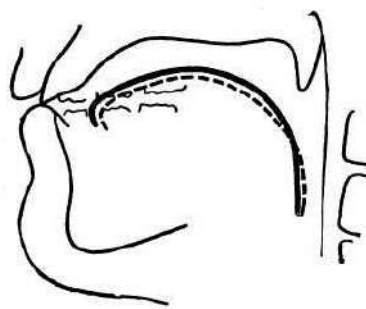


Fig. 3.14.

Tongue-position:
English [f] _____
English [v] - - - - -

Fig. 3.15.

Lip-position of English [f]



As a rule the correct pronunciation of the English [f], [v] can be acquired without much difficulty but there is a tendency with some students:

1. not to make the English [f] energetic enough, especially at the end of words;
2. to palatalize the English [f],[v] before front vowels, especially before [i:],[ɪ];
3. to devoice the English [v] at the end of words;
4. to pronounce the English labio-dental [v] as a bilabial consonant.

Such mistakes can be easily corrected by carefully adopting the position of the tongue and the lips characteristic of the English [f], [v].

3.2.2. ENGLISH FORELINGUAL CONSONANTS IN COMPARISON WITH UKRAINIAN FORELINGUAL CONSONANTS

The English Consonants [t] [d], [n]

In pronouncing the English [t], [d] the front and the central parts of the tongue are comparatively flat, the tip of the tongue is pressed against the alveoli, forming a complete obstruction. Then the tension is released and the air compressed in the mouth cavity breaks the obstruction with explosion. The soft palate is raised (fig. 3.16), the vocal chords are not made to vibrate. The English [t] is aspirated, especially before stressed vowels.

The English [t] is a forelingual alveolar apical plosive voiceless consonant phoneme.

The English [d] is formed like the English [t] except that the vocal chords are made to vibrate, it is not aspirated and less tense than the English [t]. The tongue occupies a somewhat lower position (fig. 3.16).

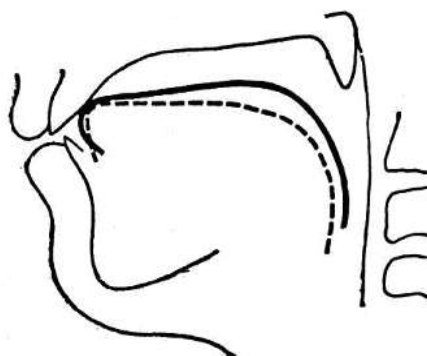
The English, [d] is a forelingual alveolar, apical plosive voiced consonant phoneme.

The English [t], [d] considerably differ from the Ukrainian [T], [Д].

1. The Ukrainian [T], [Д], like the English [t], [d], are forelingual consonants, but the shape of the tongue in their pronunciation is different.

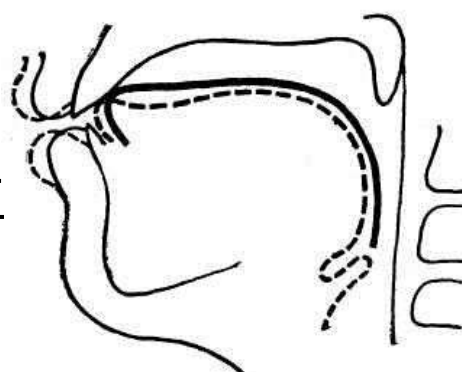
The English [t], [d] are apical, the Ukrainian [T], [Д] are cacuminal.

Fig. 3.16.
Tongue-position:
English [t] —————
English [d] - - - - -



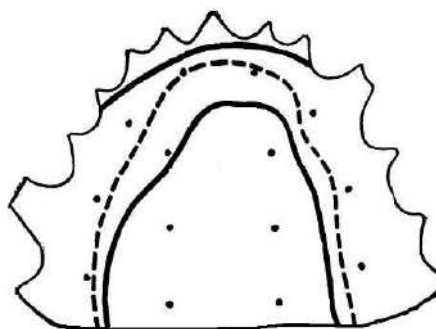
2. In pronouncing the English [t], [d] the obstruction is formed at the alveoli, while in pronouncing the Ukrainian [T], [Д] it is formed at the rear surface of the front upper teeth, i. e. according to the passive organ of speech the English [t], [d] are alveolar, the Ukrainian [T], [Д] are dental (fig. 3.17).

Fig. 3.17.
Tongue-position:
English [t] —————
Ukrainian [T] - - - - -



The difference in the articulation of the English [t], [d] and Ukrainian [T], [Д] can be seen from the palatograms (fig. 3.18).

Fig. 3.18.
Palatograms:
English [t] _____
Ukrainian [T] - - - - -



The Ukrainian [T] differs from the English [t] by the absence of aspiration.

To pronounce the English [t], [d] correctly one may start from the corresponding Ukrainian sounds. The tip of the tongue should be retracted and pressed to the alveoli. The English [t] should be pronounced with aspiration before stressed vowels. Special attention should be paid to keep the lips flat.

The tongue position for the English [n] resembles that for the English [d], but in forming the English [n] the soft palate is lowered, the air passes through the nasal cavity.

The English [n] is a forelingual alveolar apical occlusive (nasal) sonant.

The Ukrainian [H] is cacuminal and dental (fig. 3.19).

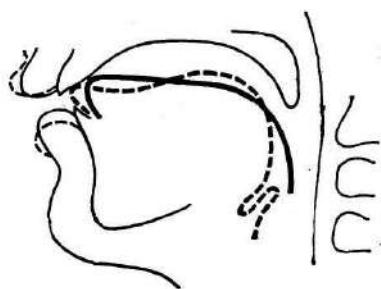


Fig. 3.19.
Tongue-position:
English [n] _____
Ukrainian [H] - - - - -

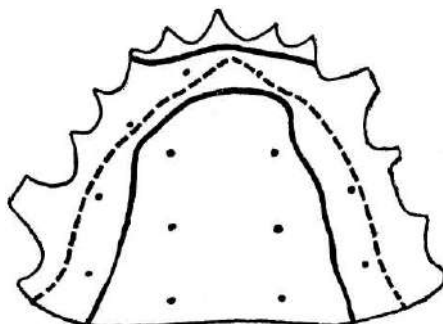


Fig. 3.20
Palatograms:
English [n] _____
Ukrainian [H] - - - - -

Many students whose native language is Ukrainian have a tendency:

1. to pronounce [t], [d], [n] dental instead of alveolar;
2. to palatalize the English [t], [d], [n] before [i:], [I], [e];
3. to pronounce a voiceless [t] instead of the voiced [d] when it is final;
4. to pronounce the English [t] without aspiration.

The English Consonants [s], [z]

In pronouncing the English [s], [z] the tip and the blade of the tongue are raised towards the alveoli.

A rounded narrowing of the air-passageway is formed between the tip of the tongue and the alveoli. The air passes along the centre of the tongue between its raised sides.

The trace of the raised tongue forming the narrowing is shown by the palatograms (fig. 3.23).

The air passes through the narrowing with friction. The soft palate is raised, the vocal chords are made to vibrate.

The English [s] is a forelingual alveolar apical fricative (with a rounded narrowing) voiceless consonant phoneme.

The English [z] is formed like the English [s] except that the vocal chords are made to vibrate, the tongue is less tense and occupies a somewhat lower position (fig. 3.21).

The English [z] is a forelingual alveolar apical fricative (with a rounded narrowing) voiced consonant phoneme.

The English consonants [s], [z] differ from the Ukrainian [C], [3] mainly in the place of obstruction. The English [s], [z] are alveolar, the Ukrainian [C], [3] are dental. The difference between the place of articulation of the English [s] and the Ukrainian [C] is shown by palatograms (fig. 3. 23).

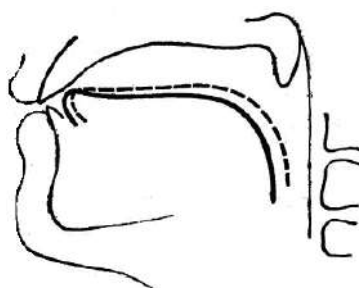


Fig. 3.21.

Tongue-position:

English [s] —————
English [z] - - - - -

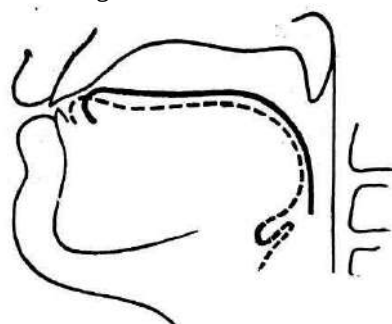


Fig. 3.23.

Palatograms:

English [s] —————
Ukrainian [C] - - - - -



Fig. 3.22.

Lip-position of English [s]

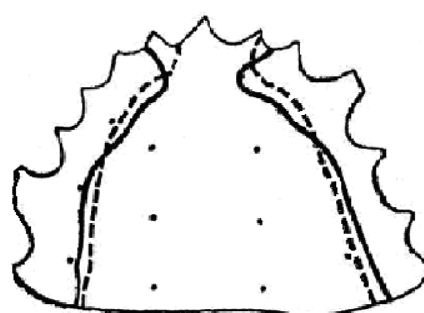


Fig. 3.24.

Tongue-position:

English [s] —————
Ukrainian [C] - - - - -

Both the English [s], [z] and the Ukrainian [C], [3] are articulated by the tip and the blade of the tongue. Though the Ukrainian [C], [3] tend more to a cacuminal articulation than to an apical one (fig. 3.24) the acoustic difference is not very noticeable. In pronouncing the Ukrainian [C], [3] the lips are pushed forward.

The correct pronunciation of the English [s], [z] can be acquired by starting from the Ukrainian [C], [3]. As a rule the English [s], [z] present no special difficulty for Ukrainian students, however attention should be paid not to palatalize the English [s], [z] before [i:], [ɪ].

The English Consonants [θ], [ð]

In pronouncing the English [θ] the tip of the tongue is flattened and raised to the upper front teeth. The whole body of the tongue is comparatively flat too (fig. 3.25). The air passes through the flat narrowing – formed between the tip of the tongue and the teeth. The soft palate is raised, the vocal chords are not made to vibrate.

English [θ], [ð] may also be pronounced as inter-dental consonants. In this case the tip of the tongue moves forward and occupies a position between the upper and lower teeth. The air passes through the narrowing of the air-passage formed between the upper teeth and the tip of the tongue (fig. 3.25, 3.26).

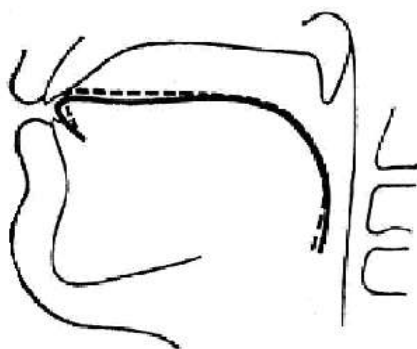


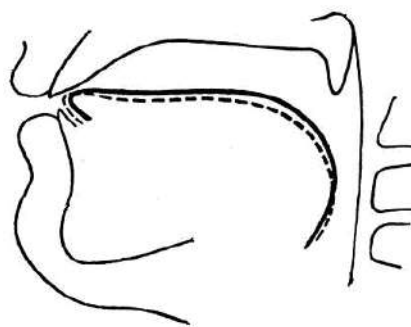
Fig. 3.26.
Lip-position of English [θ]

Fig. 3.25.
Tongue-position:
English [θ] (inter-dental) —————
English [θ] (dental) - - - - -

The English [θ] is a forelingual inter-dental (or dental) apical fricative (with a flat narrowing) voiceless consonant phoneme.

The English [ð] is formed like the English [θ] except that the vocal chords are in vibration, the tongue is less tense and occupies a rather lower position (fig. 3.27).

Fig. 3.27.
Tongue-position:
English [θ] —————
English [ð] - - - - -



The English [ð] is a forelingual inter-dental (or dental) apical fricative (with a flat narrowing) voiced consonant phoneme.

Students whose native language is Ukrainian are not recommended to start from any Ukrainian sound as there are no similar consonants in the Ukrainian language.

Those who have a tendency to replace the English [θ], [ð] by the Ukrainian [T], [Д], [C], [З] should study carefully the difference between them.

The English [θ], [ð] differ from the Ukrainian [T], [Д] in the manner of the production of noise. The English [θ], [ð] are fricatives, the Ukrainian [T], [Д] are plosives.

The trace of the tongue forming a narrowing for the English [θ], [ð] and complete obstruction for the Ukrainian [T], [Д] are shown by the palatograms (fig. 3.29).

The shape of the tongue in pronouncing the English [θ], [ð] differs from that for the Ukrainian [T], [Д] (fig. 3.28).

The trace of a more front articulation of the English [θ] is shown by the palatograms (fig. 3.29).

Fig. 3.28.
Tongue-position:
English [θ] —————
Ukrainian [T] - - - - -

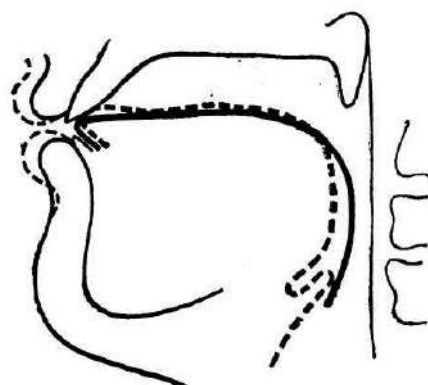
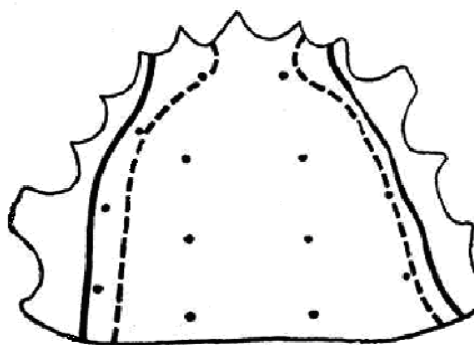


Fig. 3.29.
Palatograms:
English [θ] —————
Ukrainian [T] - - - - -



Sometimes students whose native language is Ukrainian replace the English [θ], [ð] by the Ukrainian labio-dental fricatives [f] [v]. But this mistake is rare.

It is useful to start by practising inter-dental articulation of the English [θ], [ð]. Dental articulation will be acquired without any difficulty when the students master the inter-dental varieties.

Many students whose native language is Ukrainian pronounce the English [θ], [ð] as occlusive consonants, the tip of the tongue forming a complete obstruction with the teeth. The correct pronunciation can be acquired by lengthening the articulation of [θ], [ð] so as to be sure that a narrowing is formed between the tip of the tongue and the upper teeth.

Most students experience difficulty in pronouncing the sound combinations [sθ], [zθ], [sð], [zð], [θs], [θz], [ðs], [ðz] where [s], [z] become dental under the influence of [θ], [ð].

To correct this mistake students must practise gradual movement of the tongue from the position for [s], [z] to the position of [θ], [ð] and vice versa.

The English Consonants [ʃ], [ʒ]

The English [ʃ] is articulated by the tip and the blade of the tongue against the back of the alveoli.

The tongue is raised. A narrowing of the air passage is formed between the tip of the tongue and the alveoli. The distance between the front of the tongue and the hard palate is rather narrow, a front secondary focus is formed there.

In pronouncing the English [ʃ] the soft palate is raised, the vocal chords are made to vibrate. The lips are slightly pushed forward.

The English [ʃ] is a forelingual post-alveolar apical fricative (with a flat narrowing) voiceless bicentral consonant phoneme with a front secondary focus.

The English [ʒ] is formed like the English [ʃ] except that the vocal chords are made to vibrate, the tongue is not so tense and occupies a somewhat lower position (fig. 3.30).

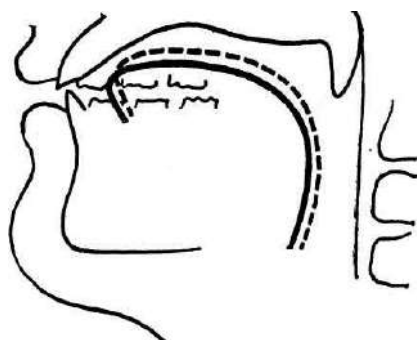


Fig. 3.30.

Tongue-position:

English [f] —————
English [ʒ] - - - - -



Fig. 3.31.

Lip-position of English [f]

The English [ʒ] is a forelingual post-alveolar apical fricative (with a flat narrowing) voiced bicentral consonant phoneme with a front secondary focus.

The English [f], [ʒ] differ from the Ukrainian [III], [Ж] mainly in the shape of the tongue. In pronouncing the English [f], [ʒ] the front part of the tongue is raised while in the Ukrainian [III], [Ж] a depression is formed in the front part of the tongue (fig. 3.32).

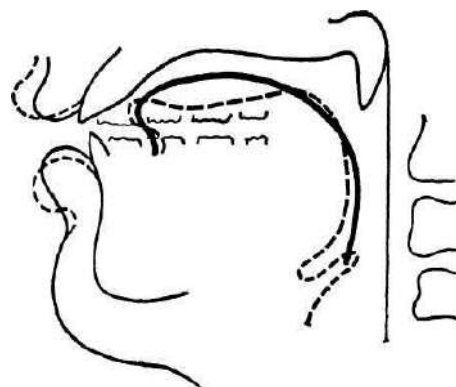


Fig. 3.32.

Tongue-position:

English [f] —————
Ukrainian [III] - - - - -

In pronouncing the English [f], [ʒ] the lips are slightly pushed forward, forming an oval-shaped opening. In pronouncing the Ukrainian [III], [Ж] the lips are more protruded, the opening between the lips is bigger.

To obtain the correct pronunciation of the English [f], [ʒ] one may start from the Ukrainian [III], [Ж] in the position before [I].

Care should be taken not to soften the English [f], [ʒ] too much, that is to avoid a too high position of the front of the tongue.

As a rule students whose native language is Ukrainian find no special difficulty in acquiring the correct pronunciation of the English [f], [ʒ]. Their most typical mistakes are too hard or too palatalized varieties of the English [f], [ʒ]. Such mistakes can be corrected by raising or lowering the tongue respectively.

The English Consonants [tʃ], [dʒ]

The English [tʃ], [dʒ], like the Ukrainian [ʧ], [ʤ], consist of two merged elements of articulation.

These sounds start with a complete obstruction followed by slow release which results in the formation of a narrow air-passage. The English [tʃ] is articulated by the tip of the tongue pressed against the back of the alveoli; without remaining there any appreciable time the tip of the tongue proceeds to the position of the English [ʃ] (fig. 3.33). The narrowing is formed between the front of the tongue and the back of the alveoli. The vocal chords are not in vibration.

The English [tʃ] is a forelingual back alveolar apical voiceless affricate bicentral consonant phoneme with a front secondary focus.

Fig. 3.33.

Tongue-position:

English [tʃ] (beginning) —————

English [tʃ] (end) - - - - -

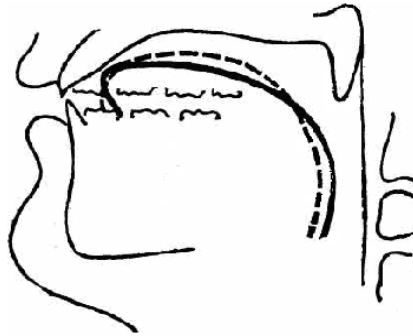


Fig. 3.34.

Tongue-position:

English [tʃ] —————

Ukrainian [ʧ] - - - - -

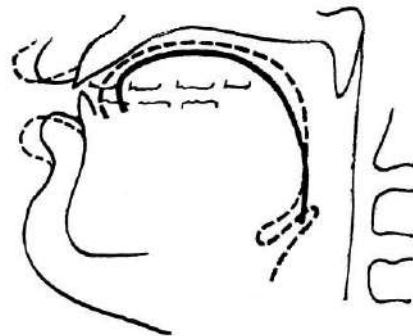
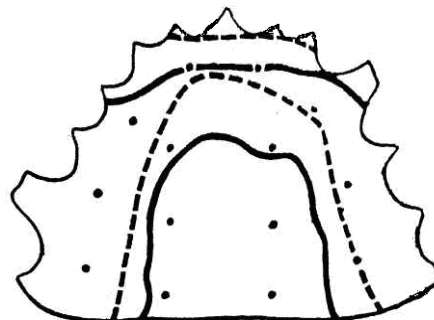


Fig. 3.35.

Palatograms:

English [tʃ] —————

Ukrainian [ʧ] - - - - -



The English [ɖʒ] is formed like the English [tʃ] except that the vocal chords are made to vibrate, the muscles of the tongue are less tense and the tongue occupies a somewhat lower position.

The English [ɖʒ] is a forelingual back alveolar apical voiced affricate bicentral consonant phoneme with a front secondary focus.

The English [tʃ], [ɖʒ] have very nearly the same quality as the Ukrainian [ʧ], [ʤ] and present no difficulty to most learners, provided that care is taken not to devolve the English [ɖʒ] when final.

The English Consonant [l]

In the pronunciation of the English [l] the tip of the tongue is raised to touch the alveoli. The sides of the tongue are lowered and the air escapes through the narrowings which are formed between the sides of the tongue and the hard palate. The soft palate is raised (fig. 3.36). The vocal chords are made to vibrate.

The English [l] is a forelingual alveolar apical lateral sonant.

There exist several variants of the English [l]. At the end of words and before consonants there appears a “dark” variant of the English [l]. In pronouncing the English [l] in this position the tip of the tongue is raised to the alveoli and a spoon-shaped depression is formed along the central part of the tongue.

“Clear” variants of the English [l] occur before vowels, especially before front vowels. In pronouncing the English [l] before [i:] in the word *lean* [li:n] the tip of the tongue is also raised to the alveoli but the contact covers a larger area. The front of the tongue is raised towards the hard palate (see fig. 3.36, 3.37).

Fig. 3.36.
Tongue-position:
English clear [l] —————
English dark [l] - - - - -

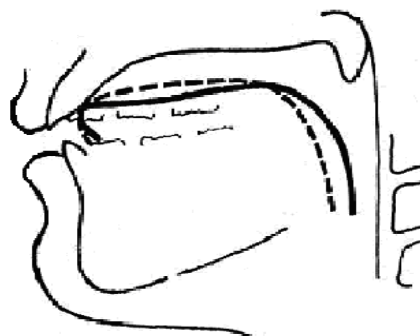
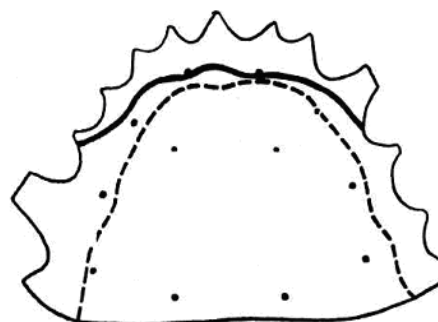
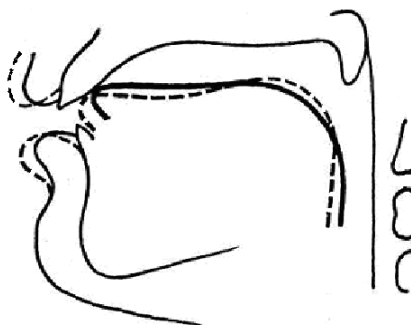


Fig. 3.37.
Palatograms:
English clear [l] —————
English dark [l] - - - - -



In pronouncing the English “dark” [ɫ] the position of the tongue resembles that of the Ukrainian [ɫ] in the word *була* (fig. 3.38). In all the other positions the Ukrainian non-palatalized [ɫ] is much harder than the corresponding English [ɫ] (fig. 3.38).

Fig. 3.38.
Tongue-position:
English dark [ɫ] —————
Ukrainian [ɫ] - - - - -

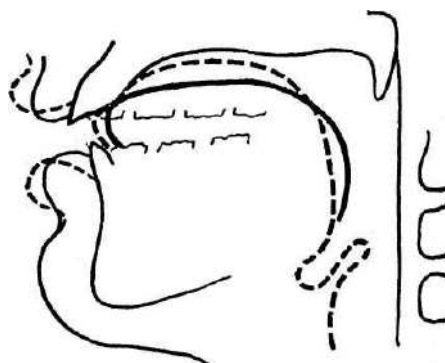


Many students whose native language is Ukrainian have a tendency to use too dark varieties of the English “dark” [ɫ].

The sound may be improved by starting from the Ukrainian [ɫ] in the word *була*.

The English “clear” [l] resembles the Ukrainian palatalized [ɫʲ] except that in pronouncing the Ukrainian [ɫʲ] the front part of the tongue is nearer to the palate (fig. 3.39).

Fig. 3.39.
Tongue-position:
English clear [l] —————
Ukrainian [ɫʲ] - - - - -



There is a tendency with some students to palatalize the English “clear” [l].

The sound may be improved by starting from the Ukrainian palatalized [ɫʲ]. The tongue should be lowered a little. Special care should be taken to pronounce the English sound combinations [tɫ], [dɫ], [pɫ], [bɫ] properly, i.e. with “lateral plosion”.

This can be achieved by practising the pronunciation of these combinations without removing the tip of the tongue from alveoli after [t], [d], [p] and [b], respectively.

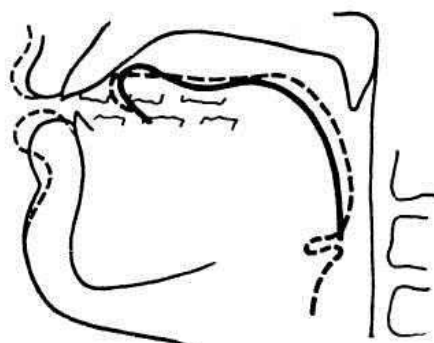
The English Consonant [r]

In pronouncing the English [r] the tip of the tongue approach the back of the alveoli, forming a rather wide narrowing of the air-passage. A spoon-shaped depression is formed in the front of the tongue, the back of the tongue is raised to the soft palate (fig. 3.40). The soft palate is raised and the air escapes through the mouth along the tongue. The vocal chords are made to vibrate.

When the sound [r] occurs between two vowels, it is heard as a single tap (vibration) of the tip of the tongue against the alveoli.

The English [r] is a forelingual post-alveolar cacuminal constrictive central sonant.

Fig. 3.40
Tongue-position:
English [r] —————
Ukrainian [P] - - - - -



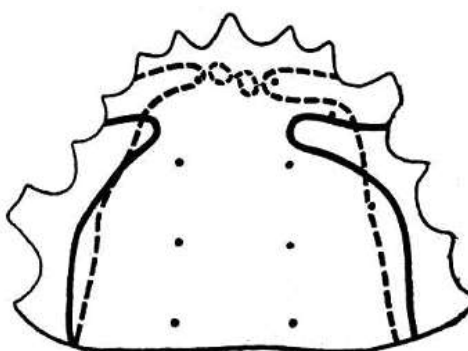
The English [r] considerably differs from the Ukrainian [P].

1. The English [r] differs from the Ukrainian [P] in the manner of the production of noise. In pronouncing the English [r] the narrowing of the air-passage, formed between the tip of the tongue and the back of the alveoli, is rather wide. In pronouncing the Ukrainian [P] the tip of the tongue approaches the alveoli, nearly touching them, and the air escaping through this obstruction widens it and makes the tongue vibrate (fig. 3.40).

2. The English [r], like the Ukrainian [P], is a forelingual cacuminal constrictive central sonant, but the place of obstruction in pronouncing the Ukrainian [P] is nearer to the teeth. The English [r] is post-alveolar, the Ukrainian [P] is alveolar.

The difference between the English [r] and the Ukrainian [P] in the place of obstruction is shown by palatograms (fig. 3.41).

Fig. 3.41.
Palatograms:
English [r] —————
Ukrainian [P] - - - - -



3. In forming the English [r] the lips are flat, slightly rounded or even protruded with some speakers, and in all the cases they are tenser than in the Ukrainian [P], in which they are lax and neutral.

The English [r] is best acquired by starting from the Ukrainian [Ж]. In such cases one should try to pronounce the English [r] keeping the tongue in the position characteristic of the Ukrainian [Ж].

Care should be taken to keep the lips flat and to avoid the vibration of the tongue which is typical of the Ukrainian [P].

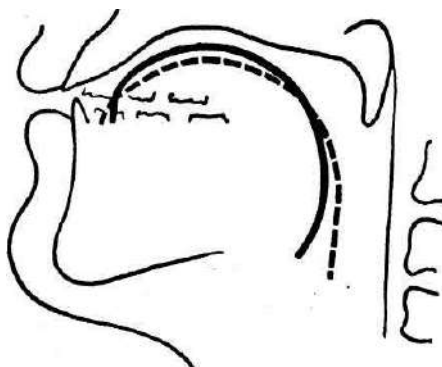
Most students experience difficulty in pronouncing sound combinations such as [θr, pr, br, fr, gr, kr, tr, dr] where [r] becomes flapped. These combinations require special training.

3.2.3. ENGLISH MEDIOLINGUAL CONSONANT [j] IN COMPARISON WITH THE UKRAINIAN [Й]

In pronouncing the English [j] the central part of the tongue is raised to the hard palate. The tip of the tongue is lowered (fig. 3.42). A narrowing of the air-passage is formed between the central part of the tongue and the hard palate. The air escapes through this narrowing.

The soft palate is raised. The vocal chords are made to vibrate. The lips are spread or neutral.

Fig. 3.42.
Tongue-position:
English [j] —————
English [i:] - - - - -



In forming the English [j] the narrowing is closer than in the English [i:], but the tongue must not touch the palate.

The English [j] is a mediolingual palatal constrictive central sonant.

Both the English [j] and the Ukrainian [Й] are mediolingual palatal constrictive central sonants, but the English [j] differs from the Ukrainian [Й] considerably.

1. In pronouncing the English [j] the tongue is not raised so high as in pronouncing the Ukrainian [Й], the air-passage is wider. The width of the air-passage varies for the English [j] and depends on the following vowel. The narrowing is wider before open vowels and narrower before close vowels.
2. In pronouncing the English [j] the tongue is somewhat retracted while in pronouncing the Ukrainian [Й] a more front part of the tongue is raised towards the soft palate.
3. The English [j] is heard to be more sonorous. The fact is explained by the lower position of the front of the tongue (see fig. 3.43, 3.44).
4. The English [j] occurs only before vowels, the Ukrainian [Й] occurs both before vowels and consonants.

The correct pronunciation of the English [j] may be achieved by starting from the Ukrainian [Й]. It should be borne in mind that the most typical mistake here is a too close [j]. Such a mistake can generally be corrected by lowering the tongue and thus, widening the air-passage between the palate and the tongue.

Taking into consideration the great sonority and sliding character of the English [j] one may also start from the Ukrainian [Й].

In this case the tongue should be raised somewhat higher than for the Ukrainian [Й].

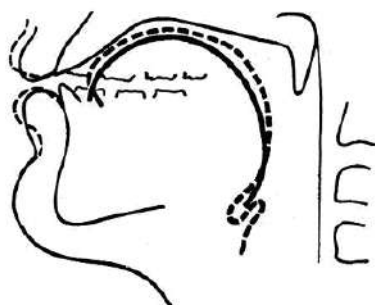


Fig. 3.43.

Tongue-position:

English [j] _____
Ukrainian [Й] - - - - -

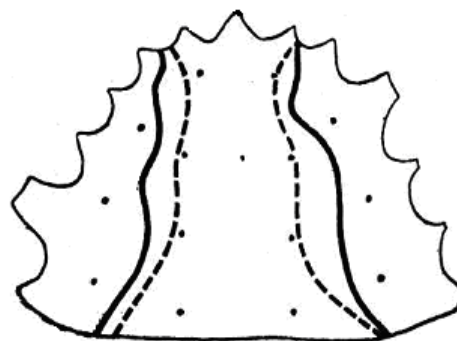


Fig. 3.44.

Palatograms:

English [j] _____
Ukrainian [Й] - - - - -

3.2.4. ENGLISH BACKLINGUAL CONSONANT PHONEMES IN COMPARISON WITH UKRAINIAN BACKLINGUAL CONSONANTS

The English Consonants [k], [g]

In pronouncing the English [k], [g] the back of the tongue is raised to the soft palate and a complete obstruction is formed there (fig. 3.45). Immediately after that the tension in the place of obstruction is released and the air breaks through the obstruction. The tip of the tongue is retracted from the front lower teeth.

The soft palate is raised. In pronouncing the English [g] the vocal chords are made to vibrate.

The English [k] is a backlingual plosive voiceless consonant phoneme.

The English [g] is formed like the English [k] except that the vocal chords are made to vibrate, the muscles of the tongue are less tense.



Fig. 3.45.

Tongue-position of English [k]

The English [g] is a backlingual plosive voiced consonant phoneme.

There are several variants of [k], [g] in English depending on the quality of the following vowel. The place of the obstacle is more advanced when the English [k], [g] are followed by front vowels and more retracted when they are followed by back vowels (fig. 3.46).



The articulation of the English [k], [g] very much resembles the articulation of the Ukrainian [K], [G] in all positions in a word, except before the sound [I], as the Ukrainian [K], [G] become palatalized when followed by [I]. And yet the English [k] differs from the Ukrainian [K] to a certain extent. The English [k] is pronounced with aspiration especially before stressed vowels, while the Ukrainian [K] is never aspirated. The place of the obstruction is rather more forward in pronouncing the Ukrainian [K], which is more stable and depends less upon the quality of the following vowel. However this difference is not of great importance, and the correct English [k], [g] may be acquired by starting from the Ukrainian [K], [G], provided that care is taken to make the English [k], [g] more energetic and to pronounce the English [k] with aspiration before stressed vowels.

Many students whose native language is Ukrainian have a tendency:

1. to mispronounce the English [k] before stressed vowels making it unaspirated;
2. to use a voiceless sound resembling the Ukrainian [X] instead of the English final [g];
3. to replace the English [g] by the Ukrainian [Г].

Those who mispronounce the sound [g] should study carefully the difference between the English [g], and the Ukrainian [Г] and practise pronouncing words ending in [g].

Special care should be taken to pronounce the English sound combinations [kl], [gl] without removing the obstruction for [k], [g] before pronouncing [l].

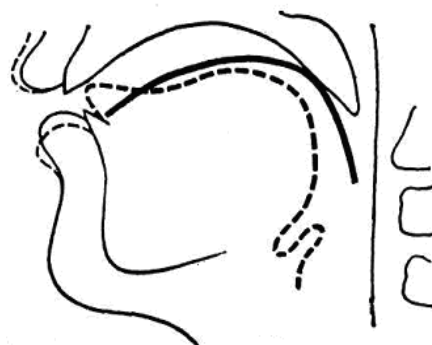
3.2.5. PHARYNGUAL CONSONANTS

The English Consonant [ŋ]

In pronouncing the English [ŋ] the back of the tongue is raised towards the soft palate. The soft palate is lowered and a complete obstruction is formed between the soft palate and the back of the tongue. The air passes through the nasal cavity. The tip of the tongue is near the front lower teeth (fig. 3.47). The vocal chords are made to vibrate.

The English [ŋ] is a backlingual occlusive nasal sonant.

Fig. 3.47.
Tongue-position:
English [ŋ] —————
Ukrainian [H] - - - - -



There is no corresponding sound in the Ukrainian language.

Students whose native language is Ukrainian have a tendency to replace the English [ŋ] by their native [H] or by the sound combination [HK], [HG].

This mispronunciation may be rectified by keeping the tip of the tongue close to the lower teeth. Besides, the difference between the English [ŋ] and the Ukrainian [H] (fig. 3.47) should be studied carefully.

Those who have difficulty in pronouncing the English [ŋ] may practise it with the jaw considerably lowered. Such an articulation makes it possible to observe the position of the tongue with the help of a looking-glass.

Some students, though pronouncing the English [ŋ] correctly add the consonant [g] or [k] after it. Such a mistake can be corrected by practising pronouncing words with final [ŋ]. "It is recommended to lengthen the consonant [ŋ], then stop the vibration of the vocal chords and slowly remove the back of the tongue from the soft palate" (Vassilyev V.A., Burenkova O.V., Katanskaya A.R., Lukina N.D., Maslova L.P., Torsuyeva E.I., 1962).

The English Consonant [h]

There are different points of view on the formation of the English [h]. D. Jones in his "Outline of English Phonetics" defines [h] as a glottal consonant.

Other phoneticians treat it differently. O. I. Dikushina, for instance, considers it to be a pharyngeal consonant, G.P. Torsuyev treats the English [h] as a sound similar to the German [h] (Hauch-Laut) which is considered to be low pharyngeal by L.V. Shcherba.

Radiograms proved that the English [h] is pharyngeal. In pronouncing the English [h] a narrowing of the air-passage is formed between the root of the tongue and the back of the pharynx (fig. 3.48). The vocal chords are not made to vibrate.

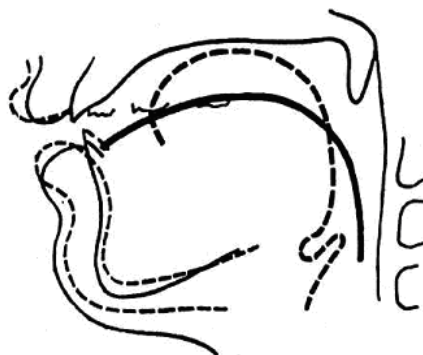
The English [h] is a pharyngeal constrictive fricative unicentral voiceless consonant phoneme.

The above described position of the speech organs in pronouncing the English [h] is immediately changed into the position required for the following vowel.

Students whose native language is Ukrainian often replace the English [h] by the Ukrainian backlingual [X] (fig. 3.48).

The English [h] does not resemble any Ukrainian sound.

Fig. 3.48.
Tongue-position:
English [h] _____
Ukrainian [X] - - - - -



Those who have any difficulty in pronouncing the English [h] "... should bear in mind that the [h]-sounds are simply vowels pronounced with breath instead of with voice. A near approach to the [h]-sounds in *hard* [hɑ:d], *he* [hi:], *hook* [hʊk], etc., may be obtained by whispering the vowels [ɑ:], [i:], [ʊ], etc." (Jones D., 1962).

The English [h] resembles the noise made by air forcibly exhaled from the lungs and freely escaping through the mouth cavity.

SUMMARY

English consonants differ from the Ukrainian consonants in many points.

1. The number of consonant phonemes is not the same in the two languages.

There are 24 consonant phonemes in the English language: [p], [b], [m], [w], [f], [v], [t], [d], [n], [tʃ], [dʒ], [s], [z], [θ], [ð], [ʃ], [ʒ], [l], [r], [j], [k], [g], [ŋ], [h]. The English voiceless [w] which is usually marked by [W] or [w] (i.e. as it may be pronounced in the words *which*, *whale*, *while*) is not included in this number as it is not pronounced by all speakers and may be replaced by the phoneme [w].

In the Ukrainian language there are 47 consonant phonemes (16 of them are long): [П], [Б], [М], [В], [Ф], [Т], [Д], [Н], [Ч], [ДЖ], [С], [З], [Л], [ДЗ], [Ш], [Ж], [І], [Р], [Ї], [К], [Г], [Х], [І'];

palatalized consonants: [Т'], [Д'], [Н'], [С'], [З'], [Л'], [І'], [Р'];

long consonants: [М], [Т], [Т'], [Д], [Д'], [Н], [Н'], [С], [С'], [З], [З'], [І], [І'], [Р], [Р'], [Ж'], [І'], [І'].

2. Both Ukrainian and English consonant phonemes are classified according to the manner of the production of noise, according to the active organ, forming an obstruction and according to the work of the vocal chords. These features of articulation are considered to be phonematically independent in the two languages.

3. In the Ukrainian language there are short and long consonant phonemes. Some pairs of consonants in Ukrainian differ only in length and yet are different phonemes, e.g. [Т] – [Т'], [Т'] – [Т'], [Н] – [Н'], etc.

Therefore, we say that the length of consonants is also phonematically an independent feature of articulation in Ukrainian. This feature of articulation does not exist in English, as there are no long consonant phonemes in the English language.

4. In Ukrainian there are non-palatalized and palatalized consonant phonemes. There are pairs of consonants in Ukrainian which differ only in the degree of

palatalization and yet are different phonemes, e.g. the Ukrainian [M], [M'], [G] – [G'], [C] – [C'], etc.

Therefore, we say that palatalization is also phonematically an independent feature of articulation in the Ukrainian language.

Palatalized consonant phonemes do not exist in English. Dark or clear variants of the English [ɪ] depend upon the position of the sound in the word. The English [ʃ], [ʒ] are slightly palatalized but there are no corresponding non-palatalized consonants.

5. English voiceless plosive consonants [p], [t], [k] are aspirated, while there are no aspirated consonants in the Ukrainian language.

6. According to the active organ causing the obstruction, there are the following groups of consonants in the Ukrainian language: labial (bilabial and labiodental) and lingual (forelingual, mediolingual, backlingual). In the English language, besides the above mentioned groups, there exists a group of pharyngeal consonants, to which the English [h] belongs.

7. The distribution of English and Ukrainian consonant phonemes among the groups of consonants is also different. The Ukrainian group of forelingual consonants includes palatalized and long phonemes and the phonemes [ɪ], [ʌʒ]. In its turn the English group of forelingual consonants includes the phonemes [θ], [ð] which do not exist in the Ukrainian language.

The group of English backlingual consonants includes the phonemes [k], [g], [ŋ], while in Ukrainian [ŋ] does not exist, but at the same time there are two additional Ukrainian backlingual constrictive consonants [X], [ɣ] (see table 3.1, p. 106).

8. There is also a difference between the phonematic systems of English and Ukrainian consonants in the articulation of similar consonants, i.e. consonants united by some common feature of articulation. Thus, in pronouncing Ukrainian forelingual consonants the place of obstruction is generally nearer to the front upper teeth than in the corresponding English consonants. The Ukrainian [T], [ʌ], [H], [C], [ʒ], for example, are dental according to the passive organ of speech, while the English [t], [d], [n], [s], [z] are alveolar; the Ukrainian [P] is alveolar, the English [r] is post-alveolar, etc.

9. The shape of the tongue in pronouncing English and Ukrainian forelingual consonants is different, English forelingual consonants are usually apical, while the Ukrainian ones are as a rule cacuminal.

10. Lip articulation differs in pronouncing English and Ukrainian consonants. In Ukrainian pronunciation there is no noticeable tension of the lips, though there is a considerable protrusion. In pronouncing English consonants the lips are tenser, and not protruded as a rule.

CHAPTER 4

PRONUNCIATION OF SOUNDS IN CONNECTED SPEECH

4.1. CHARACTERISTIC FEATURES OF CONNECTED SPEECH

Sounds are seldom pronounced separately in speech. They are usually pronounced in combinations to form syllables, words and sentences. Sounds undergo some changes in speech under the influence of each other, as well as under the influence of stress, position of sounds in a word, etc.

The articulation of any isolated speech sound consists of three phases – on-glide, stop- or retention-stage and off-glide.

During the first phase of the articulation (on-glide) the organs of speech leave their neutral position and move to the position typical of the given sound.

During the second phase (stop-stage) the organs of speech remain in the position characteristic of the given sound.

During the third phase (off-glide) the organs of speech return to their neutral position.

Thus, for example, in pronouncing the English [t] the tip of the tongue raises to occupy the position characteristic of this sound (on-glide).

Then it is pressed to the alveoli (stop-stage). This position is immediately followed by plosion and the tongue returns to its neutral position (off-glide).

The same phases of articulation plus the vibration of the vocal chords during the stop-stage are observed in making the English [d].

The phases of articulation of an isolated sound are as a rule not equal in time. In pronouncing vowels and most consonants the shortest phase is the on-glide. The off-glide occupies a somewhat longer period of time. The on-glide and the off-glide are much shorter than the stop-stage. In most cases the stop-stage occupies even more time than the on-glide and the off-glide taken together.

In articulating occlusive consonants the stop-stage is very short, the off-glide is somewhat longer than in vowels and all other consonants.

The three phases characteristic of an isolated sound are not usually realized in speech.

The joining of sounds in speaking implies a certain phase of one sound serving as the initial position for the following sound. Thus, the first sound [n] in the English word *intone* [ɪn'təʊn] has no final phase (off-glide), the following sound [t] has no initial phase (on-glide), as the stop-stage of the sound [n] provides the position of the speech organs for the English [t]. The position of the soft palate, which is raised for the sound [t], makes the only difference here.

In the Ukrainian word *вечна* [BECHÁ] the sound [C] has no off-glide, the sound [H] has no on-glide, as the stop-stage of the first sound [C] provides the position of the speech organs for the following sound [H]. The vocal chords are made to vibrate, the soft palate is lowered.

The phenomenon of “lateral explosion” which occurs in English in the sound combinations [tl], [dl], etc., is explained by the interpenetration of the phases, typical of sounds in speech, namely by the absence of the on-glide of [l] as the stop-stage of the preceding [t] or [d] provides the position of the speech organs for the following [l], e.g.

kettle ['ketl];
needle ['ni:dl].

The same phenomenon is found in the Ukrainian language, e.g.

атлет [АТЛЕТ];
тліти [ТЛІТИ];
петля [ПЕТЛЯ];
підлога [ПІДЛЮГА].

The phenomenon of “loss of plosion” is also explained by the interpenetration of the phases, the absence of the off-glide of the preceding sound and of the on-glide of the following sound, e.g.

act [ækt];
pact [pækt];
begged [begd], etc.

The loss of plosion does not exist in Ukrainian, where there are two subsequent plosions in this case, e.g.

пакт [ПАКТ];
акт [АКТ].

The length of vowels in English depends to some degree on stress and on the position of the vowel in the word.

English vowel phonemes become shorter before voiceless consonants and longer before voiced. They are much longer before sonants and at the very end of the word in an open syllable. For example, in the words *knee* [ni:], *kneel* [ni:l], *need* [ni:d], *neat* [ni:t] the English vowel [i:] is the longest in the word *knee*. It is shorter before the sonant [l] and the voiced consonant [d] in the words *kneel* and *need* and still shorter in the word *neat*.

Such length of vowels is called positional. One should carefully observe the rules of positional length of vowels, as it is very characteristic of English.

In the Ukrainian language long vowel phonemes do not exist. Ukrainian short vowels become somewhat longer when under stress.

Such length of consonants in English also varies but not to the same extent as that of vowels. However, it is important for a learner to remember that final sonants in English are comparatively long. They are especially long when preceded by a short vowel or followed by an unstressed syllable beginning with [j] or [w].

Examples:

seen [si:n] – sin [sɪn];
bile [baɪl] – bill [bɪl];
therm [θɜ:m] – thumb [θʌm];
billion ['bɪljən];
billiards ['bɪljədz];
bulwark ['bʊlwək].

In speech sounds form syllables, syllables form words, words form sentences.

The connection of words in a sentence has its peculiarities in every given language.

In the English language there are no pauses between words closely connected by meaning, especially when a word ending in a consonant is followed by one beginning with a vowel.

The syllabic structure of the word is retained here despite the absence of pauses because of the strong beginning and weak end of the final consonant of the preceding word, e.g.

My name is Klim.
[maɪ 'neɪm ɪz kɪlɪm ||].
The text is short.
[ðə 'tekst ɪz ʃɔ:t ||].
We are in Odessa.
[wɪ ər ɪn əv desə ||].
The car is in the street.
[ðə 'kɑ:r ɪz ɪn ðə stri:t ||].

Interpenetration of the phases, stress, the influence of surrounding sounds and some other factors lead to reduction and assimilation.

4.2. STYLES OF PRONUNCIATION

The different changes sounds undergo in connected speech depend also upon the style of speech.

According to L.V. Shcherba (1948) different forms of speech adapted to different aims and to different social conditions are called styles of speech.

L.V. Shcherba distinguishes two main styles – full style and colloquial style.

Each style is characterized by definite features, including phonetical ones.

The difference between full and colloquial styles of pronunciation in English is great.

In Ukrainian full style differs from colloquial style as well.

Full style of pronunciation is characteristic of lecturing, official announcements and public speeches. The chief feature of this style is more careful and distinct articulation. The colloquial style of pronunciation is used in informal speech and conversation. The rules of colloquial style vary for each language.

4.3. REDUCTION

Sounds in connected speech can be reduced, and change their quality or even fall out when unstressed.

This phenomenon is called **reduction**.

Reduction is closely connected with the development of the phonetical structure of the language, its grammatical system and vocabulary.

Depending on the character of the change, reduction may be purely **quantitative** or **quantitative-qualitative**.

Different degrees of length of English vowels depending on whether they are stressed or unstressed may illustrate the case of purely quantitative reduction. Thus, for example, the English [i:] in the word *meliorate* ['mi:ljəreɪt] is longer than the same vowel [i:] in the word *melioration* ['mi:ljə'reɪʃn]. The same can be said about the sound [ɑ:] in the words *party* ['pɑ:tɪ], *partial* ['pɑ:ʃiəl], *partiality* [pɑ:ʃɪ'ælɪtɪ].

Ukrainian vowels may become longer when under stress but the difference in length is too slight to be of any practical importance.

The change in the quality of the sound is generally accompanied or even caused by a change in quantity. Therefore there is no purely qualitative reduction.

Quantitative-qualitative reduction often occurs both in the English and Ukrainian languages. As a result, English unstressed vowels can be reduced (turned into neutral vowels or change their quantity and quality).

Examples:

melodious [mɪ'ləʊdɪəs] – melody ['melədi];
sportsman ['spɔ:tsmən] (compare *man* [mæn]);
moderate *adj* ['mɒdəraɪt] – the diphthong [eɪ] is reduced into [ɪ] (compare *moderate v* ['mɒdəreɪt]).

In the English spoken language quantitative-qualitative reduction often occurs in reduced forms of form-words. Pure quantitative reduction can also be found there but not so often (see strong and weak forms of form-words, table 4.1, p. 140).

Reduction may be **partial** or **complete** (reduction to zero). In the case of partial reduction, sounds change their quality or quantity to some degree. In the case of reduction to zero, a sound in an unstressed position falls out completely.

For example, in the English words *pencil* ['pensl], *cotton* ['kɒtn], *open* ['əʊpn], *written* ['rɪtn], etc. the vowels in an unstressed syllable fall out completely.

Examples of complete consonantal reduction are found in the following words, where [d], [p] may fall out.

windflaw ['wɪn(d)flɔ:];
windbag ['wɪn(d)bæg];
prompt [prɒm(p)t];
prompt-box ['prɒm(p)tɒks], etc.

Sometimes the same words may have partial or complete reduction depending on the style of speech. The sounds of some words may be reduced only partially in full style while in colloquial style the same sounds may be reduced completely, e.g.

bacon ['beɪkən, 'beɪkn].

It takes place especially often in reduced forms of English form-words, e.g.

from [frɒm, frəm, frm];
can [kæn, kən, kn].

Zero reduction is not characteristic of the Ukrainian language. According to the sounds (vowels or consonants) which undergo changes, reduction may be of two kinds – vowel reduction and consonant reduction.

Vowel reduction is the most typical case of reduction in English. In Ukrainian there is both vowel and consonant reduction, though consonant reduction is more characteristic of Ukrainian than vowel reduction.

Examples of reduction in Ukrainian:

приходили [ПРИХО́ДИЛИ] – the vowel [И] may be reduced into [Е];
вовк [ВОЎК] – the consonant [В] is changed into the non-syllabic [У];
джерело [ДЖЕРЕЛІ́О] – the affricate [ДЖ] is weakened and changes its quality to some extent.

Reduction, side by side with other phonetic phenomena, is of great importance for the development of the phonetic structure of the language.

Reduction is one of the phonetical means of gradual development of the grammatical structure of the language and its vocabulary.

A pattern of analysis of cases of assimilation in English and Ukrainian are presented in table 4.1 on page 140.

Table 4.1

Models of analysis of cases of reduction in English and Ukrainian

Examples		Result of reduction	Partial or complete reduction	Quantitative or qualitative	Vowel / consonant
11.	party ['pɑ:tɪ]; partake [pɑ:'teɪk]	In an unstressed position the length of the vowel [ɑ:] is reduced.	partial	quantitative	vowel
22.	melody ['melədi]	In an unstressed position the vowel is reduced into [ə].	partial	qualitative	vowel
33.	pencil ['pensl]	In an unstressed position the vowel falls out completely.	complete	–	vowel
44.	can [kən]	In an unstressed position the vowel [æ] is reduced into [ə].	partial	qualitative	vowel
55.	can [kn]	In quick colloquial speech the sound [æ] falls out completely.	complete	–	vowel
66.	Ukrainian джерело [ДЖЕРЕЛО]	In an unstressed position the affricate [ДЖ] is weakened.	partial	qualitative	consonant

4.4. ASSIMILATION

Assimilation is a phonetic process by which one sound, under the influence of a sound near it, acquires some articulation and acoustic likeness to that other sound.

Assimilation is connected with the development of the phonetical structure of the language, its grammatical system and vocabulary.

Some foreign linguists treat assimilation as a pure phonetical process without any connection with the grammatical system of the language.

H. Sweet treats assimilation (he uses the term “sound-junction”) as a physiological phenomenon, as a spontaneous phonetic process which is explained by the great rapidity

with which sounds follow each other in speech (Sweet H. The Sounds of English, 2nd ed.).

D. Jones in his "Outline of English Phonetics" (7th ed.) gives a detailed description of different cases of assimilation in English. Keen observation of the phonetic phenomena of the language makes the description of great value for us.

In treating assimilation, D. Jones does not underline its connection with the grammatical structure of the language. He regards assimilation as "the process of replacing a sound by another sound under the influence of a sound which is near to it in the word or sentence".

D. Jones' division of assimilation into assimilation proper and similitude is of definite interest, but it is hardly necessary to distinguish two types of changes, as similitude may be considered as a particular case of assimilation.

By similitude D. Jones means a process that involves the use of a certain subsidiary member of one of the phonemes which has a greater resemblance to the neighbouring sound than the principal member has. For example: dental [n] in the word *ninth* [naɪnθ], a partially breathed [l] in the words *please* [pli:z], *play* [pleɪ].

Assimilation may be treated from different points of view: its direction, degree, stability, the distance between the assimilating and assimilated sounds, etc.

4.4.1. ASSIMILATION AS THE RESULT OF SPEECH ORGANS ARTICULATION

Assimilation can involve the position of the tongue, the position of the lips, the position of the soft palate and the vocal chords.

For example if we compare the English [u:] in the words *choose* [tʃu:z], *lose* [lu:z], *noon* [nu:n] with the same sound in the words *news* [nju:z], *muse* [mju:z], *accuse* [ə'kju:z], we shall see that when the English [u:] is preceded by [j] the position of the tongue is changed. Under the influence of mediolingual [j] the tongue moves forward and the sound [u:] becomes more advanced.

When followed by a syllable with [Y] the Ukrainian [O] is also somewhat changed – it becomes more close and back, resembling [Y], e.g. *зозуля* [ЗУЗУЛ'А].

In pronouncing Ukrainian vowels, preceded or followed or both preceded and followed by palatalized consonants, the position of the tongue is changed. The tongue occupies a more front and close position than in pronouncing these vowels in an isolated position or between hard consonants. For example the Ukrainian [A] in the words *лялька* [Л'АЛ'КА], *тяжко* [Т'АЖКО] becomes more close and front.

Assimilation may affect the position of the lips.

This case occurs rather seldom in English. Ukrainian vowels may become slightly labialized under the influence of the neighbouring labial consonants. For example the first [A] in the Ukrainian word *мава* [МАВПА] and the first [И] of the word *вивчити* [ВИВЧИТИ] become slightly labialized.

Assimilation may involve the position of the soft palate.

This case is not typical of English. Ukrainian vowels may become slightly nasalized under the influence of the neighbouring nasal sonant. For example vowels become slightly nasalized in the Ukrainian word *мамо* [МАМО].

Assimilation may involve the speech organ which forms the obstruction, the manner in which a sound is produced or the place of the obstruction.

Assimilation in English, as well as in Ukrainian, affects the place of the obstruction most often.

In the combinations of [t, d, n, l, s, z] with [θ, ð] the dental [θ, ð] influence the alveolar [t, d, n, l, s, z] and the place of the obstruction is changed. Those alveolar sounds become dental. For example in the words *filth* [fɪlθ], *tenth* [tenθ] consonants [l], [n] become dental, and in the word combinations *and thus* [ənd ðəs], *in the* [ɪn ðə], *reached the* [ˈri:tʃt ðə] consonants [d], [n], [t] become dental too.

Examples of assimilation involving the place of the obstruction in Ukrainian are: *б'єшся* [Б'ЄС'С'А], *радішся* [Р'АД'ИС'С'А] (the place of the obstruction is changed and [Ш] is changed into [С'] under the influence of the following [С']).

The cases of assimilation in which the organs of speech or the manner in which a sound is produced are rather rare in English.

In Ukrainian assimilation involves the active organ and the manner of the production of noise more often.

For example the Ukrainian [ʒ] in the word *покажчик* [ПОКАЖЧИК] was changed into [ж] under the influence of the following [ч].

Assimilation often involves the work of the vocal chords in English, though not so often as it does in Ukrainian.

An example of assimilation involving the work of the vocal chords can be found in the word *gooseberry* ['gʊzbəri] where [s] was changed into [z] under the influence of the following voiced [b].

Assimilation affecting the work of the vocal chords can also be observed in the sentence *Pete is a boy* ['pi:t ɪz ə bɔɪ]. In colloquial speech [ɪ] of the word *is* falls out and the voiced consonant [z] becomes voiceless under the influence of the preceding [t] – *Pete's a boy* ['pi:ts ə bɔɪ].

In Ukrainian, voiced consonants at the beginning of a word become voiceless as a rule when followed by voiceless consonants.

Examples:

зшити [СШИТИ];

зсипати [ССИПАТИ];

розкидати [РОСКИДАТИ];

з криниці [С КРИНІЦІ].

Voiceless consonants in the middle of the word before voiced ones become voiced, especially in quick colloquial speech. Thus, for example, in the words *молотьба*, *вокзал* voiceless [T], [K] become voiced under the influence of the following voiced [Б], [ʒ] and the words are pronounced [МОЛЮД'БА], [ВОГЗАЛ].

4.4.2. COMPLETE AND PARTIAL ASSIMILATION

As to the degree of adaptation assimilation may be complete or partial.

When the articulation of a sound is completely changed under the influence of the neighbouring sound, so as to coincide with it, assimilation is termed **complete**.

Complete assimilation seldom occurs in English. The word *horseshoe* is usually given as an example, which in colloquial speech is pronounced ['hɔ:ʃu:].

In Ukrainian, cases of complete assimilation occur more often. Thus, in the words *радішся* [Р'АД'ИС'С'А], *смієшся* [СМ'ІЙ'ЄС'С'А] the sound [Ш] is changed into [С'] under the influence of the following [С'].

In the word *зшити* [ШШИТИ] the sound [ʒ] is changed into [ш] under the influence of the following [ш]. The Ukrainian long consonants [T̃], [D̃], [C̃], [ʒ̃], [H̃],

[ʃ], etc. which were developed from the combinations of a soft consonant plus [й] are also the result of complete assimilation.

When the articulation of a sound is only partially changed under the influence of the neighbouring sound assimilation is termed **partial**.

Partial assimilation often occurs both in English and Ukrainian.

Cases of partial assimilation can be found in the English words *filth* [fɪlθ], *tenth* [tenθ], *approached the* [ə'prəʊtʃt̪ ðə] – [l], [n], [d] are partially influenced here by the following dental [θ] or [ð] and change their articulation, they become dental.

Partial assimilation often occurs in Ukrainian when a palatalized consonant follows a non-palatalized one. The Ukrainian [H], [C], for example, become partially palatalized under the influence of the following palatalized [ʲ], in the words *сонця* [CÓHʲʲA], *міся* [MʲICʲʲA].

G.P. Torsuyev (1950) mentioned a third intermediate type of assimilation, in which the articulation of a sound is changed completely but it does not coincide with the assimilating sound, e.g. *five-pence* ['faɪfɪpɛns], *looked* [lʊkt], *newspaper* ['njuːspeɪpə] ([v], [d], [z] are changed into [f], [t], [s] under the influence of the neighbouring [p], [k], [p]).

The same intermediate type of assimilation can be found in the Ukrainian language. In the word combination *з хаму* [C XÁTH] the sound [ʒ] is changed into [C] under the influence of the following voiceless [X].

4.4.3. PROGRESSIVE AND REGRESSIVE ASSIMILATION

As to the direction in which the influence can be spread assimilation may be progressive and regressive.

When the articulation of a sound is changed under the influence of the preceding sound, i.e. the influence spreads from the preceding to the following sound (→) assimilation is termed **progressive**.

For example, in the word *print* [prɪnt] [r] becomes partially devoiced under the influence of the preceding voiceless [p]; in the word *news* [njuːz] [uː] becomes more front under the influence of the preceding [j], in the sentence *Pete's a boy* [piːts ə bɔɪ] [z] is devoiced under the influence of the preceding voiceless [t]. In the words *bags* [bægz], *comes* [kʌmz] [s] is changed into [z] under the influence of the preceding voiced consonants.

In Ukrainian, progressive assimilation is seldom met, e.g. in the word *мавна* [MÁBNA] [A] is slightly labialized under the influence of the preceding labial [M].

When the articulation of a sound is changed under the influence of the following sound, i.e. the influence spreads from the following to the preceding sound (←) assimilation is termed **regressive**.

For example, in the words *newspaper* ['njuːspeɪpə] the sound [z] becomes voiceless under the influence of the following voiceless consonant.

Besides these two cases of assimilation a third type may be mentioned which is called **mutual** or **reciprocal** assimilation where the assimilated and the assimilating sounds both influence upon each other (↔).

In English this case of assimilation occurs very seldom. In Ukrainian it occurs more often, e.g. in the word *чина* [CʰTʰIHÁ] [C] and [T] are changed under the influence of each other. [C] becomes soft under the influence of soft [Tʰ], [Tʰ] becomes sibilant under the influence of the sibilant [C].

4.4.4. CONTACT AND DISTANT ASSIMILATION

According to the distance between sounds, assimilation may be contact or distant (Реформатский А.А., 1955).

When a sound is influenced by an adjoining sound assimilation is termed **contact**.

For example, in the English word *sixth* [sɪksθ] [s] becomes dental under the influence of the adjoining [θ].

In Ukrainian, cases of contact assimilation can be found in the words: *молотьба* [МОЛОД'БА], *сміється* [СМ'ІЇЄС'А].

When a sound is influenced not by an adjoining sound but by a distant one assimilation is termed **distant**.

Cases of distant assimilation in English are very rare. This type of assimilation is typical neither of English nor of Ukrainian.

4.4.5. HISTORICAL AND LIVING ASSIMILATION

Assimilation may be of the historical and living.

When the articulation of a sound was changed under the influence of the neighbouring sounds in the course of the development of the language assimilation is termed **historical**. For example: *impossible* [ɪm'pɒsɪbl] where once negative prefix **in-** became **im-** under the influence of [p]; *illegible* [ɪ'lɛdʒɪbl] where [n] became [l] under the influence of [l]; *irregular* [ɪr'regjulə] where [n] was changed into [r] under the influence of the following [r].

These changes are reflected in the present spelling.

Other cases of more recent historical assimilation are *picture* ['pɪktʃə], *nation* ['neɪʃn], which were pronounced as [pɪk'tʃur], [na'sjɒn], the Ukrainian word *соняшник* [СОН'АШНИК], the spelling and pronunciation of which used to be *сонячник* [СОН'АЧНИК].

In Ukrainian, cases of historical assimilation are usually reflected in spelling.

When the articulation of a sound is changed under the influence of the neighbouring sounds in the living spoken language at the given period of its development, the assimilation is termed **living**.

All examples of assimilation described in the book except those illustrating historical assimilation are instances of living assimilation.

The tabular analysis of the cases of living assimilation in English given in the book shows clearly all types of assimilation (see table 4.2, pp. 147, 148).

The scheme is based on the principles of the classification of assimilation given by A.A. Reformatzky (1951, 1955), L.A. Bulahovsky (1951).

The phenomenon opposite to assimilation in which one of two similar phonemes is changed as a result of their interaction is called **dissimilation**. Dissimilation may be vowel or consonant, distant or contact (more often distant than contact), regressive or progressive and always complete.

Table 4.2.

Models of analysis of cases of active assimilation in English

Examples		Result of assimilation	Group of speech sounds
1.	filth [fɪlθ]	Forelingual alveolar [l] becomes dental under the influence of dental [θ]	consonant
2.	fivepence [ˈfaɪfɪpəns]	Voiced [v] becomes voiceless under the influence of voiceless [p]	»
3.	Pete's a boy [ˈpi:tɪs ə bɔɪ]	Voiced [z] is changed into voiceless [s] under the influence of voiceless [t]	»
4.	horseshoe [ˈhɔːʃuː]	[s] is changed into [ʃ] under the influence of [ʃ]	»
5.	does she [dʌʃ ʃɪ]	[z] is changed into [ʃ] under the influence of [ʃ]	»
6.	does she [dʌʒ ʃɪ]	[z] is changed into [ʒ] under the influence of [ʃ]	»
7.	print [prɪnt]	[r] is slightly devoiced under the influence of [p]	»
8.	news [njuːz]	[uː] becomes more advanced under the influence of [j]	vowel
9.	bags [bægz]	Voiceless [s] becomes voiced under the influence of the preceding voiced [g]	consonant
10.	looked [lʊkt]	Voiced [d] is devoiced under the influence of the preceding [k]	»

Table 4.2.
(continued)

Assimilation may affect		Degree of assimilation	Direction of assimilation	Distance between the assimilated and assimilating sound
1.	place of obstruction	partial	regressive	contact
2.	the vocal chords	intermediate	»	»
3.	»	»	progressive	»
4.	place of obstruction, manner of the production of noise	complete	regressive	»
5.	the vocal chords, place of obstruction, manner of the production of noise	»	»	»
6.	place of obstruction, manner of the production of noise	partial	»	»
7.	the vocal chords	intermediate	progressive	»
8.	the tongue	partial	»	»
9.	the vocal chords	»	»	»
10.	»	»	»	»

Dissimilation is of great importance for the development of the language.

The Ukrainian words *плесту* [ПЛЕСТІ́], *месту* [МЕСТІ́] which were pronounced [ПЛЕТТІ́], [МЕТТІ́] may serve as examples of dissimilation. One of the two similar stop consonants [T] was changed into the fricative [C].

In English the phenomenon of dissimilation is not yet investigated.

Students whose native language is Ukrainian often meet with difficulties in pronouncing English sounds in connected speech as the rules of assimilation in English differ from those in Ukrainian.

The following types of assimilation often occur in English: consonantal, partial, regressive, contact and living. The same types of assimilation are characteristic of Ukrainian.

Examples of full and intermediate assimilation are met more often in Ukrainian than in English. Progressive assimilation is not characteristic of either of the two languages, though in Ukrainian it occurs more often than in English.

Vowel and historical assimilation are met both in English and Ukrainian very seldom. Intermediate and full assimilation occur rarely in English.

Most often assimilation in English and Ukrainian involves the work of the vocal chords, but owing to the specific phonetic and grammatical structures of the two languages assimilation acts in different ways.

Thus, at the beginning of the word voiceless consonants in Ukrainian become voiced if they are before voiced consonants and vice versa voiced consonants are devoiced if they are before voiceless consonants. In the middle of the word Ukrainian voiced consonants are not devoiced when the adjoining sound is a voiceless consonant, e.g.

казка [KÁЗKA],
стежка [СТÉЖКА].

In English this phenomenon is not observed. English voiced consonants remain voiced when followed by voiceless consonants, e.g.

absent ['æbsənt],
good time ['gʊd 'taɪm].

4.5. INTERCHANGE OF SOUNDS

The **interchange of sounds** is a term denoting change in the phonematic structure of the morpheme in the process of word changing and word-building. The interchange of sounds takes place according to definite strict standards for each phoneme in each given language. Thus, for example, the English phoneme [d] may alternate with the phoneme [t] (*send* – *sent*, *build* – *built*, etc.). In Ukrainian the phoneme [K] may alternate only with the phonemes [Ч] and [Ц] (*некла* – *печеш*; *рука* – *руці*).

The interchange of sounds includes vowel gradation and the interchange of consonants.

Examples of vowel gradation:

drink [drɪŋk] – drank [dræŋk] – drunk [drʌŋk];
strong [strɒŋ] – strength [streŋθ];
tooth [tu:θ] – teeth [ti:θ], etc.

In Ukrainian the vowel gradation [I] – [O] is observed in the words:

кінь [K'IH'] – коня [KOH'Á];
дім [D'IM] – дому [DÓMU];
сіль [C'ILT'] – солі [CÓLT].

Examples of interchange of consonants:

house, *n* [haus] – house, *v* [havz];
leaf [li:f] – leaves [li:vz]; etc.

In Ukrainian, cases of interchange of consonants [K] – [Ч] can be found in the words, e.g.

чоловік [ЧОЛОВ'ÍK] – чоловіче [ЧОЛОВ'ÍЧЕ];
око [ÓKO] – очі [ÓЧÍ].

Interchange of sounds may be historical or living.

By the **historical** interchange of sounds we mean a case when the change is not determined by the position of the sound in the word, but appeared as a result of the laws which acted in the language at some definite periods of its development. It is closely connected with historical assimilation. Historical interchange of sounds is also explained by the phonetical structure of the language but has grammatical significance.

Cases of historical interchange of sounds in English can be found among the three forms of irregular verbs, the degrees of comparison of adjectives, different parts of speech originated from one root, the archaic forms of the plural of nouns and other grammatical phenomena. For example:

The three forms of the irregular verbs:

do [du:] – did [dɪd] – done [dʌn] (vowel gradation [u:] – [ɪ] – [ʌ] takes place);
fly [flaɪ] – flew [flu:] – flown [fləʊn] (vowel gradation [aɪ] – [u:] – [əʊ] takes place).

The degrees of comparison of adjectives:

little [lɪtl] – less [les] – least [li:st] ([ɪ] interchanges with [e], [i:]);
much [mʌtʃ] – more [mɔ:] – most [məʊst] ([ʌ] interchanges with [ɔ:], [əʊ]).

The plural of nouns:

man [mæn] – men [men] (vowel gradation [æ] – [e] takes place);
goose [gu:s] – geese [gi:s] (vowel gradation [u:] – [i:] takes place).

The interchange of sounds is also observed when different parts of speech are originated from one root:

convert [kən'vɜ:t] – conversion [kən'vɜ:ʃn];
intend [ɪn'tend] – intention [ɪn'tenʃn] – intent [ɪn'tent].

By the **living** interchange of sounds we mean a case when the change is determined by the position of the sound in the word. It is closely connected with living assimilation. The living interchange of sounds is mainly explained by the phonetical structure of the given language.

Consequently, in the words *six* [sɪks] – *sixth* [sɪksθ] forelingual alveolar [s] interchanges with forelingual dental [ʃ]. In the words *accent*, n [ˈæksənt] – *accent*, v [ək'sent] we can observe the interchange between [æ] – [ə] and [e] – [ə]. In the word *central* ['sentrəl, 'sentrl] the vowel [ə] may interchange with a zero sound in quick colloquial speech.

In Ukrainian, the sound [B] may interchange with the sound [Y], e.g. *вчиму* – *учиму*. In the Ukrainian language grammatical interchange of sounds takes place within different cases of nouns, different parts of speech originated from a common root, in different forms of the verbs, e.g.

радість [РА́ДІСТЬ] – радості [РА́ДОСТІ];
жінка [ЖІ́НКА] – жінок [ЖІ́НЧИН];
робота [РОБО́ТА] – робітник [РОБІ́ТНИК];
гріб [ГРІ́Б] – гребля [ГРЕ́БЛЯ];
жени́ти [ЖЕНИ́ТИ] – жонатий [ЖОНА́ТИЙ];
леті́ти [ЛЕТІ́ТИ] – літати [ЛІТА́ТИ].

The interchange of sounds may be complete and zero. The interchange of sounds is called **complete** when different phonemes are interchanged, e.g.

The English:

man [mæn] – men [men];

send [send] – sent [sent].

The Ukrainian:

віз [B'IZ] – воза [BÓ3A];
сніг [CH'IG] – сніжок [CH'IKÓK].

The complete interchange of sounds is most typical of both English and Ukrainian.

The interchange of sounds is called **zero** when a sound alternates with a zero sound, e.g.

The English:

towards [tə'wɔ:dz] – [tɔ:dz];
perhaps [pə'hæps] – [præps].

The Ukrainian:

терти [TÉPTИ] – тры [TPY];
завмерти [3ABMÉPTИ] – завмру [3ABMPÝ].

The complete interchange of sounds is most typical of both English and Ukrainian.

The zero interchange of sounds is not typical of the English and Ukrainian languages.

The tabular analysis of interchange of sounds in English is presented in table 4.3 on page 153.

Table 4.3.

Models of analysis of cases of sound interchange in English

Examples		Result of sound interchange	Grammatical function of the words	Vowel/ consonant	Full, partial or zero	Grammatical or phonetical
1.	little - less - least [lɪtl - les - li:st]	[ɪ] - [e] - [i:]	degrees of comparison of adjectives	vowel	complete	grammatical
2.	strong - strength [strɔŋ - strenθ]	[ɔ] - [e]	different parts of speech	»	»	»
3.	intend - intent - intention [ɪn'tend - m'tent - ɪn'tenʃən]	[d] - [t] - [ʃ]	»	consonant	»	»
4.	goose - geese [gu:s - gi:s]	[u:] - [i:]	plural of nouns	vowel	»	»

Table 4.3.
(continued)

5.	do - did - done [du: - dɪd - dʌn]	[u:] - [ɪ] - [ʌ]	different forms of irregular verbs	»	»	»
6.	can [kæn - kən]	[æ] - [ə]	strong and weak forms	»	»	»
	can [kən - kn]	[ə] - zero	»	»	zero	»

CHAPTER 5

SYLLABICS

5.1. INTRODUCTION

The syllable is a primary minor basic unit of speech. Being joined with each other, speech sounds serve as structural material, as “bricks” for syllables. A syllable is a sequence of speech sounds joined together to form a solid undividable stable primary speech unit of segmental level.

In every human language oral speech can be divided into syllables. The first speech unit pronounced by a baby is a syllable. In any language children and adults can divide speech into syllables and perceive them.

The central part of the syllable is a pitch or syllabic sound.

Pitch sounds are syllable-forming (syllabic) sounds, all other sounds are non-syllabic. The capacity of a sound to form a syllable depends mainly upon the degree of its sonority.

A.L. Trakhterov states that a primary condition, necessary for the formation of a syllable, is the presence of a tonic element, i.e. a vowel or a stable sonant.

The syllable-forming capacity of the tonic element depends upon the joint action of three heterogeneous, but mutually connected factors. They are: width of the air-passage, the intensity of the vibration of the vocal cords and the duration of the optimum phase (Трехтеров А.Л., 1956).

The tonic element of the syllable, its nucleus is usually a vowel in most languages. But in some languages under some conditions the nucleus may be a sonant too. A syllable may consist of a single vowel or of a vowel and consonants. Consonants preceding or following the syllabic vowel are called marginal. The number of marginal consonants may be different, but in most languages it is from one to seven.

The vowel is the main syllable-forming element of the syllable. The presence of consonants is not essential, a syllable may exist without consonants, and the presence of syllabic vowel or other vocalic element is the only condition necessary for the existence of a syllable. Consonants may precede or follow the syllabic vowel. The cohesion between the vowel and the syllables is rather close.

A syllable taken separately has no meaning of its own, but when syllables are in words, which have elementary meaning, denoting things, actions, qualities, etc., syllables become potentially meaningful (Топчиев Т.П., 1950).

A syllable perception is an active process of decoding of a speech wave.

In the process of perception the syllable is the field of tension of sounds segments, which is treated independently of their semantic significance. Speech perception is an active process of a speech wave detecting which is determined by articulatory base and linguistic experience of the listener (Поронова Р.К., 1997).

The results of psycho- and neurolinguistic as well as neuropsychological investigations made it possible to differentiate the two types of syllables mentioned above – open and closed.

From the phonological point of view the open syllable may fall under the category of the main type of syllables (Поранова P.K., 1997).

As stated above the syllable is a complex psycholinguistic, psychophysiological and acoustic process.

Acoustically a syllable is an impulse of energy due to the increase of the organs of speech muscle tension and the tension of the muscles between the ribs with the corresponding articulation of sounds as a result of psycholinguistic and neurolinguistic processes.

The main acoustic parameter of the syllable is the so-called total energy (W_{tot}) – a joint action of two components – intensity and duration. The share of each component of total energy depends upon the phonetic structure of the language and may differ in different languages, though the main acoustic parameter – the total energy remains unchanged in all the syllabic languages (Бровченко Т.А., 1971).

A syllable may consist of only one vowel, but such cases are rare and usually the syllabic vowel in the syllable is accompanied by consonants – preceding or following central vowel of the syllable. Such consonants are called marginal.

The structure of syllables, especially of the marginal consonants, is in the centre of interests of many scientists (Torsuch V.P., Zlatoustova L.V., Bondarko I.V., Gordina M.U. and many others).

In most languages syllable-forming sounds are vowels and less often sonants.

In English not only vowels but some sonants may become syllabic under certain conditions. The English sonants [ŋ], [l] become syllabic when they are at the end of word and are not preceded by a vowel, e.g.

	<i>Syllabic</i>	<i>Non-syllabic</i>
garden	[ˈgɑːdn]	[ˈgɑːdən]
arrival	[əˈraɪvl]	[əˈraɪvəl]
woollen	[ˈwuːln]	[ˈwuːləŋ]

The sonant [m] becomes syllabic in very rare cases, e.g.

	<i>Syllabic</i>	<i>Non-syllabic</i>
madam	[ˈmædm]	[ˈmædəm]
film	[fɪlm]	–

The final sonant [ŋ] becomes syllabic in exceptional cases as a result of progressive assimilation when [ŋ] is preceded by the backlingual consonants [k], [g], e.g.

English: bacon [beɪkŋ].

The sonants [w], [r], [j] are never syllabic in English.

There are two main types of syllables both in English and Ukrainian. Open syllables are those, which end in a vowel; close syllables are those, which end in a consonant, e.g.

<i>Open syllables</i>	
<i>English</i>	<i>Ukrainian</i>
or [ɔ:], more [mɔ:]	а, у, ця, ва га, іти
artificially [ɑː tɪ ˈfi ʃə lɪ]	
<i>Close syllables</i>	
<i>English</i>	<i>Ukrainian</i>
art [ɑːt]	ок ремо, об щити, факт
mistress [ˈmɪs trɪs]	
objective [ɒb ˈdʒɛk tɪv]	

Some linguists for scientific purposes suggested to single out more than two types of syllables, taking into consideration not only the final sound, but the number of preceding or following the syllabic vowel consonants.

Thus, it was suggested to distinguish four types of syllables instead of two – open and close. They are:

1. Absolutely open (v), i.e. consisting of one syllable-forming vowel. For example: English *or* [ɔ:], Ukrainian *a* [A].

2. Absolutely closed (cvc), i.e. consisting of a vowel, surrounded by consonants, e.g. English *class* [kla:s], *shame* [ʃeɪm]

3. Partially open, shielded at the beginning (cv), i.e. consisting of a vowel with one or several preceding consonants, e.g. English *sky* [skaɪ], *gay* [geɪ].

4. Partially closed, shielded at the end (vc), i.e. consisting of a vowel with one or several following consonants, e.g. English *ask* [ɑ:sk] (Поранова P.K., 1997).

Syllable is a minimal integrated and integrating unit of speech. On the one hand the syllable is integrated i.e. composed of speech sounds. Speech sounds form and organize a syllable as a linguistic and speech unit. They are the base for the syllable. On the other hand the syllable itself is the base for one segmental unit (phonetic word) and all suprasegmental units, sense-groups, phrases, supraphrasal unities and suprasegmental unity of the highest level – speech.

Being composed of speech sounds, syllables preserve articulatory characteristics of speech sounds and their inherent acoustic characteristics – the phonological length of vowels in English, the inherent intensity, fundamental frequency of informant structure of the vowels, etc.

But it should be taken into consideration that the features of the speech unit are not taken absolutely into the integrated syllable and may undergo some changes under different linguistic and extralinguistic factors.

When the speech unit of a higher level is formed on the basis of a lower speech unit, a syllable retains the characteristics of a lower speech unit to some extent and acquires some characteristics of its own.

The syllable may be called the baby of the language. Organized by speech sounds the syllable rises to its first higher level – the segmental level of phonetic word.

The child continues to grow and becomes stronger and rises to a higher level – he begins to talk.

The syllable uses the following suprasegmental level of sense-group (syntagma), which is the first semantically and prosodically organized unit of speech.

The child grows and grows and becomes a teenager. He becomes clever, his abilities and knowledge grow too and he can do some things himself.

The syllable participates in organizing the next higher suprasegmental speech unit – a phrase.

The child becomes an adult. He becomes strong and solid. He can do his work professionally, he can create more complicated things.

The syllable takes part in organizing supraphrasal unities – semantic groups of phrases united by sense.

At last the child reaches the top of his development and attains perfection. He is able to create the most complicated equipment and instruments and operate them.

The syllable achieves its main goal. It is involved in organizing the text – the highest unit of speech (fig. 5.1).

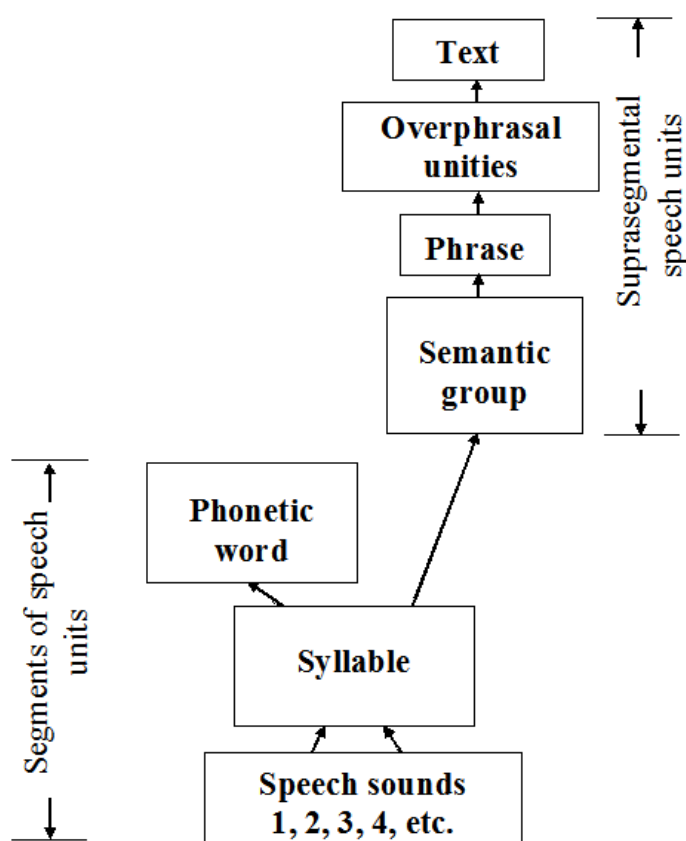


Fig. 5.1. The scheme of the integrating function of the syllable

5.2. SYLLABIC THEORIES

The first attempt to examine syllables was made before our era by ancient Greeks, who got interested in syllabic structure of utterances in connection with the problems of rhetoric, public speeches and the art of versification.

The first reform of Russian versification – result of scientific investigations in the field of syllabic theory, was published in 1735 (Trediakovsky V.K., Lomonosov M.V.).

For a long time rare investigations of syllable were related to rhetoric and versification. Linguistic investigations of the problems of nature of the syllable, the questions of syllable structure and division of words into syllables were not studied and even neglected.

At the beginning of the 20th century the outstanding representatives of

physiological experimental phonetics G. Panconcelli and E.W. Scripture wrote that the syllable was a fiction created by linguists and psychologists, that all the attempts to understand and represent it phonetically were and would remain fruitless (Panconcelli-Caltzia G., 1924)

The same point of view was expressed at that time by E.K. Kyrilovich who stated that the boundaries between the words really exist, but the boundaries between the syllables are a pure scientific obstruction.

Criticizing the points of view on a syllable as a fiction L.R. Zinder has written that the syllable, as a unity with a vowel as its nucleus, is a reality for the speakers (Zinder L.R., 1979).

At the end of the 19th and at the beginning of the 20th century the first laboratories of experimental phonetics appeared in France (Rousselot P.) and in the following Russian cities: Kasan (Bandoine de Kourtenau), St. Petersburg (Shcherba L.V.), Moscow (Artemov V.A.), Odessa (Tomson A.I.).

Syllables began to be studied with the help of electroacoustic devices and apparatuses – electric kymographs, oscillographs, spectrographs, etc. In the 1940s after the World War II new laboratories of experimental phonetics were opened in different cities of the former USSR – Minsk, Kiev, Erevan, Tbilisi, Novosibirsk and others. Besides physiologic investigations of articulation, tension and bioactivity of the muscles participating in producing speech; acoustic peculiarities of speech units were examined, the problems of syllables began to be investigated by scientists in the former USSR and abroad. Various theories of syllable production and the division of words into syllables appeared.

One of the first theories brought up for discussion was the so-called **expiratory** syllabic theory (Sievers E.). According to expiratory theory each syllable is accompanied by an independent uninterrupted act of exhalation push. The number of syllables and the number of exhalations are equal. At the same time E. Sievers didn't reject the effect of the variations in degree of sonority.

Expiratory theory was often criticized by different scientists. It was mentioned the number of syllables and the number of expiratory pushes may coincide, but not obligatory. Experimental data proved that there were many cases when two or more syllables were pronounced within one act of exhalation.

Rather widespread, especially abroad was **sonority** theory of syllable production and syllable division. According to this theory the main characteristic feature of the syllable is sonority (Espersen A.). The most sonorous sound in the syllable forms the peak of sonority, while the other sounds in the syllable have minimum of sonority.

The theory of sonority was rather popular as it made it possible to distinguish syllables in a word. But it is to be taken into consideration that the degree of sonority of vowels varies in different positions in the word and this theory does not help to define the boundary between the syllables in a word.

The theory of *muscular tension* was universally acknowledged and supported by many scientists (Fushe P., Roudet L., Shcherba L.V., Grammont M. and others).

The core of the theory of muscular tension was the affirmation of the leading role of pronouncing effort in the formation of a syllable. This theory was completed and logically set forth by L.V. Shcherba (1948).

According to L.V. Shcherba sounds in connected speech are pronounced with

alternative intensification and slackening of muscular tension. Each peak of intensification with the following slackening of tension forms a syllable. Sounds that are pronounced with intensification of muscular tension are termed pitch sounds.

According to L.V. Shcherba an articulatory syllable is an arc of tension. The pitch sound is the centre of the syllable and of the arc of tension. The tension in this arc is gradually increasing from the beginning to the centre of the syllable and then is gradually decreasing to its end.

It was possible to assume that sounds might have different functions in fusing a syllables into a solid, complete speech unit and in dividing words into syllables.

The base of the solution of the syllable division problem was the assumption that in defining the boundaries between the syllables in a word it was necessary to pay attention to the structure of initial and final sounds of the syllables.

L.V. Shcherba's concept of the three forms of the syllables helped to solve the problem of syllable division.

According to L.V. Shcherba's concept there exist three forms of the consonants:

- a. the *strong-end* consonants;
- b. the *strong-beginning* consonants;
- c. the *strong-end/strong-beginning* consonants.

At the beginning of initial consonant of a syllable the tension is weak and grows gradually up to its peak at the boundary with the syllabic vowel. Such consonants are called *strong-end* consonants. In final consonants of a syllable the beginning of a consonant at the boundary with the syllabic vowel is strong and the tension gradually decreases up to the very end of the syllable. Such consonants are called *strong-beginning* consonants (fig. 5.2).

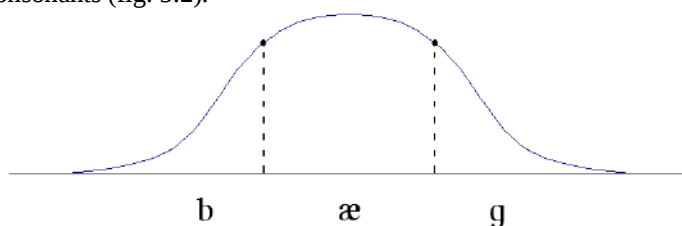


Fig. 5.2. The scheme of a syllable of the English word “bag”

At the boundary of two similar sounds a *strong-end/strong-beginning* or a *two-peak* consonant appears. The end and the beginning of such consonants are strong, a slackening of tension is observed in the middle of the syllable (fig. 5.3).

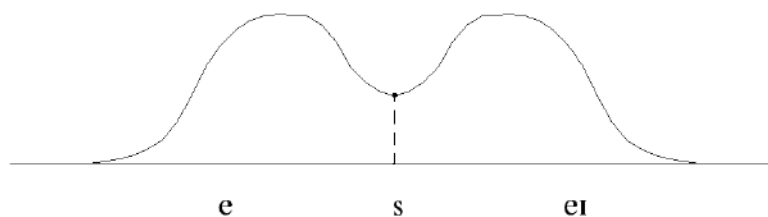


Fig. 5.3. The scheme of a syllable of the English word “essay”

One of the latest theories of syllable formation is the **energetic** theory. The concept of a syllable as an impulse of energy was taken as a foundation of this theory. N.I. Finkin was one of the first who supported the theory of syllabic energy and defined a syllable as a single portion of energy separated from another portion of energy (Finkin N.I., 1953). The syllable was defined by U.S. Stepanov as a minimal portion of energy.

The energy increases sharply at the beginning of the syllable up to its peaks and then gradually falls to the end of the syllable. Syllables are separated from other syllable by the minimal amount of energy of the end of the preceding syllable and at the very weak beginning of the following syllable.

The energetic syllabic theory is rather widespread and supported by numerous linguists (Аванесов Р.И., Торсуев Г.П., Бондаренко Л.В., Прокопова Л.И., Скалозуб Л.Г., Багмут А.Й., Бровченко Т.А., Таранец В.Г.) and many others.

The energetic theory does not deny the theory of muscular tension. There exists a direct connection between the muscle tension of the speech organs in the process of speech and the impulses of the acoustic energy.

Scientists assert that any nerve and muscular process causes energetic process. Any impulse of energy is characterised by a rising – falling structure with the peak of energy between the rising and the falling parts (Окс М., 1969; Бабий А.П., 1970; Прокопова Л.И., 1973; Борисюк И.Б., 1973; Скалозуб Л.Г., 1979, и др.).

The theory of muscular tension was universally acknowledged. The theory of muscular tension proclaimed the leading role of pronouncing effort, the alternative intensification and slackening of muscular tension. L.V. Shcherba's theory of muscular tension and the teaching of the three forms of the consonants – strong-end consonants, strong-beginning consonants and strong-end/strong-beginning consonants were very popular and made it possible to divide the words into syllables in speech.

The **energetic** syllabic theory, defining a syllable as an impulse of energy, was supported by a number of scientists. The theory of syllabic energy solved the problem of the nature of the syllable and was a reliable basis of syllable division.

But still the nature of the syllabic impulse was not quite clear and required further investigations.

In the second half of the 20th century phonetic experimental investigations applying electronic apparatuses and special computer programmes made it possible to affirm that syllables are created by a complex impulse of acoustic energy – a coordinated action of two acoustic components of intensity and duration, i.e. intensity over time (Бровченко Т.А., 1971, 1976).

$W_{tot} = A \cdot t$ (conventional units) where:

W_{tot} – total acoustic energy (conventional units);

A – intensity (conventional units);

t – duration (m. sec).

Any of the two components of the total acoustic energy can change the volume of the energy.

An increase or a decrease in the volume of the total acoustic energy of the syllable may be achieved by means of:

- a. the changes in the intensity of a syllable;
- b. the changes in the duration of the syllable;
- c. the changes in the two components of the total acoustic energy.

Each peak of intensification of the total acoustic energy, preceded by the increase of energy and followed by its decrease, is a syllable.

To make the process of the formation of syllables more clear let us compare two syllables of equal amount of acoustic energy to two equal in weight bricks.

The intensity of the first syllable is two times as big as that of the second syllable but the duration of the first syllable is smaller than that of the second syllable, it is two times as big as that of the first syllable.

In spite of the above mentioned difference as a result of cooperation of intensity and duration the first and the second syllables become equal in the volume of the total acoustic energy (fig. 5.4).

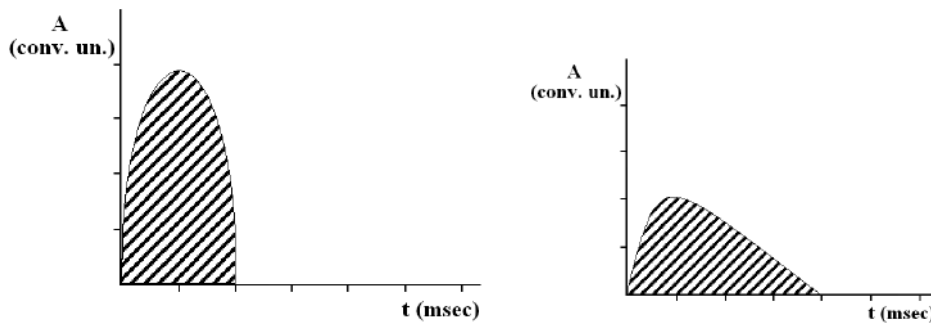


Fig. 5.4. The impulses of the total acoustic energy of the two syllables of equal total energy

The height of the first brick, which is standing upright, is two times as big as that of the second brick, which is lying straight. But the length of the second syllable is two times as big as the duration of the first syllable and consequently these two bricks are equal in weight (fig. 5.5).

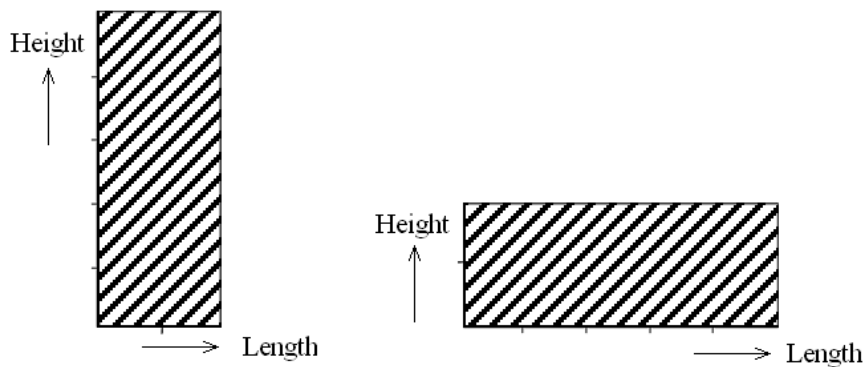


Fig. 5.5. Two bricks of equal weight in different positions (upright and lying straight)

Syllables are purely energetic speech units deprived of frequency characteristics except the inherited individual characteristics of syllabic vowels.

The impulses sent from the cortex cause alternative tension and relaxation of the speech organs: muscles, which in their turn cause the corresponding alterations in the acoustic energy, which is perceived by a human being as speech.

Taking into consideration close connection between the tension of the muscles and the acoustic energy which appear due to the tension of the articulation of the muscles during the process of speaking, it is possible to state that there is no principle difference between the mechanism of syllable division according to the theory of muscular tension and to the acoustic energetic theory. The boundary of syllable division is at the point of the weakest muscular tension and at the smallest degree of acoustic energy.

Thus, the point of syllable division between the first and the second syllables of a four syllable word of the structure CV|CV is between the glide of the first syllabic vowel and the beginning of the following consonant, e.g.

English: *better* [be | tə];

Ukrainian: *caTo* [CA | JO].

In a two-syllable word there may be two consonants between the vowels (CVC|CV). Syllable division is at the point between the weak end of the consonant, preceding the syllabic vowel of the first syllable, and the following weak beginning of the consonant of the second syllable.

The syllable division may occur between two vowels: CV|VC. In this case it is between a weak glide out of the proceeding vowel of the first syllable and a weak glide of the second vowel.

The main principle of syllable division is universal and does not differ in different languages. But the rules of syllable division depend upon the phonetic structure of the language and therefore they may vary in different languages, in English and Ukrainian as well.

A general rising-falling form of the acoustic energetic impulse with a short rising part and considerably longer falling part becomes somewhat modified in different speech units due to the positions of the word stress in a phonetic word, due to the place of emphatic or emotional sentence stress in a sense-group or a phrase, etc.

At present the problems of syllabic theory continue to be elaborated.

Experimental investigations with the help of special computer programmes made it possible to examine the nature of syllables more thoroughly, to reveal the essence of cooperation of duration and intensity – components of the main acoustic feature of the syllable – the total acoustic energy.

Experimental data received on a vast statistically reliable material of oral speech on a number of Germanic languages proved that the syllable is realised in different spheres: phonological, physiological (articulating, auditory) and acoustic.

Articulatory and acoustic characteristics of a syllable ensure its perception in oral speech.

Syllable in perception is a minimal undividable perceptual unit over time. The results of the perceptual analysis, taking into consideration the time of reaction, connected with the perception of a syllable and its parts, made it possible to assert the units of primary perception on sensory level are not phonemes but their combinations – syllables.

Elaboration of syllabic models with the support of visual and auditory aspect made it possible to control and correct the pronunciation of the learners on the level of syllables.

Elaboration of dynamic models of syllabic structures was necessary for the training of syllables and the succession of syllables with the help of technical means of education.

Linguists have long observed that many phonematic and phonetic phenomena are sensitive to the inherent weight – some syllables are treated as heavier in weight than others (Jacobson R., 1931; Allen F., 1973 and others).

Thus, in many languages closed syllables (CVC) and the syllables containing long vowels (CV:) as well as syllables with many marginal consonants in its structure (CCVCC) are perceived as heavier than open syllables with short vowels, than syllables having one or two marginal consonants.

M. Gordon argued against the standard assertion that phonetic weight criteria varied from language to language. Survey of weight-sensitive phenomena showed the very opposite. Weight criteria are often universal for different languages and non-universal for different processes in a given language. For example, there exists a difference between weight-sensitive phenomena of English stress system and tone system. Several examples given in recent literature, showed that peculiarities of syllable and tone weight are the same in many languages.

A rather widespread idea that the phonetic weight is specific in different languages and is not linked to a definite phonetic process proved to be wrong. As a result of extensive typological survey of syllabics of approximately four hundred languages made M. Gordon to suggest that weight is not changed from language to language, as it was predicted in most contemporary theories. Weight is more closely linked to the particular phonetic process in different languages (Matthew Kelly Gordon, 1999).

Phonology and phonetics play a role in cross-linguistic variations in weight criteria. The nature of weight is connected with the syllable auditory loudness, which in its turn is an acoustic stimulus of intensity over time, i.e. total energy, which is the main acoustic characteristic feature of a syllable.

The survey of some theories of syllable production and division given in the book is not exhaustive. Though many theories exist not all the problems of syllabic theory are solved.

Having examined various theories of syllable formation and production R.K. Potapova came to the conclusion that all the diversity of conceptions might be divided into two main types. The explorers of the first group define the syllable in the terms “part” of a single whole” or “element structure”. They analyze syllables from the sounds they consist of to the syllable as a whole, as a structured unit of speech, i.e. from bottom to top. The representatives of the second group analyze syllables from the syllable as a whole, as a structure and proceed to elements, the sounds the syllable consists of, i.e. from top to bottom.

One of the problems in studying marginal surrounding of the syllabic centre is creating the universal scale of consonants.

Working at the theory of universal syllable structure Joan Hooper tried to find the solution in the existence of two types of marginal consonants; initial syllables, which are in the process of increasing intensity, and final consonants which are in the process of decreasing intensity. Therefore initial consonant is a strong segment and final consonant is a weak segment (Hooper J., 1972). N.S. Archangelskaya, who examined the structure of marginal consonants, also wrote that a number of facts testified that the initial position of consonants in a syllable is a stronger one while a final position is a weaker syllable position.

J. Hooper worked at a universal scale of consonants according to their force, beginning from glides and ending in plosive consonants, tried to construct the universal model of the syllable.

Even one step in creating the universal model of the syllable is very important and the value of J. Hooper's work should not be underestimated.

At present dynamic models of syllables have been worked out for a number of Germanic languages and so far that gives the possibility to control and correct pronunciation of the learners.

The syllable was the object of numerous dialect investigations. It was established that dialects are characterized by specific types of connection between the vowel of the syllable and the following consonant.

5.3. CONTRASTIVE ANALYSES OF SYLLABLES IN ENGLISH AND UKRAINIAN

Nowadays greater and greater attention is paid to the syllable in the practical study of foreign languages.

In studying pronunciation of a foreign language it is to be taken into consideration that the correct pronunciation of syllables is as important as pronunciation of sounds. A syllable consists of sounds, but the syllable is the first undividable unit of speech.

Contrastive study of the syllables of the English and Ukrainian languages will help to understand the differences existing between syllables in English and Ukrainian to know special features of the formation of the syllables, the peculiarities of syllable division and will also help to avoid mistakes in a foreign language etc.

Having affirmed positively the universal nature of articulatory mechanism of syllable formation and division, G.P. Torsuyev drew attention to the existence of language peculiarities in the sphere of phonematic structure of the syllables, in the set of the types and subtypes of syllables, in the rules of syllable division in different languages.

As stated above the main universal principle of syllable division is that a word is divided into syllables at the point of the smallest degree of tension of the articulating organs and consequently, the smallest values of acoustic energy, is identical in all the syllabic languages and in English and Ukrainian as well.

It is known that L.V. Shcherba's concept of three forms of consonants helped to realize practically the problem of syllable division.

Besides the main rules of syllable division being general for English and Ukrainian there exist some peculiarities in the division of words into syllables in each of the two languages.

Thus, the strong-end consonants (the end of the consonant is stronger than its beginning) form the beginning of a syllable both in English and Ukrainian, e.g.

The English sounds [p], [k] in the words *party* ['pɑ:tɪ], *keen* [ki:n].

The Ukrainian sounds [П'], [Т'] in the words *нізно* [П'ІЗНО],
мільки [Т'ІЛ'КИ].

The strong-beginning consonants (the beginning of the consonant is stronger than its end) form the end of the syllable both in English and Ukrainian.

The English final [p], [k] in the words *cap* [kæp], *peck* [pek], the consonant [p] and final [n] in the word *napkin* ['næpkɪn].

The Ukrainian [Ш], [П] in the word *noumap* [ПОШТАП].

The strong-beginning/strong-end form (the so-called “two-peak” consonants) are met at the border between two consonants, between two syllables.

Examples are found in such English words as:

dissatisfy [dɪs'sætɪsfai];

disserve [dɪs'sɜ:v];

dissever [dɪs'sevə];

unnatural [ʌn'nætʃrəl], etc.

“Two-peak” consonants also occur at the junction of words, e. g.

thin knife [θɪn 'naɪf];

wide deck [waɪd 'dek], etc.

In Ukrainian two-peak consonants occur only at the junction of words. Examples are found in such Ukrainian words as:

хліб бери [ХЛІБ БЕРІ];

він ніс [ВІН НІС].

Consonants with a strong-end begin a new syllable.

Consonants with a strong-beginning end a syllable.

In English a less sonorous sound generally combines with a more sonorous one following it, e. g.

idle ['aɪdl];

cable ['keɪbl].

The rules of syllable division are numerous in English and Ukrainian, but the exceptions are more numerous.

The main rules of the division of a word into syllables are the following:

1. In words with a consonant between two vowels, the consonant usually joins up with the following vowel (CV:CV) and thus, an open syllable is formed.

In English such a kind of syllable division is met very often in two-syllable words and in syllables with long monophthongs.

In Ukrainian a consonant between two vowels in a word also joins up with the following vowel rather often, but not so frequently as in English, e.g.

English

father ['fɑ:ðə];

reader ['ri:də];

never ['nevə];

Ukrainian

батько[БА́Т'КО];

вітер [ВІ́ТЕР];

півень [ПІ́ВЕН'].

2. In English words, when a vowel is followed by two or more consonants the point of syllable division is often between the consonants (vc:cc), e.g.

insect ['ɪn:sekt];
abstract ['æb:strækt];
napkin ['næp:kin].

In Ukrainian in the syllables of the word where the vowel is followed by two or more consonants the boundary is often between the syllables, but not so often as in English. Rather often the point dividing the syllables in Ukrainian may be between the preceding vocalic centre and the following consonant, e. g.

окремо [ОКРЕ́МО];
структура [СТРУКТУ́РА];
функція [ФУ́НКЦІ́Я];
but: горки [ГО́РКИ];
прогресія [ПРОГРЕ́СІ́Я];
достові́рність [ДОСТОВІ́РНІСТ'].

In Ukrainian syllable division often lies between the sounds most contrasting in their sonority. Thus, in the words *бігти* [БІ́ГТИ], *візник* [ВІЗНІ́К] the syllable division is between [ɪ] and [Г], [T] and [3] as the difference in sonority between them is greater than that between [Г] and the following sound [T] or between [3] and the following sonant [H].

Many students whose native language is Ukrainian often find it difficult to observe the rules of syllable division in English.

Thus, in the Ukrainian word *горки* [ГО́РКИ] the syllable boundary lies between the vowel [O] and the consonant [P], i.e. the sound [P] begins a new syllable and therefore it has a strong-end.

In the English word *napkin* ['næpkɪn] the syllable boundary lies between the consonants [p] and [k]. This means that [p] ending the first syllable, has a strong-beginning, while the following [k], beginning a new syllable, has a strong-end.

In such cases Ukrainians are apt to divide the English word into syllables in the wrong way: ['næpkɪn], i.e. to pronounce [p] with a strong-end while in such cases it has a strong-beginning in English.

1. In compound words as well as in words with prefixes and suffixes the point of syllable division is between the national word of compounds, after prefixes and before suffixes both in English and Ukrainian, e. g.

English	Ukrainian
teaspoon ['ti:spu:n];	самоскид [СА́МОСКІ́Д];
tablecloth ['teɪblɪklɒθ];	теплохід [ТЕ́ПЛОХІ́Д];
unknown [ʌn'nʊən];	нехристь [НЕ́ХРИСТ'];
homeless ['hʊəmləs];	підкреслювати [ПІ́ДКРЕ́СЛ'УВАТИ].

The point of separation of words into syllables depends to some extent to the quality of the adjoining sounds and the phonetic and grammatical structure of the language.

Learners of English should pay special attention to correct pronunciation of speech sounds within a syllable.

The length of English syllabic vowels at the end of an open syllable [ɜ:, u:, ɑ:, ɔ:] as well as the vowel [i:] should be obligatory, observed in English oral speech.

The English vowel [æ] is pronounced as a long sound in the positions before a sonant or before a voiced consonant. Thus, positional length of the vowel [æ] should be observed too.

In the Ukrainian language length of vowels is phonematically irrelevant. Ukrainian vowels may be prolonged in exceptional cases being in stressed or emphasized syllables.

Voiced consonants at the end of the final syllables are not devoiced in English, while in Ukrainian they often become voiceless.

English voiceless consonants [p, t, k] at the beginning of the initial syllables are aspirated. Aspiration as a characteristic feature of consonants does not exist in Ukrainian. The difference in the articulation of English sounds the syllable consists of should be observed. The position of the lips is different in English and Ukrainian. The lips in pronouncing English sounds are more tense and pressed to the teeth. Even rounded vowels are pronounced without protrusion of the lips.

The English forelingual consonants are usually formed at the alveoli by the very tip of the tongue, the Ukrainian forelingual consonants are formed by the front part of the tongue, excluding the tip at the front part of the palate.

The English [g] is a backlingual stop consonant while the Ukrainian [ɣ] is a pharyngeal constrictive consonant, etc.

There exist some syllable structural differences in the English and Ukrainian languages.

There is a close connection between the sounds within the syllable.

In English and Ukrainian there exists a close connection of the sounds constructing the syllable, called cohesion. Consonants preceding and following the syllabic centre of the syllable adjoin it rather closely. But the cohesion of the following consonant and the preceding vowel is not so close in Ukrainian as in English.

All the mistakes in the structure of the syllables, rules of syllable division, mispronunciation of sounds making a syllable, in the phonetic base of the foreign language, etc. lead to the appearance of the so-called accent.

Accent peculiarities in the pronunciation of the foreign language, by which it is possible to recognize a foreigner, appear under the influence of the articulatory base of the native language of the speaker. Most often accent is hidden in the peculiarities of pronunciation of syllables and the sounds they consist of.

Information about a foreign accent might be noticed in mispronunciation of sounds that do not exist in the native speech of the listener, e.g. the consonants [θ, ð], the vowel [ɜ:]; pronunciation of long English vowel sounds [i:], [ɜ:], [u:], [ɔ:], [ɑ:] as short vowels though the length of the vowels is phonematically relevant in English. Other equally important are often peculiarities on the level of syllables which are not observed by the learners: the positional length of the English [æ] before the nasal sonants and voiced consonants; the pronunciation of English constrictive sonant [r] as a rolled consonant; absence of aspiration of English [p, t, k] at the beginning of stressed syllables and others.

Foreign accent is one of the main problems in teaching a foreign language. The most difficult task in learning pronunciation is to get rid of a foreign accent.

There are numerous cases when despite a good command of the foreign language and good pronunciation of the learner, the listener, whose native language is English,

will catch a note of something foreign in the speech of a person, whose mother tongue is not English. In most cases accent is explained by the specific articulation base of the native language and is caused due to the errors in the structure of the syllables and violation the rules of syllable division, due to mispronunciation of sounds and sound combinations constructing the syllables.

Investigations of the syllabic theory and practical study of the peculiarities of foreign languages are pragmatically important. It is possible to determine the emotional state of the speakers due to difference in the cohesion of sounds within syllables of different languages. It is possible to determine the nationality of the speaker and to identify the speaker by characteristic features of the structure of the syllables and articulation of sounds the syllables consist of.

SUMMARY

Thus, the syllable is a universal primary minimal undivided basic phonetic unit of speech.

This definition of the syllable is universal for all the syllabic languages.

Units of primary perception on sensory level are not speech sounds but syllables. The syllable in perception is a minimal undivided unit over time.

The syllable is an integrated and an integrating speech unit. On the one hand it consists of speech sounds, on the other hand it is the base for all the other units of speech. It is creating the segmental speech unit – phonetic word and all the supra-segmental speech units – sense-groups, phrases, subphrasal unities and the speech unit of the highest level – the text.

The first attempts to examine syllables were made before our era by Ancient Greeks in connection with their interest in the problems of rhetoric and versification.

Experimental investigations of the problems of the nature of the syllable, its structure, the division of words into syllables appeared at the beginning of the 20th century due to the first laboratories of experimental phonetics opened in Paris, St. Petersburg and other countries and cities of the world.

Various theories of syllable formation and syllable division exist. One of the first was the so-called **expiratory** theory, according to which each syllable is accompanied by an uninterrupted act of exhalation (Silvers E.). The experimental data showed that several syllables might be pronounced within one act of exhalation and the expiratory theory considered to be wrong because it was experimentally proved that in many cases two or more syllables were pronounced within one act of exhalation.

Rather spread was sonority theory, according to which the main feature of the syllable is sonority, the stressed syllable forms a peak of sonority (Esperson A.). The variations of the sonority of the vowels in different in the word made it difficult to define the boundaries between the syllables.

The theory of muscular tension was elaborated by P. Roudet, M. Grammont and others and completed by L.V. Shcherba, according to whom sounds in connected speech are pronounced with alternative intensification of intensification and slackening of muscular tension. Each peak of intensification forms a syllable. L.V. Shcherba's

concept about the three forms of the syllables helped to solve the problem of the syllable division.

One of the latest theories of syllabic formation is the energetic theory. According to this theory a syllable was defined as a single portion of energy (Finkin N.I.), as a minimal portion of energy (Stepanov U.S.).

The energetic theory does not deny the theory of muscular tension. There exists a direct connection between the muscle tension of the organs of speech impulses of energy as any nerve and muscular process causes energetic process.

The energetic theory is rather widespread and acknowledged by numerous linguists, but still the nature of the syllable impulse was not quite clear and required further investigations.

In the second half of the 20th century phonetic experimental investigations applying electronic devices made it possible to affirm that syllables are created by a complex impulse of acoustic energy, a coordinated action of two components – intensity and duration (Бровченко Т.А.). Any of the components can change the volume of the total energy.

Experimental data proved that the main acoustic characteristic feature of the syllable was total energy – intensity over time.

The share of the two components of total energy – intensity and duration is different in English and Ukrainian as it depends upon the phonematic system of the language.

According to energetic theory the boundaries between the syllables in a word and between the words are at the point of the minimal decrease of total energy.

There is no principle difference between the mechanism of syllable division according to the concept of muscular tension and the energetic theory – the boundary in both cases is at the energetically weaker point of the syllable chain as it is the result of the smallest muscular tension.

The main principles of syllable formation and division are universal, i. e. similar in all the syllabic languages but the rules of syllable formation and the division of words into syllables may be different in different languages.

At present experimental investigations of the nature and structure of the syllable continued with the help of modern acoustic devices and special computer programmes.

It was proved experimentally that syllables in Germanic languages were realized in different spheres – phonological, physiological, auditory syllables in perception have been examined.

Dynamic models of syllabic structure were elaborated for a number of Germanic languages.

Syllables as well as other phonetic phenomena are sensitive to weight, many marginal consonants are perceived as “heavier” than others in many languages.

Weight is linked to the particular phonetic phenomenon in different languages, remains stable and is not changed from language to language.

Contrastive analysis of English and Ukrainian syllables makes it possible to observe that the nature of the main principles of formation and division are the same in the two languages. There exist a difference in the rules of correlation of two components of the total energy – intensity and duration, which depend upon the phonematic structure of the English and Ukrainian languages. There exist some specific features in the structure of syllables, in the rules of syllable division in the peculiarities

of the position of the active articulating organs in pronouncing sounds, which constitute the syllables in English and Ukrainian.

A thorough contrastive study of English syllables in comparison with those of the native language will enable the learner to avoid mistakes will help to acquire perfect pronunciation without any foreign accent.

L.V. Shcherba's teaching of the three forms of the consonants – strong-end, strong-beginning and strong-end/strong-beginning consonants made it possible to divide the words into syllables in speech.

The energetic syllabic theory defines a syllable as an impulse of energy. Experimental data proved that the main acoustic characteristic feature of the syllable was total energy – intensity over time.

The share of the two components of total energy – intensity and duration is different in English and Ukrainian as it depends upon the phonematic system of the language.

According to energetic theory the boundaries between the syllables in a word and between the words are at the point of the minimal decrease of total energy.

There is no principle difference between the mechanism of syllable division according to the concept of muscular tension and the energetic theory – the boundary in both cases is at the energetically weaker point of the syllable chain as it is the result of the smallest muscular tension.

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CHAPTER 6

WORD STRESS IN ENGLISH AND UKRAINIAN

6.1. INTRODUCTION

Intensification of a syllable or syllables of a word by phonetic means is called word stress.

Word stress is one of the main distinctive features of a word. Word stress singles out the accentual centre of the word, organizing the word as a structural unit of speech.

Word stress is a constituent of the word, a part of the model, a mode of the phonetic organization of the word as a single unit (Багмут А.І., Покидько О.М., 2000).

As it has been pointed out in Chapter 5, each syllable, as an independent segmental unit, is characterised by some degree of acoustic energy, which appears as a result of intensification of speech organs muscles and their movements in the process of speech production.

In a word, consisting of two or three syllables, one of the syllables is characterised by a greater tension of the muscles or the organs participating in speech and consequently, by a stronger impulse of energy than other syllable or syllables of the word. Such syllables are said to be stressed. The syllables which are characterised by a weaker muscle tension and a weaker impulse of energy are said to be unstressed¹.

Word stress, as well as the syllable, is one of the most important and complicated phonetic phenomena. It is possible to give an accurate definition of the nature of word stress only on the condition of accounting the peculiarities of physiological, acoustic and perceptual problems of its production.

In most cases word stress is defined by linguists from the physiological and perceptual points of view as a degree of force with which a syllable is pronounced; as a syllable which is perceived as more tense and louder than other syllables in the word.

A.I. Tomson pointed out that syllables are basically sonorous. In most languages force gradation produces an acoustic impression of strong or weak syllables (Томсон А.И., 1910).

G.P. Torsuyev wrote that one of the syllables of a word consisting of two or more syllables is more distinct than the others and is perceived as stressed. The effect of word, stress is achieved by strong tension of articulating organs.

A strong force of utterance means energetic articulation of speech organs, a strong force of exhalation, a strong push of the air from the lungs and gives the impression of loudness. Weak force of exhalation is the result of a weak force of utterance, of weak energetic action of the active speech organs, and gives on acoustic impression of softness.

Rather many scientists came to the conclusion that as a result of increased tension of articulating organs the stressed syllables acquire a higher pitch of voice or other frequency characteristics (Jones D., 1956; Топсуев Г.П., 1950; Васильев В.А., Буренкова О.В., Катанская А.Р., 1962; Mateescu D., 2003 and others).

¹ The term "unstressed" syllable is inadequate. Actually there are no unstressed syllables in speech. Any syllable has some degree of acoustic energy and consequently some degree of stress. But we use the term "unstressed" in this work as it is traditional and widespread in phonetics.

Stressed syllables pronounced as phonetic words or read as dictionary units are deprived of frequency characteristics, except the inherited frequency characteristics of speech sounds and belong to the segmental level of speech.

Therefore, investigating the nature of word stress, phonetic words or words read as dictionary units are to be taken as the experimental material because in these cases the characteristics of word stress are clearly displayed and it is possible to extract characteristics belonging to word stress.

In all the other cases when a word is pronounced isolatedly it becomes a phrase with a definite intonation structure of a statement, request, question etc., with the corresponding frequency characteristics of the phrase.

Having agreed that word stress is connected with a greater degree of tension and intensity of speech organs, some linguists noted that at the same time stress may be defined as a greater degree of prominence (Торцыев Г.П., 1950; Васильев В.А., Буренкова О.В., Катанская А.Р. и другие, 1962), that stressed syllables are perceived as having a high degree of prominence (Mateescu D., 2003).

Criticizing this point of view it was noted in literature that word stress must not be confused with prominence. Prominence is the degree of general distinctness of speech – the combined effort of timbre, duration, intensified stress and pitch. It may be achieved by means of intensified sentence stress – logic or emotional stress, by means of components of intonation (Jones D., 1956).

The problem what characteristics of a syllable cause the impression of word stress is important. It has been proved in Chapter 5 of the present book that the main characteristic feature of a syllable is total acoustic energy. Stressed syllables are characterised by a bigger degree of total acoustic energy than the corresponding unstressed syllables.

Word stress is perceived by a human ear and consequently, the listener perceives word stress not as increased tension of the muscles of speech organs but as the result of this tension. The increased acoustic energy of a sentence the listener receives by the ear as strength.

On the level of perception a stressed syllable is heard by the listener as louder, more distinct and more “weighty” than the corresponding unstressed syllable.

Total acoustic energy is a complex physical characteristic of a syllable, consisting of two components – intensity and duration.

It was observed during the experimental study of word stress that acoustic characteristics of intensity and duration do not act independently of each other in the process of producing the main parameter of word stress – total acoustic energy.

Only the result of the joint coordinate action of intensity and duration – total acoustic energy, i.e. intensity over time – the main characteristic feature of word stress is perceived as word stress by the listener.

Stressed and unstressed syllables are homogeneous in their nature. The difference between stressed and unstressed syllables is purely quantitative – a stressed syllable differs from the unstressed syllables of the same word by a bigger degree of total acoustic energy.

A bigger degree of total acoustic energy may be achieved by the increase of two of its components or one of them, but the share of the components depends upon the phonematic structure of the language.

Thus, in English, intensity is more important than duration, as duration is already “engaged”, being a phonematic feature of English vowels. In Ukrainian, where the duration of vowels is not phonematically relevant, duration is a more important component of total acoustic energy than intensity in producing the effect of word stress.

To make the process of a stressed syllable production easier to comprehend let's compare the formation of an unstressed and a stressed syllable with the building of two houses: a smaller one and a bigger one.

To produce a syllable an impulse of total acoustic energy, i.e. intensity for some period of time is required. A stressed syllable requires a bigger degree of energy, than the unstressed one, which may be achieved by a bigger intensity or longer duration. To build a house some work is required – an effort of the builders during some period of time. A bigger house requires a bigger amount of work, i.e. a bigger effort and a larger number of builders or a longer period of time.

For example, a stressed syllable in comparison with the unstressed syllable in a word is characterised by twice as big total acoustic energy achieved by a bigger intensity or by a longer duration. In the same way a two-floor house, in comparison with a one-floor house may be achieved by a larger number of builders (10 builders instead of 5), by a longer period of time (12 months instead of 6, than a one-flat house).

The main purposes of word stress are:

1. Word stress, just as a phoneme, is the inevitable element of the sounding word. This function of word stress may be called word identifying function (Zinder L.R., 1979). It ensures the existence of a phonetic word as a segmental unit of speech.

The preservation of the stressed pattern of the word by emphasizing one or more of its syllables and maintaining definite relationship of the amounts of total acoustic energy of syllables within the word in dependence with the position of the syllables in it, ensures the existence of a phonetic word as a segmental unit of speech.

2. The discrimination between free-word combinations and compound words is an important function of word stress. Word stress is the main distinctive feature of an independent word (Аванесов П.И., 1956).
3. Plenty of examples underline the decisive role of word stress in the process of conversion – differentiating parts of speech in English, for example:
'present *n* – pre'sent *v*
'object *n* – ob'ject *v*, etc.
4. On the higher suprasegmental level syllables serve as the structural material for creating all the suprasegmental units of speech. Stressed syllables get additional independent characteristics of intensity, duration, frequency, etc., which makes it possible to achieve semantic variations, expressiveness, modal and emotional shades of meaning in the utterance, preserving the main acoustic quality of word stress – total acoustic energy on the suprasegmental level under various conditions of proper pronunciation as well.

6.2. DEGREES OF WORD STRESS

In determining the number of degrees of stress in a language one should first of all distinguish between the physical and linguistic aspects of the problem. In order to get a clearer understanding of the problem the chief interest is to be concentrated upon its linguistic aspect.

When we speak about the degree of stress or of the physical side – the degree of acoustic energy of the syllable – it seems reasonable to assume that each syllable in speech (stressed as well as unstressed) is always characterised by some amount of energy and if the degree of energy is treated from the physical point of view, there may be distinguished as many degrees of stress in the word, as there are syllables in it.

When we speak about the degrees of word stress in the given language we have to take into consideration, as it has been mentioned above, the number of functionally opposed degrees of energy within the word. In this case we speak about the functional or linguistic aspect of word stress.

Structurally, from a linguistic point of view, in every language there exists a functional discrimination of definite degrees of stress, the number of which may be different in different languages.

To understand the question one should take into consideration those stressed syllables which are phonologically opposed to unstressed syllables of the word and may therefore be said to be stressed.

Degrees of stress may be opposed to each other in case of primary and secondary stress as a stressed syllable to another stressed syllable.

The linguistic explanation of the existence of three degrees of stress can be found in the above-mentioned scientific works by G.P. Torsuyev, M.A. Sokolova and others. The majority of English phoneticians assert that there are three degrees of stress in English: primary, secondary and unstressed, e.g.

ˌfʌndə'mental;
exˌperi'mental;
inˌvesti'gation.

The degree of total acoustic energy of unstressed syllables is considerably smaller than that of stressed syllables and depends upon the position of the syllables in the word.

The first unstressed syllables are stronger than all the others unstressed syllables in the word. The final unstressed syllables are weaker than the first ones, but stronger than the second unstressed syllable from the end. The following examples illustrate the accentual structure of the polysyllabic words. The biggest degree of acoustic energy is marked by number 1 (primary stress). The secondary stress is marked by number 2. The increasing row of numbers represents the decreasing acoustic force of the unstressed syllables. The bigger the number is above the syllable, the weaker its acoustic energy is, e.g.

3 2 5 1 4
encyclopedia [ɪnˌsaɪklə'pi:dɪə];
3 2 6 1 5 4
responsibility [rɪˌspɒnsə'bɪlətɪ];
2 4 1 5 3
satisfactory [ˌsætɪs'fæktəri].

The existence of a primary and a secondary word stress in English polysyllabic words of four and more syllables is explained by the rhythmic tendency which is the result of a great number of short notional words, consisting of one, two or rarely three syllables and numerous unstressed form words between them, which facilitate rhythmic tendencies of alternation of stressed and unstressed syllables in speech (Торсуев Г.П., 1950).

Some linguists tried to solve the question of degrees of stress from a physical viewpoint and found a different number of degrees of stress in English.

Thus, D. Jones speaks about several degrees of stress, treating the problem from the physical point of view (Jones D., 1962).

Four degrees of stress (primary, secondary, tertiary, weak), corresponding to four degrees of loudness are mentioned by G.L. Trager and H.L. Smith in 1957.

Consequently, there exists a phonological opposition between three degrees of word stress – primary, secondary stress and unstressed syllables in English polysyllabic words and two degrees of stress in two- and three-syllable words, which have only one stressed syllable.

In polysyllabic words the primary stress usually falls on the second or third syllable from the end in most cases. The secondary stress falls on initial or second syllable of the word more often.

Primary stress is characterised by the biggest degree of energy. The secondary stress is also strong, but weaker than the primary stress.

Most words with prefixes and suffixes in English have two primary stresses – the first primary stress falls on the root of the word, the second primary stress falls on the suffix or prefix.

In the Ukrainian language stressed syllables are weaker in than in English. Stressed and unstressed syllables are not so vividly opposed by the degree of total acoustic energy in Ukrainian as in English. It is explained not only by a weaker energy of Ukrainian stressed syllables and a stronger acoustic force of unstressed syllables but by the absence of reduction of unstressed syllables in Ukrainian, which is typical of English. Besides, due to the peculiarities of the Ukrainian grammatical structure, the form words are not so numerous and consequently, a regular rhythmic alternation of stressed and unstressed syllables is not observed in Ukrainian.

Nearly all polysyllabic Ukrainian words have two degrees of word stress – stressed and unstressed. Three degrees of word stress are sometimes used for the sake of emphasis in compound words or words with prefixes. Two strong stresses in multi-syllable words are met more often.

6.3. EXPERIMENTAL INVESTIGATION OF WORD STRESS

In the middle of the 20th century the acoustic nature of stress began to be investigated with the help of electroacoustic experimental methods which at that time began to be applied in different laboratories of experimental phonetics in our country and abroad.

In the experimental study of the nature of word stress, D.B. Fry asserted that duration and intensity were both cues for judgement of word stress, but duration was more effective than intensity (Fry D.B., 1955).

Observations of other scientists supported his point of view (Соколова М.А., 1960; Топыев И.П., 1960).

In a similar experimental investigation with an equal amount of experimental material and an equal number of speakers, as in that by D. Fry, Ph. Lieberman tried to prove that intensity is a more important component of word stress than duration though the fundamental frequency seemed to be more relevant (Lieberman Ph., 1960).

A number of scientists tried to prove on the basis of experimental analysis that fundamental frequency was the main acoustic cue, differentiating stressed and

unstressed syllables in British and American English, drawing attention to the fact that the main acoustic correlate of word stress was not so much fundamental frequency, but the character of the movement of the tone, its deviation from the level tone (Bolinger D.L., 1958; Селезнёва И.С., 1960 and others).

A contradictory result of the first experimental investigations of word stress may be explained by the following reasons:

1. The experimental words and phrases read by one or two speakers were rather limited in number. The results, received in the process of experiment, were not verified with the help of exact methods of statistic analysis. Consequently, the results of experiments were not reliable.

2. The acoustic characteristics of word stress were investigated in isolated words or in one word phrases, neglecting the influence of the position of the syllable in the word, the communicative type of the phrase and consequently, the intonation structure of the phrase and its inference on the acoustic characteristics of stressed and unstressed syllables were neglected.

3. The correlation between the acoustic parameters of word stress was not discussed, while it is impossible to examine the nature of word stress without studying the correlation of its acoustic characteristics and the share of each of them in producing the effect of stress.

Word stress in Ukrainian has not been the object of special experimental investigations until the 1960s.

In view of this the nature of word stress in English and Ukrainian was one of the most urgent and open problems for study.

To obtain reliable data of acoustic cues of word stress it is necessary to take into consideration the following requirements:

1. The amount of experimental data and the number of speakers should be statistically sufficient to ensure reliable results of the experiments. A sufficient number of male and female speakers will make it possible to account physiological and gender variations.

2. Stressed syllables should be represented in different positions in the word – at the beginning of the word and at the end of it. Stressed and unstressed syllables should be compared in similar positions. In this way the influence of the position of the syllable on its physical characteristics could be taken into consideration.

3. To avoid the influence of the intonation structure on the characteristics of word stress, stressed and unstressed syllables are to be analysed in different communicative types of phrases. Those characteristics which are explained by the variations of the intonation structure – movement of the tone, its level, etc., belong to sentence stress, not to word stress.

4. All the quantity results of the experiments are to be subjected to mathematic statistic analysis to prove their reliability.

In the 1970s an experimental investigation of English and Ukrainian word stress observing all the requirements stated above was undertaken (Бровченко Т.А., 1972).

The material chosen for experimental analysis was a group of stress pairs of the type “accent” (noun) and “ac’cent” (verb) in English and of the type “брати” (verb) and “брати” (noun, plural) in Ukrainian, in which a change in grammatical function was associated with a shift of stress from the first to the second syllable.

The pairs of words, the primary difference between which was in the stress pattern, made it possible to compare stressed and unstressed syllables similar as to their sound composition and position of the syllable in the word, i.e. the same vowels under stress and without it.

To obtain reliable data of acoustic cues of word stress it was necessary to consider the structure of the phrases and their intonation patterns, because the acoustic characteristics of a syllable may depend on them. Therefore, by acoustic cues of word stress we understood only those of them which remained invariable under six types of pronouncing conditions:

1. Individual physiological and gender peculiarities, i.e. those explained by individual and physiological characteristics of voices, individual variations typical of a speaker's voice and variations typical of male and female voices had to be considered.

2. It was necessary to investigate the influence of individual characteristics of vowels on the physical nature of word stress and therefore, the comparison of the same stressed and unstressed vowels was the main type of the experiments. An additional test had to be undertaken both in English and Ukrainian when stressed vowels were compared with the unstressed vowel within one word.

3. The syllabic structure of the experimental words had to be taken into consideration. Acoustic characteristics of two- three- and four-syllable words had to be compared.

4. As the position of the syllable in the word might also influence the acoustic characteristics of word stress initial and final syllables had to be also analysed separately and the data had to be compared to avoid the influence of positional conditions of the syllable.

5. The intonation structure of the experimental phrases had to be taken into consideration. To avoid the influence of intonation on the acoustic characteristics of word stress, the groups of one-word phrases, pronounced as statements and those pronounced as general questions had to be analysed separately.

6. The characteristics of syllables in one-word phrases had to be compared with those characteristics in extended phrases which had to be also analysed separately and the results had to be compared.

As a result, all the precautions were taken in this book to define exact characteristics of word stress despite different conditions of pronunciation and different grammatic and intonation structure of the utterances.

For a detailed investigation of word stress in English and Ukrainian, in order to explore the situation in a more controlled fashion, two sets of experiments were carried out.

The first set of experiments implied the quantitative analysis of absolute and relative acoustic characteristics of similar syllabic vowels in pairs of words differing in stress. The purpose of these series of experiments was to get a clearer understanding of the difference between the acoustic characteristics of stressed and unstressed syllables under different conditions of pronunciation.

The second set of experiments implied the analysis of the relation of absolute values of total energy, intensity, duration and fundamental frequency of stressed vowels to the characteristics of the corresponding unstressed vowels in pairs of words.

The aim of those experiments was to take into consideration the difference in the quality of stressed and unstressed vowels and reveal those characteristics which were typical of stressed syllables and were vividly opposed to the unstressed ones within the same word despite the difference in vowels.

Gender peculiarities of stressed and unstressed were also taken into consideration. Male and female voices were analysed separately and the data compared.

The analysis of relative acoustic characteristics made it possible to define the physical nature of word stress, to reveal the main acoustic characteristics of word stress and its components. The analysis of the relative acoustic characteristics provided

conditions for a detailed investigation of the parameters of word stress in English and Ukrainian.

Several independent experimental studies and the statistical analysis of the data (implying the calculations of measures of central tendency, variability, reliability and other measurements) made it possible to obtain reliable material concerning the acoustic and perceptual cues of word stress in English and Ukrainian.

The following measurements of acoustic characteristics in each utterance were carried out:

1. Peak intensity, measured in conventional units (conv. units).
2. Duration, measured in milliseconds (msec).
3. Total acoustic energy, i.e. the integral of the amplitude over time, measured in conv. units. A special device has been employed to integrate the area under the intensity curve represented by the intonogram.
4. Peak, fundamental frequency or pitch, measured in cycles per second (cps).

6.4. ACOUSTIC NATURE OF WORD STRESS IN ENGLISH

The list of experimental material for the investigation of nature of word stress in English included minimal word-pairs with initial or final stressed syllables pronounced isolatedly and in one-word and extended phrases by twenty speakers – 10 male voices and 10 female ones.

Examples:

'conflict	con'flict;
'protest	pro'test;
'contract	con'tract;
'integral	in'tegral, etc.

Each speaker read the experimental utterances observing the following conditions:

1. isolated words were read twice: a) as vocabulary units and b) as one-word statements;
2. 10 one-word sentences were read as interrogative phrases – general questions;
3. the same words were included into simple declarative phrases and the corresponding interrogative phrases.

Examples:

That's a 'conflict.	Did they con'flict?
That's a 'protest.	Did they pro'test?
That's a 'contrast.	Did they con'trast?
That's an 'integral.	Is that in'tegral?
They didn't con'flict.	Didn't they con'flict?
They didn't pro'test.	Didn't they pro'test?
They didn't con'trast.	Didn't they con'trast?
That isn't in'tegral.	Isn't that in'tegral?

The investigation of the data of approximately 1500 English one-word and extended phrases showed that in all the cases the total energy of the stressed syllables was much bigger than the total energy of the corresponding unstressed syllables. Some variations of characteristics of absolute acoustic energy observed from speaker to

speaker and the difference between male and female voices could be explained by the individual physiological and gender peculiarities of the speakers. It's important to note that relative acoustic characteristics of word stress remained stable and did not differ essentially within each group of experimental material.

Examination of the data, presented in table 6.1, shows that the total energy of the stressed syllables in one-word phrases in English was more than twice as big as that of the unstressed syllables.

Despite the differences between the results of absolute meanings of acoustic characteristics of stressed syllables in speech of the same speaker and the characteristics of different speakers, in phrases read by male or female voices, relative acoustic characteristics remained stable and illustrated the relevant difference between stressed and unstressed syllables. Thus, the examination of the data presented in table 6.1 showed that the average total energy of stressed syllables prevailed over the energy of the corresponding unstressed syllables.

The average coefficients denoting the relation of total energy of the stressed syllables to the total energy of the corresponding unstressed syllables in one-word phrases were considerably big. The average total energy of stressed syllables in extended phrases was big enough but not as big as in one-word sentences.

Coefficients, denoting the relation of the acoustic characteristics of the stressed syllables to that of the unstressed ones, were measured in relative units. It's possible to assert that stressed syllables were characterised by a bigger total energy both in one-word and in extended phrases in English (table 6.1).

Table 6.1

Average absolute and relative characteristics of total acoustic energy of English stressed and unstressed syllables in one-word and extended phrases

Speakers	One-word phrases			Extended phrases		
	Absolute meanings of acoustic energy (conv. units)		Relative meanings of energy (rel. units)	Absolute meanings of acoustic energy (conv. units)		Relative meanings of acoustic energy (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voice	297	147	2.02	236	145	1.63
Female voice	200	95	2.11	209	122	1.71
Total	249	121	2.06	223	134	1.67

It seems reasonable to assume that the role of total acoustic energy as a characteristic feature of word stress is more vivid in isolated words pronounced as vocabulary units which are more simple than that of extended phrases, the structure of which is more complicated.

The total acoustic energy of stressed and unstressed syllables in English was analysed under different conditions of pronunciation.

The results of the analysis showed that the energetic characteristics of the stressed syllables did not depend upon the position of the syllable in the word. The coefficients showing the relation of the total energy of the stressed syllables to the total energy of

the corresponding unstressed syllables in initial and in final syllables were more than 2 rel. units.

No significant difference between two relative characteristics of the total acoustic energy was observed between two- and three-syllable words, though the amount of absolute energy was bigger in two-syllable words. The coefficients showing the difference between the total energy of stressed and unstressed syllables varied from 1.93 to 2.25 rel. units (table 6.2).

Table 6.2

Average absolute and relative characteristics of total acoustic energy of English stressed and unstressed syllables under different conditions of pronunciation

Conditions of pronunciation of stressed and unstressed syllables		One-word phrases		
		Absolute characteristics of acoustic energy (conv. units)		Relative characteristics of acoustic energy (rel. units)
		Stressed syllables	Unstressed syllables	
Position of the syllables in the words	initial	251	123	2.04
	final	227	101	2.25
Syllabic structure of the word	two-syllable words	278	144	1.93
	four-syllable words	227	101	2.25

The results of the experimental analysis showed that the relative acoustic characteristics of the total acoustic energy in English remained stable under different conditions of pronunciation corroborating the theory of the leading role of total acoustic energy in creating the effect of word stress.

As it has been asserted in Chapter 5 total acoustic energy – the main physical characteristic feature of word stress – is a complex acoustic parameter, created by two components – intensity and duration. The results of the experimental analysis showed that the intensity of the stressed syllables prevails over that of the corresponding unstressed syllables in English, but not so much as the total acoustic energy. The coefficients showing the relation of the intensity of the stressed syllables to the intensity of the unstressed syllables are considerably smaller than those of total acoustic energy. The coefficients showing the relation of the intensity of the stressed syllables to the intensity of the unstressed syllables are considerably smaller than those of the total acoustic energy. A sharp decrease of intensity in extended phrases reveal the subordinate role of intensity as a component of the total acoustic energy in English (table 6.3).

Table 6.3

Average absolute and relative characteristics of intensity of English stressed and unstressed syllables in one-word and extended phrases

Speakers	One-word phrases			Extended phrases		
	Absolute characteristics of intensity (conv. units)		Relative characteristics of intensity (rel. units)	Absolute meanings of intensity (conv. units)		Relative meanings of intensity (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voices	13.8	8.7	1.53	11.1	8.8	1.26
Female voices	10.7	6.6	1.62	9.5	7.0	1.36
Total	12.5	7.9	1.58	10.3	7.9	1.31

The intensity of stressed and unstressed syllables in English was analysed under different conditions of pronunciation.

The results of the analyses showed that the intensity of the stressed syllables was rather big and did not depend upon the position of the syllable in the word. The coefficients showing the relation of intensity of the stressed syllables to the intensity of the corresponding unstressed syllables did not differ considerably and were as big.

No significant difference between the relative characteristics of intensity was observed among two- and three-syllable words.

These observations support the conclusion about the significant but secondary role of intensity as a component of the main acoustic characteristic feature of word stress – total energy in English (table 6.4).

Table 6.4

Average absolute and relative characteristics of intensity of English stressed and unstressed syllables under different conditions of pronunciation

Conditions of pronunciation		One-word phrases		
		Absolute characteristics of intensity (conv. units)		Relative characteristics of intensity (rel. units)
		Stressed syllables	Unstressed syllables	
Position of the syllables in the words	initial	13.0	8.5	1.53
	final	12.2	7.6	1.61
Syllabic structure of the word	two-syllable words	12.7	8.2	1.55
	three-syllable words	12.2	7.5	1.63

The results of the experimental analysis showed that the duration of stressed syllables in English one-word and extended phrases was longer than the duration of the corresponding unstressed syllables. However, the difference was not so big as the difference between the total acoustic energy of stressed and unstressed syllables and considerably smaller than the difference of intensity between stressed and unstressed syllables.

The coefficients showing the relative duration of stressed syllables were smaller than those of the intensity.

A bigger total acoustic energy of stressed syllables may be achieved by means of increase of its components – intensity or duration or both of them.

The results of the experimental investigation made it possible to affirm that the share of duration and intensity in creating the total acoustic energy of a stressed syllable is not equal. The share of duration is not as big as the share of intensity in English (table 6.5).

As it has been mentioned before, the length of vowels is phonematically important in English. As duration is “engaged” on speech sounds level, its role on the level of word stress is diminished.

Table 6.5

Average absolute and relative characteristics of duration of English stressed and unstressed syllables in one-word and extended phrases

Speakers	One-word phrases			Extended phrases		
	Absolute characteristics of durations (msec)		Relative characteristics of duration (rel. units)	Absolute characteristics of duration (msec)		Relative characteristics of intensity (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voices	153	119	1.38	139	107	1.29
Female voices	158	111	1.33	136	102	1.32
Total	156	115	1.39	133	105	1.31

The duration of stressed and unstressed syllables in English was analysed under different conditions of pronunciation.

The results of the analysis showed that the coefficients characterizing the relation of duration of stressed syllables to the corresponding unstressed syllables were rather low and didn’t deviate much under different conditions of pronunciation, supporting the idea that the share of duration creating stressed syllables is not so big as the share of intensity in English (table 6.6).

Table 6.6

Average absolute and relative characteristics of duration of English stressed and unstressed syllables under different conditions of pronunciation

Conditions of pronunciation		Phonetic words		
		Absolute characteristics of duration		Relative characteristics of duration
		Stressed syllables	Unstressed syllables	
Position of the syllables in the word	initial	137	98	1.40
	final	153	118	1.37
Syllabic structure of the word	two-syllable words	160	117	1.38
	three-syllable words	132	98	1.35
Intonation structure of the phrase	statements	150	116	1.29
	questions (general)	162	107	1.51

The results of the experimental analysis of the frequency characteristics of word stress in English showed that the measurements of pitch slightly prevail in stressed syllables over those of the unstressed syllables. The coefficients of relative pitch of the stressed syllables vary in the limits from 1.18 rel. units to 1.23 rel. units, which makes it possible to admit that the frequency is not relevant as a characteristic feature of word stress in English (table 6.7).

Table 6.7

Average absolute and relative pitch characteristics of English stressed and unstressed syllables in one-word and extended phrases

Speakers	One-word phrases			Extended phrases		
	Absolute characteristics of pitch (cps.)		Relative pitch (rel. units)	Absolute characteristics of pitch (cps.)		Relative pitch (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voices	152	123	1.24	167	135	1.24
Female voices	264	222	1.18	261	216	1.21
Total	208	173	1.21	214	176	1.23

Frequency characteristics were analysed under different conditions of pronunciation. The results of the analysis showed that in different positions of the syllables in the words and in different syllabic structures, the pitch of the stressed syllables varied considerably. The relative pitch characteristics of stressed syllables were even smaller than those of duration. The coefficients showing the difference in pitch under various conditions of pronunciation were very small in all the cases and varied from 1.10 rel. unit to 1.26 rel. units.

All the above testify to the conclusion that pitch is not a characteristic feature of word stress in English (table 6.8).

Table 6.8

Average absolute and relative characteristics of pitch of English stressed and unstressed syllables under different conditions of pronunciation

Conditions of pronunciation		Phonetic words		
		Absolute characteristics of pitch (cps.)		Relative characteristics of pitch
		Stressed syllables	Unstressed syllables	
Position of the syllables in the word	initial	194	165	1.18
	final	202	160	1.26
Syllabic structure of the word	two-syllable words	190	160	1.19
	three-syllable words	196	178	1.10

As a result of the experimental investigation of word stress in English a conclusion can be made that word stress in English is energetic in nature. The main physical parameter of word stress is total acoustic energy – intensity over time. The main components of total acoustic energy are intensity and duration with the help which the main acoustic characteristic feature of word stress is formed.

The role of intensity and duration is not equal in producing the effect of word stress. Intensity is the main component of total acoustic energy in English. The share of duration is not as big as the share of intensity which is explained by the phonological structure of the English language, i.e. the “engagement” of duration on the level of speech sounds.

The pitch of voice cannot be considered a characteristic feature of word stress in English. A higher pitch characterises stressed syllables, very seldom. The coefficients showing the average relation of pitch of stressed syllables to the corresponding unstressed ones are very low and do not help to distinguish stressed and unstressed syllables. Pitch characteristics are not stable under different conditions of pronunciation and differentiate various communicative types of phrases on the suprasegmental level.

6.5. ACOUSTIC NATURE OF WORD STRESS IN UKRAINIAN

The list of experimental material for the investigation of nature of word stress in Ukrainian included minimal word-pairs with initial or final stressed syllables pronounced isolatedly as vocabulary units and in one-word and extended phrases by 20 speakers – 10 male voices and 10 female voices.

Examples:

бра́ти	брати́;
се́стри	сестри́;
ві́кна	вікна́;
му́зика	музи́ка.

Each speaker read the experimental utterances preserving the following conditions:

1. Isolated words were read twice: (a) as vocabulary units and (b) as one-word statements.
2. 10 words were read as one-word interrogative phrases – general questions.
3. The same words were included into simple extended phrases, e.g. declarative and interrogative phrases – general questions.

Examples:

Не треба цього бра́ти.	Чи треба це бра́ти?
Це великі ві́кна.	Це великі ві́кна?
Це мої се́стри.	Це мої се́стри?
Це гарна му́зика.	Це гарна му́зика?
Це твої брати́.	Це твої брати́?
Не бачу цього ві́кна.	Не бачиш цього ві́кна?
Немає твоєї сестри́.	Немає твоєї сестри́?
Він гарний музи́ка.	Він гарний музи́ка?

The investigation of the data of approximately 1500 Ukrainian one-word and extended phrases showed that absolute and relative characteristics of total acoustic energy of the stressed syllables were nearly twice bigger than those of the unstressed syllables. The coefficients showing the relation of the total energy of the stressed syllables to the total energy of the unstressed syllables was 1.96 rel. units in one word phrases.

The relative average total energy of the stressed syllables of extended sentences was big enough but not so big as in one-word phrases. The coefficient showing the relation between the total energy of the stressed and the unstressed syllables in extended sentences was 1.79 rel. units (table 6.9).

It may be assumed that in Ukrainian, as well as in English, the influence of sentence stress and other prosodic characteristics is stronger in more complicated extended phrases than in one-word phrases.

Table 6.9

Average absolute and relative characteristics of total acoustic energy of Ukrainian stressed and unstressed syllables in one-word and extended phrases

Speakers	One-word phrases			Extended phrases		
	Absolute meaning of total energy (conv. units)		Relative characteristics of total energy (rel. units)	Absolute characteristics of total energy (conv. units)		Relative characteristics of total energy (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voices	431	237	1.97	256	154	1.66
Female voices	455	235	1.94	310	192	1.61
Total	443	236	1.96	285	179	1.64

The total acoustic energy of stressed and unstressed syllables in Ukrainian has been analysed under different conditions of pronunciation.

The results of the analysis showed that energetic characteristics of the stressed syllables did not depend upon the position of the syllable in the word. The coefficients of the relation of total energy between the stressed and the corresponding unstressed syllables in initial and final syllables were more than two rel. units.

No significant difference was observed in two- and three-syllable words. Under all the conditions of pronunciation the average total energy was big enough to assert that total energy is the main physical characteristic feature of word stress in Ukrainian as well as in English (table 6.10).

Table 6.10

Average absolute and relative characteristics of total acoustic energy of Ukrainian stressed and unstressed syllables under different conditions of pronunciation

Conditions of pronunciation of stressed and unstressed syllables		Absolute characteristics of acoustic energy (conv. units)		Relative characteristics of acoustic energy (rel. units)
		Stressed syllables	Unstressed syllables	
Position of the syllables in the word	initial	194	165	1.18
	final	202	160	1.26
Syllabic structure of the word	two-syllable words	190	160	1.19
	three-syllable words	196	178	1.10

The results of the experimental analysis showed that the intensity of stressed syllables prevailed over the intensity of the corresponding unstressed syllables but considerably less than that of the total acoustic energy. The coefficients showing the relating of the intensity between stressed and unstressed syllables were smaller than the

corresponding coefficients in English. The coefficients of correlation between Ukrainian stressed and unstressed syllables were equally low both in one-word and extended phrases.

The results illustrate that the share of intensity as a component of the main characteristic feature of word stress – total acoustic energy, is not so important in Ukrainian as in English (table 6.11).

The intensity of stressed and unstressed syllables in Ukrainian was analysed under different conditions of pronunciation.

Table 6.11

Average absolute and relative intensity of Ukrainian stressed and unstressed syllables in one-word and extended phrases

Speakers	One-word phrases			Extended phrases		
	Absolute meanings of intensity (conv. units)		Relative characteristics of intensity (rel. units)	Absolute meanings of intensity (conv. units)		Relative characteristics of intensity (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voices	15.4	12.5	1.23	13.6	10.6	1.28
Female voices	13.7	11.0	1.24	12.5	10.2	1.23
Total	14.6	11.8	1.24	12.4	9.6	1.26

The indices of relative characteristics of intensity of stressed syllables under different conditions of pronunciations were considerably smaller than those of the total energy and didn't differ considerably between stressed and unstressed syllables. The relative characteristics of intensity were stable in different syllabic structures of the word. Under other conditions of pronunciation the indices of relative characteristics of intensity were not so stable either, and the relative intensity of the initial syllable was lower than that of the final syllables (table 6.12).

Table 6.12

Average absolute and relative characteristics of intensity of Ukrainian stressed and unstressed syllables under different conditions of pronunciation

Conditions of pronunciation		One-word statement		
		Absolute characteristics of intensity (conv. units)		Relative characteristics of intensity (rel. units)
		Stressed syllables	Unstressed syllables	
Position of the syllables in the word	initial	15.1	13.6	1.11
	final	14.0	11.7	1.20
Syllabic structure of the word	two-syllable words	15.2	12.0	1.26
	three-syllable words	1.18	9.6	1.23

A bigger average intensity of the stressed syllables than of the unstressed ones makes it possible to assure that intensity is one of the characteristic features of word stress in Ukrainian and a more important component of total energy than duration.

However, considerably smaller average indices of intensity than those of total energy and the dependence of intensity of conditions of pronunciation support the idea that intensity is not an independent characteristic feature of word stress but is a component of total acoustic energy.

The results of the experimental analysis showed that the duration of the stressed syllables in Ukrainian was considerably longer than in the corresponding unstressed ones in one-word and in extended phrases, which is explained by the influence of prosodic suprasegmental characteristics on the characteristics of the word stress.

The difference in duration between the stressed and unstressed syllables was much bigger than, the difference between the intensity of stressed and unstressed syllables in Ukrainian.

The average coefficients showing the relation of the duration of stressed syllables to the duration of the unstressed syllables in one word phrases in Ukrainian were bigger than in extended phrases (table 6.13).

Table 6.13

Average absolute and relative duration stressed and unstressed syllables in one-word and extended Ukrainian phrases

Speakers	One-word phrases			Extended phrases		
	Absolute duration (msec)		Relative durations (rel. units)	Absolute duration (msec)		Relative durations (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voices	229	142	1.46	157	114	1.38
Female voices	202	126	1.60	160	105	1.47
Total	205	134	1.56	159	112	1.43

The duration of stressed and unstressed syllables in Ukrainian was analysed under different conditions of pronunciation.

The results of the analysis showed that the coefficients characterizing the relation of the duration of stressed syllables to that of the corresponding unstressed syllables were not so big as those of the total acoustic energy, but considerably bigger than those of the relative intensity.

Some variations in the indices of the coefficients of the relative duration of stressed syllables under different conditions of pronunciation were observed. The average relative duration of initial stressed syllables was shorter than that of final stressed syllables. The average relative duration of stressed syllables in statements and questions was rather stable (table 6.14).

Table 6.14

Average absolute and relative characteristics of duration of Ukrainian stressed and unstressed syllables under different conditions of pronunciation

Conditions of pronunciation		One-word statement		
		Absolute characteristics of duration (msec)		Relative characteristics of duration (rel. units)
		Stressed syllables	Unstressed syllables	
Position of the syllables in the word	initial	147	110	1.34
	final	169	118	1.43
Syllabic structure of the word	two-syllable words	212	138	1.59
	three-syllable words	182	121	1.50

The importance of the two components of the acoustic energy – intensity and duration is not equal in Ukrainian.

Both intensity and duration have the smaller average meanings than those of the total acoustic energy. Nevertheless, the share of duration in the formation of the total acoustic energy is bigger than that of intensity. The average relative indices of duration are bigger than those of intensity and thus duration may be considered a more important component of acoustic energy than intensity in Ukrainian (table 6.15).

The difference between pitch characteristics of the stressed and unstressed syllables is very small in Ukrainian, considerably smaller than that of intensity. The coefficients showing the relation of pitch of stressed syllables to the corresponding unstressed ones do not differ essentially in various conditions of pronunciation.

The only exception was the pitch of stressed syllables in different communicative types of phrases. The average relative pitch of stressed syllables was considerably smaller in statements than in general questions. Such a difference may be explained by the cooperation of segmental characteristic of word stress with the suprasegmental characteristics of sentence stress and intonation. It supports the viewpoint that pitch modulations are relevant on the suprasegmental level and not relevant on the level of word stress (tables 6.15, 6.16).

Table 6.15

Average absolute and relative characteristics of pitch of stressed and unstressed syllables in Ukrainian one-word and extended phrases

Speakers	One-word phrases			Extended phrases		
	Absolute characteristic of pitch (cps.)		Relative pitch (rel. units)	Absolute characteristic of pitch (cps.)		Relative pitch (rel. units)
	Stressed syllables	Unstressed syllables		Stressed syllables	Unstressed syllables	
Male voices	190	152	1.25	169	134	1.26
Female voices	303	269	1.13	271	262	1.06
Total	247	211	1.19	225	193	1.16

Table 6.16

Average absolute and relative characteristics of pitch of stressed and unstressed syllables in Ukrainian one word phrases under different conditions of pronunciation

Conditions of pronunciation		Absolute characteristics of pitch (cps.)		Relative characteristics of pitch (rel. units)
		Stressed syllables	Unstressed syllables	
Position of the syllables in the word	initial	254	218	1.17
	final	248	218	1.14
Syllabic structure of the word	two-syllable words	241	207	1.16
	three-syllable words	226	202	1.12
Intonation structure of the phrase	statements	186	158	1.18
	questions (general)	271	202	1.36

Thus, English and Ukrainian word stress is energetic in character. The main physical characteristic feature of word stress distinguishing stressed syllables from the corresponding unstressed syllables is total acoustic energy, which is the result of a joint action of two components – intensity and duration both in English and in Ukrainian.

The share of the two components of the total acoustic energy is not equal in English and Ukrainian.

In the English language intensity is the leading component of the total acoustic energy. It is a more important component of the total energy than duration. The difference in intensity between stressed and unstressed syllables is bigger than that of duration in English.

A less important role of duration on the level of word stress in English may be explained by the phonematic structure of this language in which length of vowels is capable of distinguishing words and thus, is “engaged” on the level of speech sounds in English and is less important on the level of word stress.

In Ukrainian where the length of vowels is not phonematically important duration is the leading component of the main characteristic feature of word stress – total acoustic energy. Intensity is a less important component of total energy than duration in Ukrainian but as it has been mentioned above in English the share of intensity as a component of the main acoustic characteristic feature of word stress is bigger than that of duration.

Frequency characteristics of word stress are not relevant on the level of word stress both in English and in Ukrainian.

Table 6.17

A summarizing table of absolute acoustic characteristics of English and Ukrainian stressed and unstressed syllables

Acoustic characteristics	English		Ukrainian	
	Stressed	Unstressed	Stressed	Unstressed
Total energy (conv. units)	249	121	443	236
Intensity (conv. units)	12,5	7,9	14,6	11,8
Duration (msec)	156	115	205	134
Pitch (cps)	M. 150 W. 264 $\overline{X} = 207$	M. 123 W. 299 $\overline{X} = 211$	M. 190 W. 303 $\overline{X} = 247$	M. 152 W. 269 $\overline{X} = 210$

Table 6.18

A summarizing table of correlation coefficients between acoustic characteristics of stressed and unstressed syllables in English and Ukrainian

Acoustic characteristics	Coefficients of English and Ukrainian	
	English	Ukrainian
Total energy	2.06	1.96
Intensity	1.58	1.24
Duration	1.39	1.56
Pitch	M. 1.24 W. 1.18 $\overline{X} = 1.21$	M. 1.25 W. 1.13 $\overline{X} = 1.19$

6.6. PERCEPTION OF ACOUSTIC CHARACTERISTICS OF WORD STRESS IN ENGLISH AND UKRAINIAN

The problem of word stress cannot be solved finally by describing objective acoustic correlates of word stress alone.

It is just as important to determine what subjective characteristics make it possible for a human being to distinguish between stressed and unstressed syllables.

Since the research into the perception of stressed and unstressed syllables was the object of the given paragraph, some auditory experiments were carried out.

Twenty isolated English words read as vocabulary units were singled out of ten accentual pairs of similar sound compositions and were presented to ten listeners whose native language was English. Similar twenty isolated words read by Ukrainian speakers were presented to ten listeners, whose native language was Ukrainian.

As pointed out above total acoustic energy – the result of coordinated action of intensity and duration is the main physical cue of stressed syllables in English and Ukrainian. Changes in the components of acoustic energy – intensity and duration may cause changes in the perception of syllables as stressed or unstressed. An opinion was expressed by some linguists that frequency may also distinguish a stressed syllable from the unstressed one. However, it has been proved in the preceding paragraphs that neither the height of the tone nor the deviations from its level could be considered the characteristics of word stress in English and Ukrainian.

In the course of auditory analysis the listeners had to take into account the subjective characteristics of stressed and unstressed syllables and to define them.

While listening to speech the listeners succeed in distinguish stressed and unstressed syllables of the word due to the acoustic cues of the stressed and unstressed syllables that are relevant on the word stress level in the given language. Different languages, naturally, may have different acoustic cues and consequently, different recognition routines.

It should be noted that listeners reserve their final decision on the recognition of stressed and unstressed syllables until they perceive the entire word, i.e. they perceive the phonetic structure of the word as a whole. In view of this, it is especially important to examine absolute and perceived acoustic characteristics of stressed and unstressed syllables and examine their relationship in the experimental words. Since stressed and unstressed syllables are determined by means of the subjective criteria in this paragraph it is important to take into consideration what the subjective criteria, distinguishing the stressed syllable from the unstressed one may be:

- **strength** of the syllable corresponds to the objective characteristic of total acoustic energy;
- **loudness** of the syllable corresponds to the objective acoustic characteristic of intensity;
- **length** of the syllable corresponds to the objective acoustic characteristic of duration;
- **pitch** of the syllable corresponds to the objective acoustic characteristic of fundamental frequency;
- **weight** of the syllable.

The results of the auditory analysis revealed a close correlation between the primary objective physical parameter of word stress – total acoustic energy and subjective perceptual characteristic – strength.

The stressed syllables were perceived by the subjects as stronger than the corresponding unstressed syllables in 98.5 % of cases in the English speech and in 96.4 % of cases in the Ukrainian speech.

The auditory analysis revealed that there exists a correlation between the objective quantitative acoustic characteristics of components of word stress – intensity and duration and their subjective qualitative perceived characteristics – length and duration.

Objective parameter of intensity is perceived by a human ear as loudness. The stressed syllables are perceived louder than the unstressed ones. As well as intensity is an important objective component of the total acoustic energy, loudness is an important subjective component of strength of stressed syllables.

The share of loudness in creating the impression of strength of stressed syllables is bigger in English than in Ukrainian (76 % of cases in English and 46 % of cases in Ukrainian were perceived as louder ones).

Objective parameter of duration is perceived by a human ear as length.

As well as duration is an objective component of total acoustic energy length is a subjective component of strength.

The share of length in creating the duration of stressed syllables is very important in the Ukrainian language.

The listeners registered 68.6 % of cases when the stressed syllables were longer than the unstressed ones in Ukrainian. This result supported the conclusion that duration on acoustic level and length on the level of perception are the leading components of the main acoustic characteristic feature of stressed syllables – the total energy in Ukrainian. As a result of auditory analysis 72.1 % of stressed syllables were perceived by the subjects as longer than the correspondent unstressed in English and 68.6 % in Ukrainian.

This conclusion contradicts the results of the objective acoustic analysis of duration which stated that the primary component of the total acoustic energy in English was intensity, and duration was a component of minor importance.

Longer length of English stressed syllables on the level of perception may be explained not as much by the effect of word stress as by the existence of long vowel phonemes in the phonematic system of the English language. This suggestion may be supported by a bigger coefficient of correlation between the intensity of stressed and unstressed syllables, while in Ukrainian it is considerably smaller.

Subjective characteristics of the height of tone or pitch as well, as the objective characteristics of the fundamental frequency, proved that they were insignificant in differentiating both English and Ukrainian stressed and unstressed syllables. The higher pitch of voice of stressed syllables was not significantly bigger than that of the corresponding unstressed ones and was perceived by the listeners as higher in pitch in 25.2 % of cases in English and 19.5 % in Ukrainian and consequently, could not be considered characteristics of word stress on subjective level too.

The concept of syllable weight, grounded on phonetic considerations, was developed by M.K. Gordon in his thesis for a doctor's degree in 1999. According to M.K. Gordon syllable weight, as well as the weight of other phonetic phenomena, is a language property. The results of his survey confirmed the hypothesis that weight was shown to have different dysfunctions in different phonetic processes. Syllable types according to this theory may belong to the light or to the heavy ones in weight. Unstressed syllables are perceived as light in weight, stressed syllables are heavy in weight.

Auditory analysis revealed that while evaluating syllables from the viewpoint of the sensation of their weight, many subjects came to the conclusion that stressed syllables were perceived as more "weighty" and more "heavy" than the unstressed ones. 52.8 % of cases the subjects perceived the stressed syllables as more weighty in English and 46.2 % in Ukrainian.

A big number of cases when stressed syllables were perceived as more weighty make it possible to suggest that weight may be the third component of total energy caused by the strength of sounds or by bioelectric activity of the speech producing muscles, but these are just suppositions and nothing is yet known about the objective correlate of weight.

The concept of weight is a new scientifically interesting notion and requires further elaboration (table 6.19).

Table 6.19

Perceptual acoustic characteristics of stressed and unstressed syllables in English and Ukrainian

Perceptual characteristics of stressed syllables in comparison with unstressed ones	Number of cases of prevailing perceptual characteristics of stressed syllables (%)	
	English	Ukrainian
Strength	98.4	96.7
Loudness	76.5	46.0
Length	71.2	68.6
Pitch	25.2	16.5
Weight	52.8	46.2

6.7. POSITION OF WORD STRESS IN ENGLISH AND UKRAINIAN

Word stress is also considered from the point of view of its position or place in the word and of the degree of acoustic energy with which a syllable is pronounced in the word.

According to the position of the syllable in the word two types of word stress are distinguished – free, i.e. stress may be on any syllable of different words or fixed, when stress falls on the definite syllable in all the words of the language. Thus, in Polish the second syllable from the end is always stressed, in Estonian the first syllable of the word is stressed.

As to the degree of stress, as it has been mentioned, there exist three degrees of word stress in most languages – primary, secondary and unstressed syllables.

In English and Ukrainian word stress is relatively free. The stress may fall on any syllable of the word though what syllable is stressed is fixed for each word.

Two- and three-syllable words and occasionally four-syllable words have only one stressed syllable and all the other syllables are unstressed in English as well as in Ukrainian. The stress may fall on any of the two-syllable or three-syllable words though which syllable is stressed is fixed for each word.

The rules of place of stress in English words are subjected to numerous exceptions what made Daniel Jones to admit that foreign students are obliged to learn the stress of each word individually.

Despite the fact that exceptions are numerous some rules are to be taken into consideration.

In English stress may be:

1. on the first syllable:
 - number ['nʌmbə];
 - language ['læŋɡwɪdʒ];
 - politics ['pɒlətɪks];
2. on the second syllable:
 - credulity [krɪ'dju:lɪtɪ];
 - lieutenant [lef'tenənt];

disorder [dɪs'ɔ:də];

3. on the last syllable:

police [pə'li:s];

balloon [bə'lu:n].

In Ukrainian stress may also be:

1. on the first syllable:

голуб [ГОЛУБ];

власно [ВЛАСНО];

2. on the second syllable:

дедалі [ДЕДАЛІ];

даремність [ДАРЕМНІСТЬ];

3. on the last syllable:

голосний [ГОЛОСНИЙ];

крадькома [КРАД'КОМА].

Syllables may be pronounced with several degrees of stress – stronger or weaker in English and Ukrainian words.

Several degrees of word stress are distinguished, but for practical purposes it is generally sufficient to distinguish three main degrees of stress – primary, secondary and unstressed syllables.

Thus, in the word *examination* [ɪgˌzæmɪ'neɪʃn] the strongest or primary stress is on the fourth syllable ['neɪ], there is a weaker or secondary stress on the second syllable [ˌzæ], the other syllables are said to be unstressed.

In English and Ukrainian words of two or three syllables only one degree of stress is distinguished, all the other syllables are unstressed.

Examples:

The English: telegram ['telɪgræm]; proclaim [prə'kleɪm].

The Ukrainian: гамір [ГАМІР]; верховний [ВЕРХОВНИЙ].

Some polysyllabic adverbs in English have a single strong stress, the other syllables are unstressed.

Examples:

particularly [pə'tɪkjʊləli];

invariably [ɪn'veəriəblɪ].

Compound words are often to be pronounced with a single stress.

Examples:

appletree ['æpltri:];

schoolmaster ['sku:lma:stə];

daybreak ['deɪbreɪk];

blacksmith ['blæksmɪθ];

dining-room ['daɪnɪŋ rʊm];

birthday ['bɜ:θdeɪ].

In Ukrainian the cases of single stressed polysyllabic words are even more numerous.

Examples:

зауваження [ЗАУВАЖЕН'А];

педагогічний [ПЕДАГОГІЧНИЙ];

замішувати [ЗАМІШУВАТИ];

мелодійність [МЕЛОДІЙНІСТЬ];

переатестація [ПЕРЕАТЕСТАЦІЯ];

безсмертний [БЕЗСМЕРТНИЙ].

In English in words of four or more syllables a primary (or stronger) stress, and a secondary (or weaker) stress are distinguished.

Examples:

fundamental [ˌfʌndə'mentl];

examination [ɪɡˌzæmɪ'neɪʃn].

Some Ukrainian compound words of four and more syllables are pronounced with a primary and a secondary stress, but such cases are rather rare.

Examples:

народногосподарський [НАРО́ДНОГОСПОДА́РС'КИЈ];

вагоноремонтний [ВАГО́НОРЕМО́НТНИЈ];

політгодина [ПОЛ'І́ТГОДІ́НА].

There are some rules defining the place of the stress in the words that have two strong degrees of stress or a primary and a secondary stress but there are many exceptions to these rules. However some general principles were formulated in the literature (Jones D., 1962; Kingdon R., 1958; Наконечний М.Ф., 1959 and others).

The following words in English are usually pronounced with two strong degrees of stress:

1. Cardinal and ordinal numerals from thirteen to nineteen.

Examples:

thirteen ['θɜː 'tiːn];

fourteen ['fɔː 'tiːn];

fifteen ['fɪf 'tiːn];

sixteen ['sɪks 'tiːn];

sixteenth ['sɪks 'tiːnθ];

seventeenth ['sevn 'tiːnθ];

eighteenth ['eɪt 'tiːnθ];

nineteenth ['naɪn 'tiːnθ].

2. Compound adjectives, as a rule, have two primary stresses if the first element of them is an adjective too.

Examples:

short-paid ['ʃɔːt 'peɪd];

short-sighted ['ʃɔːt 'saɪtɪd];

short-tempered ['ʃɔːt 'tempəd];

old-established ['əʊld ɪ'stæblɪʃt];

old-fashioned ['əʊld 'fæʃnd];

good-tempered ['gʊd 'tempəd];

good-humoured ['gʊd 'hjuːməd];

free-handed ['friː 'hændɪd];

free-spoken ['friː 'spəʊkən];

ready-made ['redi 'meɪd];

many-sided ['meni 'saɪdɪd];

poly-syllabic ['pɒlɪsɪ'læbɪk].

3. Compound nouns and verbs may have two strong stresses if the first and the second elements of them have a distinct meaning of their own. Two primary stresses show the double root origin of these words.

Examples:

red brass ['red 'brɑːs];

red deer ['red 'diə];

red cent ['red 'sent];

good will ['gʊd 'wɪl].

4. Words with some prefixes have two primary stresses, if the prefix which has a distinct meaning of its own is added to a word in common use. These prefixes may be divided into the following groups:

a) prefixes implying negation added to a word give it an opposite meaning (*un-*, *in-*, *ir-*, *il-*, *non-*, *dis-*, *under-* etc.);

Examples:

unasked ['ʌn'ɑːskt];

unable ['ʌn'eɪbl];

unvalued ['ʌn'væljuːd];

indisputable ['ɪndɪ'spjuːtəbl];

inside ['ɪn'saɪd];

ill-advised ['ɪləd'vaɪzd];

ill-used ['ɪl'juːzd];

non-appearance ['nɒn ə'piərəns];

non-attendance ['nɒn ə'tendəns];

disconnect ['dɪskə'nekt];

disengage ['dɪsɪn'geɪdʒ];

disobey ['dɪsə'beɪ];

underwork ['ʌndə'wɜːk];

undervalue ['ʌndə'væljuː];

b) prefixes implying assistance (*sub-*, *vice-*):

sub-lieutenant ['sʌbleɪ'tenənt];

vice-chairman ['vaɪs'tʃeəməŋ];

vice-minister ['vaɪs 'mɪnɪstə];

c) prefixes with different meanings:

ex- (meaning "former") e.g. ex-minister ['eks'mɪnɪstə];

pre- (meaning "before") e.g. pre-war ['pri'wɜː];

over- (meaning "too much") e.g. overdo ['əʊvə'duː];

inter- (meaning "between", "among") e.g. interbreed ['ɪntə'briːd].

Words with prefixes tend to be pronounced with a primary and a secondary stress or to lose one of the stresses altogether. In modern English words with prefixes have generally a secondary stress on the prefix:

a) if they are in common use together with the prefix;

Examples:

disengaged [ˌdɪsɪn'geɪdʒd];

immigration [ˌɪmɪ'ɡreɪʃn];

exposition [ˌeksˌpə'zɪʃn];

immobility [ˌɪmə'bɪlətɪ];

incivility [ˌɪnsɪ'vɪlətɪ];

irremovable [ˌɪrɪ'muːvəbl];

b) if they are not used in the given form without the prefix;

Examples:

imitation [ˌɪmɪ'teɪʃn];

incidental [ˌɪnsɪ'dentl];

irrecoverable [ˌɪrɪ'kʌvərəbl];

explication [ˌeksˌplɪ'keɪʃn].

In Ukrainian stress may be:

1) on the root of the word:

a) in words with root vowel "o", "i":

потік [ПОТ'ІК];
потіку [ПОТО́КУ];
прихід [ПРИХ'ІД];
приходу [ПРИХО́ДУ];

b) in nouns of feminine gender ending in -а (-я):

пригода [ПРИГО́ДА];
загроза [ЗАГРО́ЗА];
розтрата [РОЗТРА́ТА];

and two-syllable nouns ending in -ка, -ва:

книжка [КНІ́ЖКА];
жертва [ЖЕ́РТВА];

c) in verbal nouns:

гулянка [ГУ́ЛАНКА];
читанка [ЧІ́ТАНКА];

d) in nouns of masculine gender ending in -ик, -ень:

вогник [ВО́ГНИК];
учень [У́ЧЕН'];

e) in nouns denoting some kind of institution, etc.:

майстерня [МАЙСТЕ́РН'А];
лікарня [ЛІКА́РН'А];

f) in adjectives with the suffix -ень:

більшенький [БІ́ЛШЕН'КИЙ];
меньшенький [МЕ́Н'ШЕН'КИЙ];

2) on the last syllable:

a) in abstract and collective nouns:

глушня [ГЛУ́ШН'А];
рідня [РІ́ДН'А];

b) in the majority of words of masculine gender:

коваль [КОВА́Л'];
кобзар [КОБЗА́Р];
пастух [ПАСТУ́Х];

c) in adverbs ending in -кома:

крадькома [КРАД'КОМА́];
тайкома [ТАЙКОМА́].

Ukrainian adjectives ending in -чий are usually pronounced with a stress on the second syllable from the end.

Examples:

творчий [ТВО́РЧИЙ];
плодючий [ПЛОД'У́ЧИЙ].

A great number of Ukrainian words with prefixes (especially such prefixes as *без-*, *на-*, *пра-*, *не-*, *про-*, *нід-*, *при-*) are pronounced with a stress on the prefix:

Examples:

безліч [БЕ́ЗЛІЧ];
прадід [ПРА́ДІД].

Verbal prefixes are generally unstressed (with the exception of the prefix *ви-* which is usually stressed, e.g. випитати [ВИПИ́ТАТИ]).

Ukrainian compound adjectives are pronounced with a single stress on the second element:

багатобічний [БАГАТОБІЧНИЙ];
великоврожайний [ВЕЛИКОВРОЖАЙНИЙ].

Most compound nouns in Ukrainian are also pronounced with a stress on the second element:

головноуправляючий [ГОЛОВНОУПРАВЛ'АЙУЧИЙ];
всюдихід [ВС'УДИХІД].

Compound nouns, the first element of which is a noun, are pronounced with two strong stresses on the two elements:

генерал-лейтенант [ГЕНЕРАЛ-ЛЕЙТЕНАНТ];
генерал-майор [ГЕНЕРАЛ-МАЙОР].

The semantic and grammatical role of the stress is shown in the examples given below:

- 1) word stress distinguishes a group of words from a compound word;

Examples:

black board ['blæk 'bɔ:d]	чорна дошка;	blackboard ['blækbɔ:d]	класна дошка;
green horn ['gri:n 'hɔ:n]	зелений ріг;	greenhorn ['gri:nhɔ:n]	новак;
black bird ['blæk 'bɜ:d]	чорний птах;	blackbird ['blækbɜ:d]	дрізд;
red skin ['red 'skɪn]	червона шкіра;	redskin ['redskɪn]	індієць;
red wing ['red 'wɪŋ]	червоне крило;	redwing ['redwɪŋ]	дрізд;
white throat ['waɪt 'θrəʊt]	біла шия;	whitethroat ['waɪtθrəʊt]	кропив'янка;
green house ['gri:n 'haʊs]	зелений дім;	greenhouse ['gri:nhaʊs]	теплиця;
greenstone ['gri:n'stəʊn]	зелений камінь;	greenstone ['gri:nstəʊn]	нефрит;
white fish ['waɪt 'fɪʃ]	біла риба;	whitefish ['waɪtfɪʃ]	сиг;
white thorn ['waɪt 'θɔ:n]	біла колючка;	whitethorn ['waɪtθɔ:n]	глід;
grey beard ['greɪ 'biəd]	сива борода;	greybeard ['greɪbiəd]	старик, дід;
grey goose ['greɪ 'gu:s]	сірий гусак;	greygoose ['greɪgu:s]	дикий гусак;

- 2) word stress can change the grammatical form of the word, various parts of speech;

Examples:

Nouns

accent ['æksənt]
conduct ['kɒndəkt]
converse ['kɒnvɜ:s]
desert ['dezət]
essay ['eseɪ]
foretaste ['fɔ:teɪst]
impress ['ɪmpres]
insult ['ɪnsʌlt]
object ['ɒbdʒɪkt]
produce ['prɒdʒu:s]
protest ['prəʊtest]
subject ['sʌbdʒɪkt]
transport ['trænsɜ:pɔ:t]

Adjective

absent ['æbsənt]
abstract ['æbstrækt]
frequent ['fri:kwənt]
present ['preznt]

Verbs

accent [ək'sent];
conduct [kən'dʌkt];
converse [kən'vɜ:s];
desert [dɪ'zɜ:t];
essay [e'seɪ];
foretaste [fɔ:'teɪst];
impress [ɪm'pres];
insult [ɪn'sʌlt];
object [əb'dʒekt];
produce [prə'dʒu:s];
protest [prə'test];
subject [səb'dʒekt];
transport [træns'pɔ:t];

Verb

absent [əb'sent];
abstract [əb'strækt]
frequent [frɪk'went];
present [prɪ'zent]

administration [ədˌmɪnɪs'treɪʃn];
academician [əˌkædə'mɪʃn];
familiarity [fəˌmɪlɪ'ærɪtɪ];
peculiarity [pɪˌkju:lɪ'ærɪtɪ];
superiority [sjuːˌpɪərɪ'bɒrɪtɪ].

Ukrainian students also make such mistakes therefore they should memorize long English words with the secondary stress on the first or on the second syllable.

SUMMARY

Word stress in English and Ukrainian is energetic dynamic in nature. The main physical essence of word stress is an increased impulse of the acoustic energy.

Word stress singles out the accentual centre of the word, organizes the word as a linguistic unit. Word stress is the inevitable element of all the speech units – of a sense-group, a phrase, overphrasal unities and the text – the highest unit of speech on suprasegmental level. Word stress is characterised by some amount of degree of energy which is the result of muscular tension of the articulating organs in the process of speech. The syllables which are characterised by the increase of acoustic energy in comparison with other syllables in the word are said to be stressed.

In a word consisting of two or three syllables, one of the syllables of which is characterised by a bigger tension of the organs of speech and consequently, by a stronger impulse of the acoustic energy, is said to be stressed. The other or the others syllables of the word that are characterised by a weaker impulse of acoustic energy are said to be unstressed. Thus, each syllable has some degree of acoustic energy. There are as many degrees of energy as there are syllables in a word, but a human being usually can perceive only four of five degrees of syllable energy. Only those degrees of acoustic energy are considered to be degrees of word stress, which are phonologically opposed to other degrees of acoustic energy, and thus, are perceived as word stress.

In English and Ukrainian the majority of phoneticians assert that there are syllables of three linguistically relevant degrees of stress – primary, secondary and unstressed syllables.

The theory of word stress has been considered by linguists in the course of time. Different definitions of word stress were suggested by scientists.

The physiological conception of word stress, proposed by L.V. Shcherba was especially popular in the 1950s. According to this theory the word stress is the result of the increased muscular tension of the organs of speech and consequently, by a longer duration. The exceptional role of duration as the main characteristic feature of a word stress in Russian was later supported by the results of experimental investigations (Zlatoustova L.V., 1953).

It was noted that the force gradation produces the impression of strong and weak syllables in most languages (Tompson A.I., 1910). It was stated that the energetic articulation of speech organs and their coordinate movements involves a strong push of the air from the lungs and gives the impression of intensity or loudness on the level of perception due to which the degree of stress is distinguished (Torsnev T.P., 1950).

Rather many scientists have come to the conclusion that due to the tension of articulation, stressed syllables are characterised by higher fundamental frequency and are perceived as higher in pitch than the unstressed syllables (Jones D., 1956; Mateescu D., 2003, and others).

Higher fundamental frequency cannot be considered a parameter discriminating stressed and unstressed syllables in English and Ukrainian as well as in other languages of a dynamic type of stress. It has been proved in numerous experimental phonetic investigations that frequency characteristics differentiate communicative types of utterances, various modal and emotional connotations on suprasegmental level but are irrelevant on a segmental level.

Some scientists suggested that, besides a greater degree of speech organs tension, stressed syllables have a higher degree of prominence (Vassilyev V.A., 1963; Mateescu D., 2003).

This point of view was criticized by some linguists because prominence is a wider phenomenon than word stress – it is a combined effort of timbre, duration, intensity, intensified sentence stress and intonation.

It was demonstrated in Chapter 5 that the main physical characteristic feature of a syllable is total acoustic energy.

The total acoustic energy is a complex physical characteristic which might be a coordinated effort of intensity and duration, defined as intensity over time.

Stressed and unstressed syllables are similar in nature. The difference between stressed and unstressed syllables is purely quantitative – the stressed syllable is characterised by a bigger degree of acoustic energy than the corresponding unstressed syllable or unstressed syllables in the same word.

Thus, each syllable in the word has some degree of energy. From the physical point of view there are as many degrees of energy in a word as the number of syllables in it.

From the linguistic point of view there exists a functional discrimination of definite degrees of word stress in any language. But only those syllables are said to be stressed which are phonologically opposed by the degree of the total acoustic energy to other syllables of the word. Several degrees of stress may be opposed to stressed and unstressed syllables in words consisting of more than three syllables, that is the biggest degree of acoustic energy may be opposed to a weaker degree of energy and both of them may be opposed to the weakest degrees of energy of the word. The majority of English phoneticians assert that there are three degrees of stress in English polysyllabic words – primary, secondary and unstressed syllables.

In Ukrainian three degrees of word stress are observed in polysyllabic words too, but not so often as in English.

The primary stress is characterised by the biggest degree of acoustic energy in the word. The secondary stress is also rather strong, but weaker than the primary one.

In Ukrainian stressed syllables are weaker in acoustic force and are not so vividly opposed by the degree of acoustic energy to the unstressed syllables as in English. It might be explained by the absence of reduction in Ukrainian, by the difference in the grammatic and rhythmic organization of the two languages.

Word stress has not been studied experimentally before the appearance of electro acoustic speech recording apparatuses in the laboratories of experimental phonetics. The results of the first experimental investigations of the acoustic nature of word stress were contradictory.

D.B. Try (1955) asserted that duration and intensity were both cues for judgment of word stress in English, but duration was more effective.

P.H. Lieberman tried to prove that intensity is a more important correlate of word stress than duration, though fundamental frequency according to him seemed to be more relevant. Observations of other scientists supported the leading role of frequency characteristics of word stress in British English.

Contradictory results of word stress may be explained by a limited experimental material. Besides the influence of the grammatic and phonetic structure of the languages on the characteristics of word stress were not taken into consideration. The results of the experimental investigation were not verified with the help of methods of the statistic analysis.

Ukrainian word stress has not been studied experimentally until the 1960-70s.

One of the first systematic contrastive experimental analyses of English and Ukrainian word stress was published in the second part of the 20th century (Brovchenko T.A., 1972).

All the requirements of phonetic experimental analysis were preserved:

- The amount of experimental material (over 3000 units) and the number of speakers (20 speakers of English and 20 speakers of Ukrainian) were statistically sufficient.

- Stressed and unstressed syllables were taken in different positions in the word, in different syllabic structures of the words and in different communicative types of phrases.

- The results of the electro-acoustic phonetic experimental research were subjected to mathematic statistic analysis to prove their reliability.

The results of experimental analysis supported the hypothesis that the main physical characteristic of stressed syllables in English and Ukrainian is the total acoustic energy (W_{tot}) – a coordinate action of its components: intensity (A) and duration (t). In all the observed cases the absolute meaning of the total acoustic energy of the stressed syllable was considerably bigger than that of the corresponding unstressed syllable.

The average relative coefficients reflecting the correlation of the total energy characteristics of stressed and unstressed syllables in English – 2.06 rel. units, in Ukrainian – 1.96 rel. units showed that the total acoustic energy was about twice as big as the total acoustic energy of the unstressed syllables and remained stable under various conditions of pronunciation and consequently, is the main acoustic characteristic of word stress both in English and Ukrainian.

Duration and intensity of stressed and unstressed syllables did not differ so much and were not so stable as the total acoustic energy, the relative coefficients were not so big and stable as those of the total acoustic energy. The coefficient of correlation which showed the difference between the relative characteristics of intensity of stressed and unstressed syllables in English was 1.24 rel. units. The coefficient showing the relation between characteristics of duration of stressed and unstressed syllables were 1.39 rel. units in English and 1.58 rel. units in Ukrainian.

The data about the correlation of the two components of the total acoustic energy, that is about their relative characteristics made it possible to assert that the shares of intensity and duration are not equal in creating the stressed syllables in the two languages. Intensity is a more important component of the total acoustic energy in English, in most cases the share of intensity was much bigger than that of duration. The average relative coefficients, showing the correlation of intensity between stressed and unstressed syllables were considerably bigger than those of duration. Thus, intensity is a more important component of the total energy than duration in English.

In Ukrainian the share of the components of the main acoustic characteristic of word stress – the total acoustic energy was not equal either. Duration proved to be a more important component of the total energy than intensity in Ukrainian. In most cases the share of duration was much bigger than that of intensity. The average relative coefficients showing the relation between the duration of stressed and unstressed

syllables were considerably bigger than those of intensity. It shows that duration is a more important component of word stress than intensity in Ukrainian.

Experimental investigations showed that the difference in fundamental frequency both in English and Ukrainian is insignificant. Fundamental frequency cannot be considered a relevant acoustic characteristic of word stress. It belongs to melodic characteristics of suprasegmental units of speech (fig. 6.1, p. 227).

The auditory subjective analysis testified that most stressed syllables were perceived by the listeners as stronger, louder and longer. The higher pitch of voice of the stressed syllables was perceived by the listeners in rather rare cases.

An equal perception of stressed syllables as longer and louder in a prevailing number of cases, both in English and Ukrainian, while the share of duration – a main characteristic of a word stress is bigger in Ukrainian than in English may be explained by the phonological length of vowels in English, while in Ukrainian the length of vowels is phonologically irrelevant.

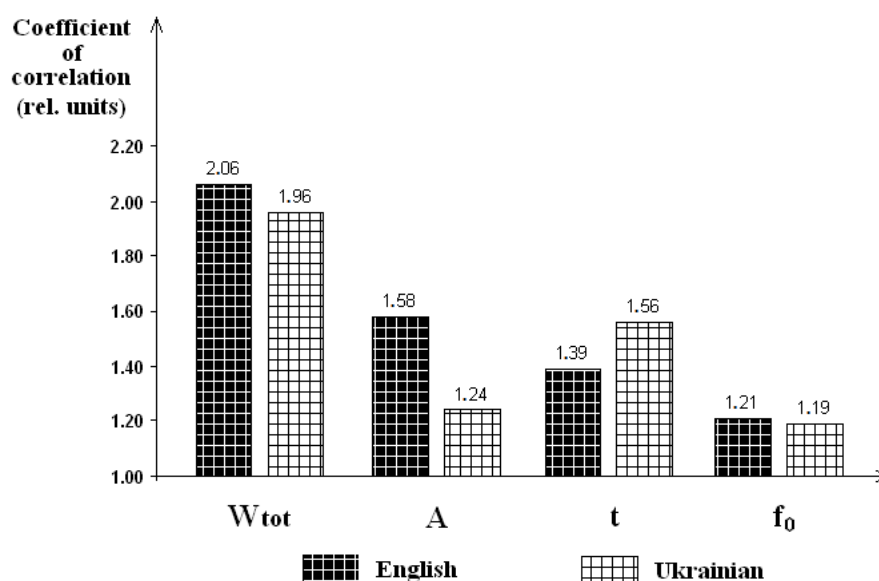


Fig. 6.1. Average objective acoustic relative coefficients of correlation between stressed syllables in English

The experimental analysis of subjective characteristics of word stress supports their leading role in the perception of stress.

The subjective perceived characteristics of word stress revealed the same regularities as the corresponding objective characteristics. The subjective characteristics of strength as well as the corresponding objective characteristics of the total energy are the main feature of word stress in English and Ukrainian. On the level of perception the share of subjective parameters of loudness and length is different in the two languages as well as of the corresponding objective characteristics.

Though the share of the components of the main acoustic characteristic of word stress – total energy, intensity and duration may be different in different languages and one of them may be more important than the other, it should be taken into consideration

that both the components of the dynamic type of stress are necessary for creating the main characteristic of the syllable in the dynamic type of languages – total energy.

The subjective characteristic of weight was perceived by a rather large number of listeners and may be considered as a characteristic feature of word stress on the level of perception though its physical nature is not clear.

The results of the perceptual subjective analysis of word stress in English are presented in fig. 6.2.

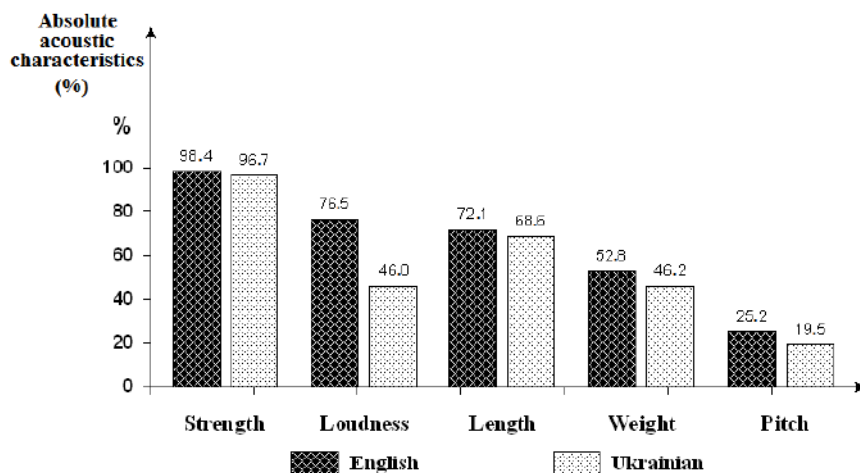


Fig. 6.2. Average subjective perceived acoustic characteristics of stressed syllables in English and Ukrainian

The role of word stress is extremely great in the language. The character of stress, its strength and place influence all the phonetic phenomena of the sounding speech.

Word stress, as well as speech sounds and intonation, is one of the phonetical means of semantic expression and can change the meaning or the grammatical form of the word.

PART II

SUPRASEGMENTAL UNITS OF SPEECH

CHAPTER 7.

STRUCTURAL AND PHONETIC SPEECH

ARRANGEMENT ON THE SUPRASEGMENTAL

LEVEL

7.1. SPEECH CONTINUUM DELIMITATION

In Part 1, where English phonetics and phonology were described many of the problems, dealing with phonetic characteristics of individual segments (vowels and consonants), syllables and some processes that influence these segments (assimilation, elision, aspiration and others) and the mechanisms evolved in the process of combining these segments into greater units (syllables and words) were dwelt on.

There are some phonological features characteristic of speech segments larger than sounds. These features cannot be derived out of the individual characteristics of vowels and consonants, which compile the phrase. They do not involve one segment but spread over a larger number of segments. These type of phonetic characteristics are called suprasegmentals or prosody. The word “prosody” comes from the type of Greek song that is accompanies a musical instrument. Some time ago, this term denoted the peculiarities of pronouncing the words, including the time and pitch of their production. Special signs were introduced to mark these characteristics in writing; these marks were called “prosodies”. By the srcond century of A.D., the word prosody denoted the phonetic characterisrics that did not refer to the segmental level of vowels and consonants continuum [Coupler-Kuhlen, 1986:1].

In modern linguistics the phonetical characteristics of the suprasegmental level are united by the general term intonation. The term “intonation” is derived from the Latin word that means “to speak loud.” Nowadays, the linguistics term “intonation” is much more complicated than its etymological meaning and includes the whole spectrum of phonetical means of an utterance at the suprasegmental level. This refers to the following: melody, loudness, tempo (pauses included), timber, sentence-stress and rhythm.

Among linguists there is no unique approach to the terms intonation and prosody, which characterize the phonetic structure of speech suprasegmentals. Some researchers believe the term “prosody” deals with the problems of the stress system; others attribute more characteristics to it. A number of scientists use these terms as synonyms.

When describing the principles of speech delimitation at the suprasegmental level, the following suprasegmental units are analysed: phonetical word, sense-group, phrase, overaphrasal unity, and text.

A phonetical word is an independent word together with the unstressed form-words and particles joining it.

A syntagm (sense-group) originates from the Greek word “syntagma” – built together, connected; it is interpreted as a minimal semantic unit of speech shaped

intonationally and syntactically. In this sense the term syntagm was first used by L.V.Scherba. A sense-group can spread over the whole sentence but more often a sentence or a phrase consists of a number of sense-groups.

A phrase is prosodical and has syntactical unity, which can include inner (between the sense groups) pauses, which are treated as the units of oral speech linea division. A phrase corresponds to the term "sentence" in written speech.

An overphrasal unity (a complex syntactic unity) is a portion of speech consisting of two or more phrases which are united by a common topic and development of some part of the preceding utterance in the following one, it refers to all types of theme and rheme progression. In oral speech prosody of overphrasal unities is "superimposed" on the syntagmatic and phrasal intonational structures.

A text (textus – material, interlacing) is a semantically united succession of signs which is characterized by coherency, integrity and completeness. Phonetic investigations indicate that the intonational structure of the text cannot be regarded as a mere sum of intonation of its structural units.

The system of the sense groups' prosody is presented rather well in modern scientific literature.

The problem of the intonation of supraphrasal unities and the text is an important and independent problem, and will not be discussed in this publication. Full attention will instead be paid to the analysis of prosodical structure of sense groups and phrases consisting of a number of sense groups.

The problem of a sense-group delimiting out of a speech continuum is closely connected with three criteria insuring the integrity of this unity: semantic completeness, syntactic wholeness, and intonational unity.

Among the semantic factors responsible for the words' unity in a sense group, special attention should be paid to the ones involved in the process of joining the words that express an integral, though a complicated concept, in the given context. Thus, the words joined by their meaning and needed for the purpose of understanding the whole meaning of this group of words are disposed of within one sense group. Alternatively there can be a tendency to put each member of the antithesis into a separate sense group:

Мій батько працює інженером. || Мати | ніде не працює. ||

My father works at a firm. || My mother | doesn't work anywhere. ||

The degree of a word's meaningfulness conditions its possibility to be syntagmatically marked: form-words and semi-notional words do not form a separate sense group. This refers to the pronouns, auxiliary- and semi-auxiliary verbs, numerals, most adjectives, and others.

Regarding the special semantic importance of the above, enumerated words are the exception. As a rule, in such cases there turns out to be a psychological pause in speech, the prominent word making a separate sense group:

Will you give me three tickets? || – Three | is impossible. || There are only two available. ||

The semantic factors that condition the syntagmatic division of utterances are closely connected with the syntactic factors that are dependent on the sentence structure, on the degree of its expansion, on the strength of syntactic links between the words. Primarily, it refers to the parts of compound sentences, the principal, subordinate and introductory clauses:

We'll have a walk | if you don't mind. ||

Separation of the syntactic structures that complicate the sentence into an independent sense group is also inevitable, such syntactic structures including isolated

phrases, homogeneous parts of a sentence, introductory words, interjection, appositions, addresses and enumerations:

Dave, | how long do you intend to stay in Turkey? ||

However, sometimes addresses, introductory words, and each of two homogeneous members of a sentence joined by the conjunction «and» do not form a separate sense group.

He is a good eater and sleeper. || Добрувечір, Кампе. ||

Some members of a sentence or groups of members of a sentence can make a separate sense group in sentences of any structure. Therefore, in English the following elements of an utterance can create a sense group of their own: the subject expressed by a noun, or the subject group including the attributes related to it; the adverbial modifiers of place and time located at the beginning of the sentence and some others:

Out in the crowd | against the railings | with his arm hooked in Annette's | Soames waited. ||

In Ukrainian the list of syntactic structures which can form independent sense groups is considerably wider than in English. This can be explained by the free word order in a Ukrainian sentence. Besides the group of the subject and adverbial modifiers being placed at the beginning of the sentence, an object in pre-position, an extended post - posed object, an extended post - posed adverbial modifier, an uncoordinated extended attribute and an extended predicate group (including the adverbial modifiers, post - posed objects and others) can form independent sense groups:

Купила вона собі сукню | з модної джинсової тканини. ||

All forms of the syntactic structures of a sense group listed above are typical in languages. They are common for all styles of speech, and, certainly, they are characteristic of a norm only and are not obligatory.

Both in colloquial and in literary speech, different individual, stylistic and emphatic factors causing a syntactic structure variability in a sense group are numerous. However, as L.W.Scherba wrote, "in our consciousness...there is knowledge of typical methods of a sense group construction ...".

Semantic and syntactic integrity of a sense group obtains an intonational shape in oral speech that allows it to be regarded as the minimal independent unit of intonation. The sense group unity in speech is achieved by the use of a complex of prosodic means. The melody, temporal characteristics, loudness, rhythm and sentence stress are involved. The sense groups are embodied into one of the basic melody contours depending on the communicative type of the utterance and its attitudinal and emotional connotation (expanded upon later). The character of loudness alterations within the limits of a sense group also submits to certain regularities of the law. The most essential role in a sense groups division belongs to the normative (syntagmatic) stress and pauses between the sense groups.

In colloquial speech the most typical basic changes in the components of intonation mainly appear on the stressed syllables of the utterance, while unstressed syllables continue the pitch motion of the stressed syllables. Certainly, there are some cases where the unstressed syllables behave in a different way.

The role of different syllables within the intonation contour is not equal. Separate syllables or groups of successive syllables form some independent structural elements within the sense groups; these elements execute some specific kind of work. The following principal elements of a sense group are usually regarded in the course of its intonational analysis: the nucleus, the post-nuclear part and the pre-nuclear part.

The nucleus is the most essential element of the intonation group; it is always present in the sense group. This is the semantic and intonational center of a sense group

that is usually located in the last stressed syllable of an intonation group. The post nuclear part that includes one or more unstressed syllables can follow the nucleus. The nucleus, together with the post nuclear part, form the terminal tone.

The pre nuclear part precedes the nucleus. Its basic element is the head the group of stressed and unstressed syllables that starts with the first stressed syllable.

British phoneticians use other terms. G. Arnold and J. O'Connor [O'Connor, Arnold, 1961] write the "head" instead of the "scale". R Kingdon [Kingdon, 1972] thinks that the "head" is the first stressed syllable and excludes the first stressed syllable out of the head, thus, naming the latter the "body".

One or more unstressed syllables – the so-called *pre-head* of the intonation group – can precede the head.

It should be underscored that the elements of an intonation group are always interacting and form a single intonation contour (pitch and dynamic), thus their separate analysis is justified only when aiming at examining some details of intonation or for teaching purposes.

7.2. PHONETIC CHARACTERISTICS OF SUPRASEGMENTAL UNITS

In modern linguistics, intonation is continued to be understood as a complex of structural unity of prosodic elements which are relevantly differentiated in different functional intonation structures.

The componental structure of intonation comprises the whole spectrum of phonetic means which are involved at the suprasegmental level of phrase development. A specific arsenal of suprasegmental phonetical means is characteristic for each stage of speech communication (articulation, acoustics and perception). It is common to name the components of intonation according to the terms existing at the perceptive level. Speech melody, loudness (or intensity), duration (tempo and pauses), timber of speech, sentence stress and rhythm are all involved. The whole range of prosodic means are described in Chapter 8; the characteristics of their articulatory, acoustic and perceptive correlates are there provided. In this chapter, a brief characteristic of all of the aforementioned components will be made available.

Melody (tone) involves the variations in the pitch of the voice in speech. When analysing the intonation of an utterance, not only pitch level but all peculiarities of pitch in a voice are to be taken into consideration: configuration of the speech melody (i.e. the character of movement of pitch of a voice or the type of the so-called intonation contour – IC); the range of pitch (i.e. the difference between the highest and the lowest data of fundamental frequency); the speed of tone movement, etc.

Besides, this other components of intonation should not be neglected: loudness, tempo, timbre, rhythm and sentence-stress.

Loudness is a relative force of auditory perception that depends on the perceived energy of sound waves. It is conditioned by the amplitude of the speaker's vocal cords vibration when producing speech.

The tempo of speech may be defined as the speed with which a word or an utterance as a whole is pronounced. Usually three degrees of tempo are distinguished by phoneticians – normal, quick and slow

Timbre (voice quality) is the special colouring of the voice in speech which is superimposed on speech melody. Timbre is the specific colouring of a human voice which shows the speaker's mood and emotions.

From the physical and functional points of view, timbre is the least investigated component of intonation.

Sentence stress is the greater degree of energy or prominence which is given to one or more words in a phrase as compared to the other words of the same phrase.

Rhythm is the periodical regular alteration of commensurable sound elements in a speech continuum. It presents a tendency towards equal duration (isochrony) of syllables and intervals between the stressed words in speech. Rhythm is closely connected with tempo of speech.

Intonation as a supplementary system enables the speaker to convey the information which is absent in syntactical and lexical structures and to express the meaning of a sentence adequately, as well as the speaker's attitude to the content of the utterance, his feelings, volition and emotions.

Intonation performs a number of functions, the main of which are:

the organizing function – the division of speech units from one another;

the differentiation of communicative types of the sentences;

the expression of logical relations within the speech unit and between the speech units in a speech chain;

and the expression of modal and emotional shades of an utterance.

Although intonation is a complex unity of several components inseparable from each other, each of them may have a decisive or subordinate significance in conveying the aim of communication.

The chief functions of the main component of intonation – tone or melody are the following:

1. To organize (unite) sense-groups into sentences, sentences into overphrasal unities and overphrasal unities into the highest suprasegmental speech unit – the text. On the other hand, melody ensures the division of the text into overphrasal unities, overphrasal unities into phrases (utterances) and phrases into sense-groups.

2. To differentiate between the communicative types of the sentences – statements, questions, requests, orders, etc.

3. To reflect the emotional state of the speaker and his attitude to the reported.

The chief functions of loudness are:

1. To provide the basis for energetic structure of the utterance with the aid of sentence stress; that is to provide different degrees of energy for stressed and unstressed syllables, assuring their alternation according to the rules existing in the given language.

2. To provide the basis for the singling out the words, sense-groups and phrases expressing a greater degree of semantic importance or different emotions with the help of logic and emphatic sentence stress.

3. To provide the basis for the rhythmic structure of the utterance.

The chief functions of tempo are:

1. To express some logical meanings.

2. To express modal and emotional shades of an utterance.

Tempo may become slower to emphasize semantically important words or sense-groups in a sentence. Words, sense-groups, or sentences that express some secondary idea, are often pronounced quicker. Passive emotions such as depression or sorrow are usually characterized by a slow tempo. Violent emotions of anger or irritation are usually characterized by a quicker tempo.

The chief functions of intensity are:

1. To provide a basis for energetic and rhythmic structure of the utterance with the aid of sentence stress; that is to provide different degrees of energy to stressed and unstressed syllables and assure their alternation according to the alternation rules in a given language.

2. To provide a basis with the help of logic, emphatic and emotional sentence stress by singling out words, sense-groups and phrases expressing a greater degree of semantic importance or different emotions.

3. To provide the basis for the rhythmic structure of the utterance.

The chief functions of Tempo are:

1. Tempo of speech as a component of intonation has some logical and emotional functions.

2. Tempo may become slower to emphasize semantically important words or sense-groups in a sentence. Words, sense-groups, or sentences that express some secondary idea are often pronounced quicker. Passive emotions such as depression and sorrow are usually characterized by a slow tempo. Violent emotions of anger and irritation are usually characterized by a quicker tempo.

Timbre insures attitudinal and emotional connotations are conveyed in speech. It's of great importance for the stylistic differentiation of the text.

The last two components of intonation – the rhyme and sentence-stress – are complex characteristics; they are formed by means of interaction between pitch and temporal and dynamic components of intonation. That is why, from the point of view of function, they fulfill the same tasks in speech as the elements which they consist of.

It is evident that the suprasegmental level is a universal one; there is no language to be found that could exist without this level. At the same time, the way the suprasegmentals are used in every language to convey logical, semantical and attitudinal – emotive relations in communication – is unique.

7.3. TECHNIQUES REGISTERING THE INTONATION CHARACTERISTICS IN WRITTEN SPEECH

Up until recent time intonation has been regarded as the prerogative of oral speech. Written speech was treated as an object of visual perception alone. Traditionally oral and written speeches have been opposed to each other from the point of view of possibility / impossibility of exploiting intonation. It should be remembered that in this connection any written text is “pronounced” twice, i.e. by the author and by the reader, independent of whether or not the text is read aloud or to oneself. Many linguists have been writing about the intonation significance in written speech. Among them there are such famous researchers as Scherba L.V., Dzinkin V. and others. A reader should “read out” the intonation implied by the author of the text, otherwise the adequate perception of meaning is impossible.

One of the ways to present intonation in written speech is based on signs of punctuation; it has been quite well described in scientific literature. Besides, there are some approaches that do not involve punctuation when dealing with intonation in written speech; they are changes in the print, rhythmic figures exploitation and the use of descriptive lexemes (vocabulary). In spite of the fact that there are many ways of reflecting intonation in written speech, it should be kept in mind that such components of intonation as melody, tempo, timbre and loudness cannot be registered in a written text. Their direct usage is the characteristic of oral speech.

CHAPTER 8.

COMPONENTS OF INTONATION

8.1. INTRODUCTION

An analysis and description of language intonation from the point of view of phonetics must be founded upon the examination of prosodical units' material nature. It is acknowledged that the process of speech communication analysis includes three stages: speech production (phonation, articulation); a sound signal transportation in the form of sound waves, which spread within the expansible environment according to the law of physics (acoustic phase); and speech signal acceptance by the auditory system of man (perception). This is why the prosody of speech continuum can be carried out by means of describing the physiological processes that control the oral tract via analyzation of the acoustic parameters of the sound field oscillations which spread within the environment and by examining the process of acoustic signal perception aimed at the listener's adequate interpretation of the information sent by the speaker. The approach based on prosody's interpretation in terms of speech – perceived characteristics is most frequent, the differentiation of which is provided by the melody (pitch) component, loudness, tempo (the pauses included), voice timber, sentence stress and rhythm. Practically all of the named components correlate with the corresponding characteristics of the acoustic stage and the phonetical phase, though one cannot speak of a direct correlation between them. These problems are discussed later in this chapter regarding all of these intonational characteristics.

It should be mentioned that not all of the above-mentioned components of intonation have been studied well enough. Some of them (for instance, pitch and stress) have been paid much attention to in scientific and training literature; the others (timber, for example) have been explored insufficiently.

It should be acknowledged that there exists a rather important reason for which many researchers give the first role to the melody component in the intonation of speech [Ivolhler, 1987; Palmer, 1974]. It is the melody component of intonation that is most distinctly perceived at hearing and is maximally exploited in a functional way [Palmer, 1974]. That is why an appropriate system of signs was worked out for the pitch characteristics before any others. The pitch here is registered in a graphic form (tonograms). At the same time, the fixation of the temporal component of intonation is reduced to registering the pauses duration. The information about the dynamic components is marked by the stressed syllables (although some researchers use signs which denote speech loudness, but they are not commonly approved [Dubovsky, 1983, p.43]. The timber components of intonation do not have any signs (accepted by all researchers) capable of reflecting the corresponding prosodic features graphically. Therefore, it should be mentioned that even melody peculiarities can be only partially recorded with the help of the existing systems of signs, since not all acoustic characteristics of frequency changes have equivalents in functioning systems.

All the elements of a sense group (pre-head, head, nucleus and tail) differ in pitch component peculiarities, thus, the degree of pitch component prominence in the nucleus is opposed to all the other elements of a sense group.

The nuclear tone type simple (falling, rising, level) or complicated (fall-rise, rise-fall, etc.) is the principal prosodic characteristic of a sense group [Плющ, 1976; Halliday, 1963; O'Connor, Arnold, 1961].

Post nuclear syllables, as a rule, continue the tone movement of the nucleus without introducing any substantial qualitative changes into it. It should be mentioned that the appearance of a secondary stress on the post nuclear syllables may increase their significance (weight) in the intonation of an utterance (in the Ukrainian language in particular).

The type of the head (an ascending, a descending and a level head is distinguished according to the basic frequency direction within the stressed syllables in the sense group, and monotonous, stepping, sliding and scandent in dependence with the pitch level in the mutual position of the stressed and the unstressed syllables following them in the sense group) plays an important role, too, when expressing some communicative, attitudinal and other semantic relations in speech communication.

The intonation of the pre-head (in comparison with the other parts of the sense group) takes the least part in executing the communicative aim and semantic aspects of an utterance, but compared to the unstressed syllables of the head the pre-head is often more informative and is better repeated by native speakers.

In a number of research papers, there have been attempts to find a direct correlation between the melody configuration of sense group segments and the semiological units. Still, most linguists hold the opinion that the sense differentiating possibility of the pitch component of intonation is not executed due to the prosodic peculiarities of some segment in a sense group, but results from the interaction of the intonation constructions of the pre-head, head, nucleus and tail, that are functionally connected in a speech act.

For instrumental analysis, the following acoustic characteristics should be included into a list of those that are to be examined: the form and the direction of the basic tone frequency integral line (in an utterance and its segments); the place of the frequency maximum localization in an utterance and its segments; the frequency range of an utterance and its segments, the rate of the basic tone frequency fall and rise in segments and at the places of their juncture.

An essential contribution into the problem of logic and semantic relations differentiation alongside with the attitudinal connotations of the utterances is introduced by the dynamic component of intonation. Nevertheless, there is a tendency to undervalue the role of the dynamic component of intonation in the process of conveying the semantic units. One of the main reasons of such an approach is due to the fact that the dynamic component of intonation is analyzed from the point of view of word-stress and sentence stress. Even in this respect a word's prominence reached due to the logical stress (at the expense of the growth of the dynamic component) plays a decisive role in the logic and semantic structure of the utterance and in marking the relation between its members and in manifesting its attitudinal meaning.

Alongside this, speech loudness, independent of its connection with the stress, can take part in executing logical, attitudinal, and emotional meanings.

The instrumental analysis of an utterance dynamic structure is based on the following acoustic characteristics analysis: the form and the direction of the intensity integral line, the place and of the intensity maximums location and the maximal and average syllable intensity in an utterance.

The temporal component is also one of intonational means which express different aspects of contents, among them being the speaker's attitude to the utterance and to the communicative situation. The specific peculiarities of the temporal speech parameters [Rathay, 1975] (those are characteristic to all the individuals speaking the

language and are relevant in executing logical, semantic and attitudinal meanings in the process of communication) change to a considerable degree because of the significant variation in rhythmic and temporal characteristics of individual speech. The temporal component alteration is also reasoned by the following factors: the sense group length (the longer the speech pattern is the larger number of syllables is pronounced per unit of time), speech loudness (the lower the loudness is the slower the speech is), and speech style (the official and the oratory styles being characterized by a slower tempo, a non-official conversation – by a faster one) [Cramer, 1961; Fant, 1987].

Such multifunctionality of the temporal component in speech complicates the task of stating its sense differentiating role in distinguishing logic, semantic and attitudinal meanings, which is why the following temporal characteristics should be included into the list of the examined ones: the duration data of various portions of speech continuum (an utterance, its segments and its separate sounds) and the length of cessation in phonation (the pauses between the sense groups and within the sense groups [Cook, 1972] of physiological and psychological origin).

The timber characteristics of speech allow the listeners to judge the psycho-physiological condition of the speaker, his attitude to the object of communication, and the situation (i.e. to interpret the specific attitudinal and emotional meaning adequately). The indicators of the high frequency arrears intensifying the sound energy are the main correlates of timber characteristics in speech. Being one of the obligatory elements in speech intonation, the timber finds itself in a tight interaction with the other components of intonation.

The sentence stress is an important prosodic component that can (depending on the examined unit of speech) spread over a sense group such as an utterance and larger units like those including several sentences, text. Compared to the components of intonation regarded before the differentiating feature of this one lies in its complex character, since it is represented as a result of the principal physical parameters of the phonetic structure: frequency, dynamics and tempo at the acoustic level.

The role of different types of the sentence stress (normative and logic, emphatic) in oral speech can not be reappraised. The interaction and interrelation of all the enumerated types of sentence stress in an utterance aimed at emphasizing the semantic and intonational center of the utterance are caused by the communicative tasks in the process of speech production, morphologic, syntactic peculiarities of the language, vocabulary of the speech portion and its stylistic devices.

Rhyme, together with sentence stress, is a complex component of speech intonation and is the result of interaction among main components of phonetic structure: dynamic and temporal. Reoccurrence of the stressed and unstressed syllables in time (their isochronisms) defines the rhythmic structure of speech. It is quite clear that the stress is of primary importance in the rhythmic organization of speech. When analyzing the questions associated with a speech rhythm, one should remember that this component of intonation is a multi-leveled one (a syllable rhyme, a word rhyme and a sense group rhyme) and is capable of appearing in all the above-stated forms simultaneously.

Coming now to the conclusion of this inventory and taxonomic study of the intonational means of a language, it can be definitely stated that there are considerable distinctions in the informative degree of melody, loudness, tempo, timber, rhyme and sentence stress regarding their ability to convey logic, semantic, emotional and attitudinal meanings. These components of intonation have a complex character in speech. That is why the problem of their hierarchy, interrelation and interdependence in speech are to be studied alongside with the problem of each component's role when executing different linguistic functions of intonation. In this chapter the main emphasis is being put on

characterizing the elements of the intonational structure and the major functional aspects of these elements. In Chapter 9, the exhaustive characteristics of the semantic and the functional aspects of intonation will be focused upon.

8.2. MELODY COMPONENT

8.2.1. MELODY PERCEPTIVE PARAMETERS, ITS ARTICULATORY AND ACOUSTIC CORRELATES

The melody or pitch component of intonation can be regarded as a change in the height of the voice in the process of speech that assists and in interpreting the semantics of an utterance in perceiving.

The process of voice production by the vocal organs will be described in Part 1 (this being the result of the vocal cords vibration and the generation of secondary vibrations (overtones) resulting from the resonating properties of the laryngeal, oral and nasal resonating cavities). The quicker the vocal cords vibrate (two elastic folds), the higher the sound is; the slower the vocal cords vibrate, the lower the pitch of the sound is. There are two ways of increasing the speed of the vocal cord vibration: 1) by means of increasing the pressure of air getting out of the lungs (the stronger the pressure is, the quicker the air passes through the larynx and the higher is the pitch of the sound); 2) by means of the vocal cord tension increase (the stronger the tension of the vocal cords is, the higher the voice).

The length and thickness of the vocal cords should be taken into account since these are the parameters that influence the speed of the vocal cords vibration. The longer and thicker the vocal cords are (they are 1.5 cm long in men), the lower the vibration frequency is, and the shorter and thinner the vocal cords are (their length is equal to 1.2 cm in women) the higher the vibration frequency is.

If at the stage of phonation the melodious component of intonation is produced by the vocal cords vibration, from the point of view of the acoustic nature of a spreading sound-wave the melody component of intonation is presented by the fundamental frequency (that is the lowest frequency of the vocal cords vibration). This fundamental frequency tone is measured in hertz (the frequency of 1 hertz corresponds to one oscillation per second).

At the stage of auditory perception of a sound wave the pitch level characterizes the melody of intonation. The frequency modulations of the acoustic wave can not be perceived by man's ear completely, while the terminal part (one third of the duration) is not heard.

During the process of speech production, a change in the basic tone frequency in the course of an utterance realization (parts of an utterance) forms a melody contour of a given speech pattern. As it has been demonstrated by a short inventory-taxonomic analysis of the melody components, its sensedifferentiating opportunities are defined by the character of the tone variability in the terminal and pre-nuclear parts of the sense group, and by the level of the pitch component of intonation, and the range of its variation. Therefore, the communicative aim, logic and semantic relations, attitudinal and emotional connotations are developed as the result of an interaction of the intonational constructions of the pre-head, the head and the nucleus that are functionally linked in

the speech act (but not as the result of the pitch peculiarities of some segment in the sense group). That is why the pitch level and its variability character, both within each of the above-mentioned elements and in the tone group on the whole, are important for the sense group melody analysis.

The pitches over – falls (intervals) within the sense group and in either of its segments or at the borders between them are important correlates of semantics. The role of the meaning tone modifiers can be fulfilled not only by the absolute data showing the pitch component variation but also by the indicators of the rate of this change. The gradual character of a person's perception of the melody increase or decrease is supported by the results of much experimental phonetic research [Типология..., 1977; Nevalainen, 1987].

A multiple variety of combinations of the above-mentioned pitch components of intonation can be potentially used in the phonetical presentation of any speech passage of the communicative process. At the initial stage of the teaching process, a number of the analyzed melody models should be reduced to the most frequent types of the pitch models that occur in the communicative process.

8.2.2. MELODY GRAPHIC REGISTRATION

An utterance melody can be presented by a system of special signs for practical aims. In phonetic literature, there are several systems aimed at representing intonation. They can be divided into two groups

- the systems of signs, reflecting changes in melody alone;
- the systems of signs, marking the degree of syllable stress in addition to melody variation.

The following systems refer to the first group:

1. The method introduced by Ch. Fries which is based on a line drawn throughout a written phrase: the line points at a relative pitch of the voice in every part of the utterance.

2. The method offered by D. Bolinger is based on placing separate syllables at different levels depending on the pitch of the voice.

3. The method used by a number of American linguists such as K. Pike is based on putting some marks above the stressed syllables which characterize their tone level. The tone levels are numbered from one to four in accordance with their rise.

It is possible to describe two systems within the second group:

1) the method that uses the so-called stand tonograms (staves) which consist of two parallel horizontal lines aimed at writing intonation signs between them (no text);

2) the method that uses the system of signs which makes it possible to mark the intonation directly in a text.

In the first method two parallel lines of a stand - tonogram conventionally signify the upper and the low levels of the voice range in speech. A melody contour is drawn between these two lines with the help of special signs, each sign corresponding to the vowel sound. The level of these signs-location characterizes the pitch level of the corresponding vowel.

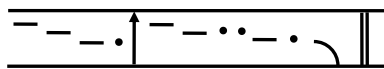
A dash (–) serves for the image of a stressed syllable pronounced at a permanent height.

A dot (.) presents an unstressed syllable in the tonogram.

A downward ($\searrow$), an upward ($\swarrow$), a falling – rising ($\searrow \swarrow$) and a rising – falling ($\swarrow \searrow$) curve serves to present some definite change in the pitch of the main stressed syllables.

The vertical arrow ($\uparrow$ or $\downarrow$) points at the place of a hop-resembling change in the pitch level of the head (see 8.2.3.3.).

That man Crofts does not seem to be good for much



This method of graphic representation of intonation components was introduced by the phoneticians L. Armstrong and I. Ward.

The second method is based on placing the due signs directly in a printed (original or transcribed) text in accordance with some special rules. Therefore, a stressed syllable is marked by the sign of stress (') placed above the upper line of the text. In case the syllable is marked by the secondary stress, the sign (ˈ) is placed under the low line of the text. The tone type of the nuclear syllable is represented by the following signs:

- - the high rise
- ˊ - the low rise
- - the high fall
- ˋ - the low fall
- ˆ - the high rise-fall
- ˆ - the low rise-fall
- ˋ - the high fall-rise
- ˋ - the low fall-rise

Either of the fixed signs is placed before the syllable it refers to:

'That 'man 'Crofts does ˊ 'not 'seem to be 'good for ˋ much.

[ˈðæt ˈmæn ˈkrɒfts dɒz ˊ nɒt ˈsi:m tə bi ˈgʊd fɔː ˋ mʌtʃ]

This method of tonetic symbols (stress marks) system used in printed texts was developed by the British linguist R. Kingdon.

Both methods of the second group possess a number of undeniable advantages as compared to the methods of pure tonetic marks placed in the text, therefore, most of modern linguists use them.

Thus the use of stand-tomograms allows the inclusion of more information about an intonation contour in comparison to the tonetic system of intonation marks placed in a text; that is the pitch level structure of unstressed syllables is reflected and stressed syllables are characterized better. The second method is more convenient in its turn since it allows the combination of the transcription of the text with its tomogram registration. Depending on the amount of the information needed, one or another method of an utterance melody contour graphic presentation is used in this work.

In case not only the qualitative characteristics but the quantitative signifiers of the speech acoustic parameters are wanted, the diagrams based on the instrumental data of the sounding speech fragments are involved. The pitch contour is characterized in detail by the frequency-temporal diagram, $F=f(t)$, where F – is the fundamental frequency, t – is the time (see fig.1.11 and 1.12).

8.2.3. STRUCTURE AND PROPERTIES OF THE MELODY CONTOUR PRINCIPAL ELEMENTS

8.2.3.1. Nucleus

The nucleus (the principal stressed syllable) is the semantic center of the sense group. That is why, as previously mentioned, the most important element of an intonation contour is the nuclear tone.

The problem of the number of tones in the English language is controversial (see part II, Introduction).

It was traditional to oppose various types of nuclear tones according to three characters: a maximum pitch level, an interval of its change, and a direction of the tone movement. Depending on the level, low, middle and high nuclear tones are distinguished. While analyzing this voice-melodic parameter, its dependence on the physiological peculiarities of the speech apparatus of the given individual should be taken into account since it is these elements that determine the upper and the lower limits of the pitch units used by a person during his speech.

According to the relative value of the melody change (falling or rise), the tonal intervals are divided into wide and narrow.

According to the direction of melody, motion simple and complex tones are distinguished. The ascending, descending and regular ones can be referred to as simple tones. There are various types of complex tones; the most widely distributed ones are descending-ascending (fall-rise) and ascending-descending (rise-fall). According to the classification read above, it is possible to distinguish between the following types of nuclear tones: low descending (low fall), high descending wide (high fall), low ascending (low rise), high ascending narrow (high rise), regular low (level), descending-ascending (fall-rise), etc.

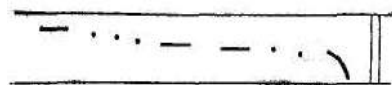
8.2.3.1.1. Low Fall

It starts at a medium level of a melody range of the voice and finishes at the low level. Therefore, judging by the interval of its variability, this tone can be interpreted as a narrow one.

The low fall usually expresses a very neutral attitude to both the subject of the speech and to the communicator. It is used to state the fact and is not complicated by any emotional connotations. It is clear that such a function of the descending tone is preserved only in case of the neutral behavior of non-nuclear parts of the pitch contour and other components of intonation. Thus, a descending monotonous or a stepping nature of the head (see further) is normative to convey the neutral attitude.

Sunday is the last day of the week.

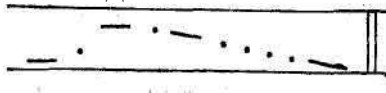
[ˈsʌndɪ ɪz ðə ˈlɑːst ˈdeɪ əv ðə ˌwiːk. ||]



In the Ukrainian language, the low descending tone also expresses a calm and neutral attitude. However, it is perceived by the Englishmen as a more level one that results from a less sharp fall in the voice; therefore, the sense group is perceived as an incomplete one.

Він сьогодні виїхав на Урал.

[V'IN S'OGODN'I VYI'KHAB NA URAL||]



8.2.3.1.2 High Fall

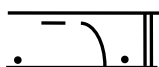
This tone begins from a high level and, depending on the level of the falling tone end, it is subdivided into a high descending wide tone (if it finishes at the lowest level of the voice range) and high descending narrow tone (if it finishes at the average level of the voice range).

The High Fall Wide Nuclear Tone

This tone reinforces the meaning of a statement, negation, or consent and, consequently, can be considered as an emphatic variant of a descending tone in the English language. It can point at the personal interest of the speaker in the subject of a conversation or accentuate the attentive attitude to the communicator.

I felt sorry.

[aɪ 'felt ˌsɒrɪ||]



That is why the high fall is more common in a lively conversation while the low fall prevails in a monologue of a descriptive nature.

In the Ukrainian language, the rate at which this tone falls is not as steep as in English. Besides, the terminal level of the melody does not reach the lowest level.

Він не знайшов його.

[V'IN NE ZNAI'SHOV YOGO ||]

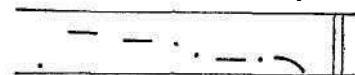


The High Falling Narrow Nuclear Tone.

The voice starts at a high level and falls down up to the middle one. In English, the post-nuclear syllables take part in the fall, too. The high narrow fall is less categorical than the high wide fall, which is why it is often used in a non-final sense groups conveying the meaning of incompleteness.

We set out for the town of Blight.

[wi 'set 'aʊt fə ðə 'taʊn əv ˌblaɪt||]



In the Ukrainian language, these tone characteristics differ somewhat from the English ones, the tone falling more smoothly, the range of its variation being narrower. Mostly this tone ends at the level somewhat higher than the middle one.

Я не розумію його.

[YA NE ROZUM'IJU YOGO ||]



8.2.3.1.3. Low Rise

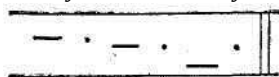
It starts at a low level and ends at a medium level. In cases when the terminal tone contains the unstressed syllables, the main stressed syllable is pronounced at the level pitch the rise takes place at the post-nuclear syllables.

The basic functional purpose of this type of a tone is to convey the incompleteness of a semantic group in a declarative sentence or a request for information in an interrogative utterance of a certain structure.

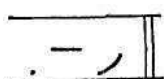
Have you come to stay? ['hæv ju 'kʌm tə ,steɪ]



Have you come to stay here? ['hæv ju 'kʌm tə ,steɪ hɪə]

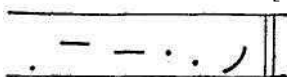


She was there... (but you didn't see her) [ʃɪ 'wɒz ,ðeə]



It is often used when conveying different attitudinal and emotional meanings, such as negligence or carefulness.

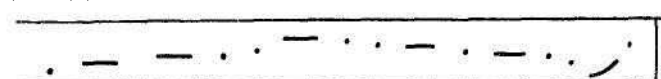
I can't do it at once. [aɪ 'kɑ:nt 'du: ɪt ət ,wʌns]



In Ukrainian, the Low Rise (in its shape and level) possesses the identical features of the English language. Therefore, here the rise in the tone starts, as a rule, in the nuclear syllable.

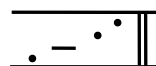
The Ukrainian: *Давид зранку зібрався було іти в Щербаківку...* (та не встиг вийти, як зустрів свого друга).

[ДАВИД ЗРАНКУ ЗІБРАВС'А БУЛО ІТИ В ЩЕРБАКІВКУ]



The utterances that start with the conjunction “a” are included into the lot of rare exclusions, e.g.:

А яблуко? [А ЙАБЛУКО]



8.2.3.1.4. High Rise

This tone ends at the upper level of the pitch range. There are two variants of the high rise which depend on the initial level of the rising tone a high wide rise (it starts at the lowest level of a voice range) and a high narrow rise (it starts at an average level of a voice range).

The High Wide Rise

This tone is characterized by the voice rise from the lowest level up to the highest one. In English the nucleus is often pronounced at the low level and the ascending in the tone takes place at the post-nuclear syllables.

From the functional point of view, this tone is a version of the low rising tone, but it sounds in comparison with the low rise more relaxed and at ease. The most typical use of the high wide rise is to pronounce short types of repeated questions

'Did you?

'Is it?



This tone manifests a high degree of surprise, too: *He did 'what to her?*

In the Ukrainian language the changes in the tone are similar to those of English. The difference is in the following: a) a slower ascent of the tone; b) the rise starts obligatorily in the nuclear syllable; c) the post-nuclear syllables can be characterized by the smooth continuation in the rise, nevertheless, in some cases the pitch level of the post-nuclear syllables gradually decreases:

Хіба він не чекав на мене? [Х'ІБА В'ІН НЕ ЧЕКАВ НА МЕНЕ ||].



The High Narrow Rise

The voice increases up to the high level and starts from the middle level. In English the most habitual is the situation when the nuclear syllable is not the terminal one and the nucleus is level; thus, the rise occurs on the post-nuclear syllables. This tone is used in echo-questions and repeated questions most often.

What have you done? – he asked.

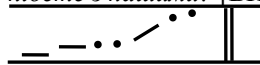
Nothing.

Nothing? [nʌθɪŋ ||]

In Ukrainian, the functional commitments of the high rise are the same as in English.

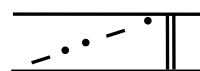
General question:

Ви підете з нашими? [ВИ П'ІДЕТЕ З НАШИМИ ||]



Echo-question:

Через годину? [ЧЕРЕЗ ГОДИНУ ||]



8.2.3.1.5. Fall-Rise

It starts from a high or a medium level, falls down to a low level, and then grows, as a rule, up to a medium level or is a little bit lower. In a sense group containing the fall-rise, the voice falls and rises within one syllable if it is the stressed syllable. If the terminal stressed syllable is not the final one and the unstressed syllables follow it, the voice pitch decreases on the last stressed syllable and rises on the unstressed syllables following the stressed one: *It's wonderful.* [ɪts ˈwʌndəfʊl ||]

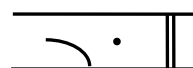


The structure of the tone gives the opportunity to perform diverse functions. On the one hand, the element of the falling tone associates with completeness, finality and confidence; on the other hand, the second component of this tone (rise) signals incompleteness, uncertainty, etc. Thus, it is always an emphatically colored contour, and the range of attitudinal and emotional meanings is extremely wide. Anyway, it is not just a simple assertion of facts but a hint at keeping something in mind, situationally or contextually conditioned. The impossibility of sounding categorical predetermines a wide usage of this tone to convey indecisiveness, assumption, uncertainty, etc. Such a tone can signal the speaker's intention to invite the listener to take part in the discussion to as far as showing his readiness to leave the final word to the listener. The following connotations refer to the ones conveyed with the help of this tone: the formulas of politeness, sympathy and apology:

✓ Well. He's right as usual. I will afterwards.

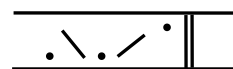
As to the Ukrainian language, it should be remarked that the fall-rise is not used so often as in English, e.g.

Справді? [CIP'ABD'I ||]



In contrast to English, the typical character of this type of the tone in Ukrainian is its dispersal usage (execution in two syllables staying at some distance from each other):

Саме в ньому? [A C. AME B H', OMY ||]



8.2.3.1.6. Rise-Fall

The height of a voice grows from a comparatively low level up to a high one and then quickly goes down reaching to a low one. In case the unstressed syllables follow the nucleus, the rise takes place in the nucleus and the fall in the post-nuclear syllables. This tone has a categorical character. It signals the completeness of the sense group. It conveys connotations of a positive meaning such as admiration, or of the negative meaning such as sarcasm:

'He's a genius. 'How ^fascinating! 'Pointless `question.

In the Ukrainian language, this tone is usually used to convey such emotional connotations as envy and mockery: *Кр'а `чень!*

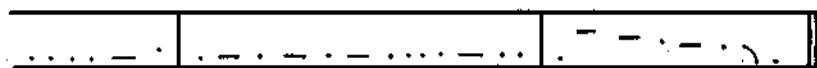
8.2.3.1.7. Level Tone

This type of the tone is characterized by a constant height of pitch level which can be high, mid, or low. Most often the mid tone level is used in English and Ukrainian speech. It conveys incompleteness and non-finality.

The level tone is often used to mark the syntactic and the semantic peculiarities of speech by prosody: the author's words following the direct speech, introductory words, an apposition, or a detailing part of an utterance.

When he had recovered — a glass of home-made elder-berry assisted him — he paced up and down the kitchen.

[wɛn hi həd rɪ, kʌvəd | - ə | glɑ:s əv | hoʊm-meɪd | eldəberi ə, sɪstɪd hɪm - | hi 'peɪst 'ʌp ən 'daʊn ðə , kɪtʃɪn||]



There is something more, I think.

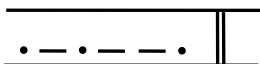
[ðeər ɪz 'sʌmθɪŋ ,mɔː | aɪ | θɪŋk ||]



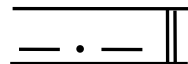
Often in the two compared languages the level tone is conveying such emotional and attitudinal meanings as displeasure, offence, dissatisfaction, bitter, controlled rage and others.

The boy will stay with you.

[ðə | bɔɪ wɪl | steɪ 'wɪð ju ||]



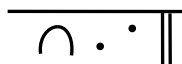
Дуже жалко. [ДУЖЕ 'ЖАЛ' ||]



More Complicated Types of Tones

Besides the above stated key tones, there are some more complicated tones that can be found in emphatically marked utterances in both compared languages. For instance, a rise-fall-rise is sometimes used in English. The pitch starts at a relatively low level and rises up to a rather high one, then it falls down to a low level and increases to a medium level. This tone is characteristic to express optimism and enthusiasm. *Perfectly!*

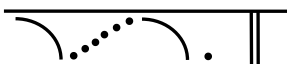
[~ pə'fɪktli]



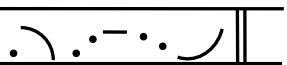
It should be remarked that this type of a tone is not typical in the Ukrainian language.

The so-called dispersal tones are placed among complex tones. They are used to mark a portion greater than one word in a sense group. In this case the first word of importance is marked by the high fall, and the last stressed word is marked either by the high fall or the low rise.

She would like to go to the opera. [ʃiː wəd laɪk tə ɡoʊ tə ðiː ˈoʊprə ||]



I knew it was going to rain. [aɪ ɪnjuː ɪt wəz 'ɡoʊɪŋ tə ,reɪn ||]

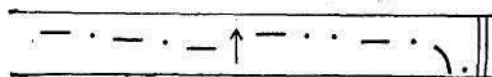


8.2.3.2. Tail

The unstressed post-nuclear syllables (the tail) take part in forming the terminal tone together with the nucleus. In the structure of a simple terminal tone they continue the melody movement of the nucleus.

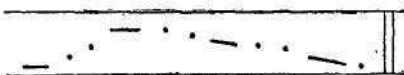
Don't forget to say "thank you" for every favour.

[ˈdʌnt fə'get tə 'seɪ ↑ θæŋk ju fər 'evri ,fɛɪvə||]



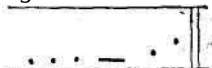
Катря по голосу пізнала Юхима.

[КАТР'А ПО ГОЛОСУ ПІЗНАЛА ЙУХИМА. ||]



In English, cases where a terminal tone type is determined by post-nuclear syllables, but not the nuclear one, are frequent enough:

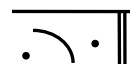
He might have called to you? [hi maɪt hæv ,kɔːld tu ju||]



In complex nuclear tones, the character of the melody in the tail often determines one of the branches of the nuclear tone.

Thus, in the fall-rise the descending part is presented by the nuclear melody and the ascending one – by the melody of the tail.

The salt, please. [ðə sɒlt pliːz ||]



8.2.3.3. Head

As stated above, the melody of the head plays quite an important part in the semantics of an utterance.

The heads are classified according to two main principles: the direction of the melody movement within the head (scale) and the character of the pitch level variation within the stressed syllables. Taking into account the direction of the pitch movement within the head, one can distinguish a descending, an ascending and a level scale. According to the pitch level changes within the stressed syllables (the unstressed syllables following the stressed ones being included), monotonous, stepping, sliding and scandent scales are distinguished. Depending on a combination of these two characters, the following basic types of heads can be singled out: descending monotonous, descending stepping, descending sliding, descending scandent, ascending monotonous, ascending stepping, ascending sliding, ascending scandent, and level. Besides, according to pitch level of the highest syllable within the head, the latter can be regarded as low, average or high. It should be remarked that a level and a regular stepping head can be low, middle and high; as to the other types of heads they can be either high or middle.

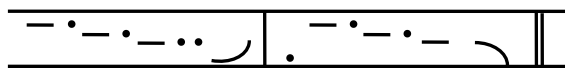
The importance of the head in the utterance's semantics is beyond any doubt. Thus, if the speaker uses a regular descending or ascending head in the intonation shaping of his speech, it means that all the words within the head are of equal importance to him. If the speaker uses an accidental rise in the pitch of the descending head (a sharp fall within an ascending head), it means that he is eager to emphasize the word that is marked by the accidental rise in the pitch within the head.

8.2.3.3.1. Descending Stepping Head

This type of a head is formed by a succession of the stressed syllables where each succeeding syllable has a lower level than the previous one. Thus, the pitch movement within the limits of each stressed syllable is level. Every unstressed syllable is pronounced at the same level as the previous stressed syllable is.

Arthur almost worshipped the ground that Montanelli walked on.

[ˈɑːθə ˈɔːlmʌst ˈwɜːʃɪpt ðə, graʊnd | ðæt ˈmɒntəˈneli ˈwɔːkt ˌɒn||]



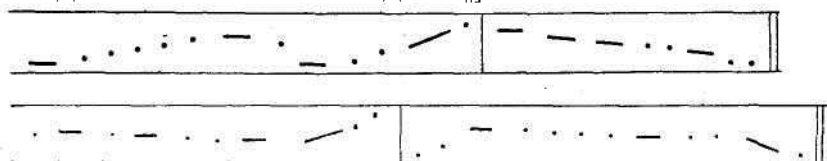
This head is also named a gradually descending or a regularly descending one in scientific literature.

This type of a head is most typical for English non-emphatic speech, when all the words within the head are of equal importance. This scale can combine with any terminal tone, and the degree of the sense group's emphatic richness is defined by the character of the nuclear tone.

In the Ukrainian language, the stepping descending head is not so typical in emphatic utterances. Here in a non-emphatic speech an irregular wavy head is used most often. There is no direct correlation between the BTF and the informative value of the corresponding speech segments [Багмут, 1980].

Стежачи як офіцер читає газету, Гай ще більше примружився. Черниш лежав на краю настилу, розглядаючи замасковані доти.

[СТЕЖАЧИ ЙАК ОФІЦЕР ЧИТАЄ ГАЗЕТУ | ГАЙ ШЧЕ БІЛШЕ ПРИМРУЖИВС'Я ||] [ЧЕРНИШ ЛЕЖАВ НА КРАЙУ НАСТИЛУ | РОЗГЛЯДАЙУЧИ ЗАМАСКОВАНІ ДОТИ ||]



8.2.3.3.2. Descending Monotonous Head

This type of a head is characterized by an even decrease of the melody component throughout the scale: each succeeding syllable (including the unstressed ones) is pronounced at a lower level than the previous one. From the functional point of view this type of a head is similar to the descending stepping scale.

Old and young, men and women, Negro and white were drawn into participation in the May Day celebration.

[ˈoʊld ənd ˌjʌŋ, ˈmen ənd ˌwɪmɪn, | ˈniːɡroʊ ənd ˌwaɪt | wə ˈdrɔːn ɪntə pɑː ˌtɪsɪˈpeɪʃn ɪn ðə ˈmeɪ ˈdeɪ ˈselɪ ˌbreɪʃn ||]



8.2.3.3.3. Descending Sliding Head

The head of this type differs from the previous one by the fact that within the limits of each stressed syllable (including the unstressed ones following it) there is a sliding

downturn in the pitch that reaches a little lower level than the initial pitch of the next stressed syllable. The melody in the unstressed syllables continues the melody of the previous stressed one.

He hasn't definitely refused. [hi: 'hæzn't 'defɪnɪtlɪ rɪˌfju:zd ||]

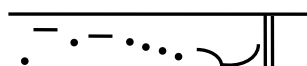


You can't go there. [jə 'kɑ:nt 'gou̯ ðɛə ||]



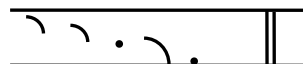
In some cases the stressed syllable can be pronounced at a constant level, and a downward pitch in the succeeding unstressed syllables develops the effect of a sliding tone:

He hasn't definitely refused. [hi: 'hæzn't 'defɪnɪtlɪ rɪˌfju:zd]



The sliding descending head adds some prominence to every stressed word in the utterance. It usually imparts some emotional and attitudinal connotations to the utterance: warning, admiration, reprimand, etc.:

How dare you say it! ['hav 'deə jəˌseɪ ɪt]



8.2.3.3.4. Descending Scandent Head

This head is formed by a sequence of the descending stressed syllables where the pitch increases smoothly within each stressed syllable. The melody of the unstressed syllables continues the melody of the preceding stressed one:

I hate doing nothing.

['aɪ 'heɪt 'du:ɪŋˌnʌθɪŋ]



This type of a head is also used to shape the emphatic utterances that express strong emotions of both characters – the positive ones (admiration) and the negative ones (indignation).

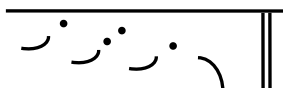
Down upon our heads.

['daʊn əˈpɒn əvəˌhedz ||]



Look at the scars on his arms and legs.

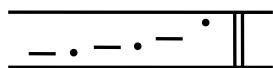
['lʊk ət ðəˈska:z ɒn hɪz 'ɑ:mz əndˌlegz ||]



8.2.3.3.5. Ascending Stepping Head

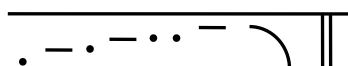
It is formed by a sequence of stressed syllables; each succeeding syllable is pitched a little higher than the preceding one. The pitch of the succeeding unstressed syllables repeats or exceeds the level of the preceding stressed syllables but never reaches the level of the following stressed syllable. Unlike the descending stepping head, the ascending scale is not used in emphatically neutral speech. It is used to execute the meanings of surprise, interest and protest in English.

Have you never seen it? ['hæv ju 'nevə ,si:n ɪt ||]



The development of the ascending stepping head is most typical in English to give more prominence to the main stressed syllable that is logically or emphatically stressed:

She didn't ask you to go there. [ʃi 'dɪdnt 'ɑ:sk jə tə 'gou ðəə ||]



Combined with the high ascending nuclear tone this type of a head is used in echo-questions.

The monotonous ascending head is more typical to express the same connotations in the Ukrainian language.

8.2.3.3.6. Ascending Monotonous Head

An ascending monotonous head is characterized by an even increase of the melody throughout the head: each succeeding syllable (including the unstressed ones) is pronounced at a higher pitch than the preceding one. In functional respect this type is similar to the ascending stepping head (see above). It is seldom used in the English language. In Ukrainian the monotonous ascending head is also used to express the above-stated emotional meanings in speech; therefore, the frequency of the monotonous scale exploited in speech is higher than that of the stepping ascending one:

Черний лежав на краю насипу. [ЧЕРНИШ ЛЕЖАВ НА КРАЙУ НАСИПУ||]



8.2.3.3.7. Ascending Sliding Head

This type of a head forms an ascending pitch structure where every stressed syllable is pronounced with a sliding fall in the tone. The unstressed syllables continue the movement of the melody of the preceding stressed one. The final level of each “slide” is pitched somewhat lower than the initial level of the following stressed syllable.

It's such a pity that you can't come.

[ɪts 'sʌtʃ ə 'pɪtɪ ðæt jə 'kɑ:nt kʌm ||]



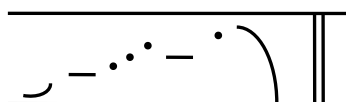
In the example given above, the sliding ascending scale emphasizes the functional significance of every stressed word and its emotional connotation.

In the Ukrainian language this scale is of the same functional significance, though it is met rather seldom.

8.2.3.3.8. Ascending Scandent Head

An ascending scandent head is formed by a succession of stressed syllables where each stressed syllable is pronounced with the rising tone. The unstressed syllables continue the melody of the stressed one. Every succeeding stressed syllable starts at a somewhat lower level than the pitch of the preceding unstressed syllable.

Why haven't you arrived in time? ['waɪ 'hævnt ju ə 'raɪvd ɪn ɪ'taɪm ||]



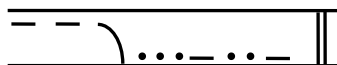
The emphatic richness of the utterances pronounced with the ascending sliding and scandent heads is much higher than of the rising stepping head.

8.2.3.3.9. Level Head

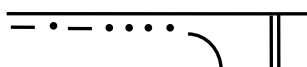
A level head is formed by a sequence of stressed and unstressed syllables that are pronounced at the same pitch level:

What fine weather we are having today!

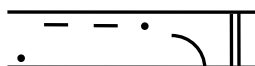
['wɒt 'faɪn ɪ'weðə wi: ə 'hævɪŋ tə'deɪ ||]



Go and do it as you are told! ['gɒv ənd 'du: ɪt əz jə ə ɪ'təʊld ||]



I don't think she knows. [aɪ 'daʊnt 'θɪŋk ʃi: nəʊz ||]



The level head, depending on its level, can be high, middle or low. All types of the level head are used exclusively in emphatic speech, where the high level scale characterizes a higher emotional richness of the utterance in comparison with the middle one. The low level head is used to convey such negative emotional meanings as hostility, enmity and indifference.

8.2.3.3.10. Broken Head

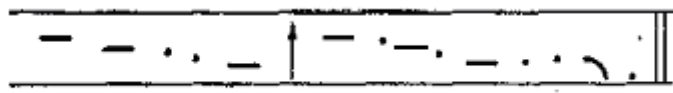
If all lexical units of an utterance form a semantic unity, it cannot be divided into sense-groups, irrespective of the number of words in it. If all the stressed words in the utterance are equally important, the scale has a level gradually descending or gradually

ascending character starting with the first stressed syllable (the highest one) up to the last (the lowest one) syllable.

If one word in a sense-group is semantically more important than the others: the pitch of the voice raises sharply within it (high enough, but not reaching the level of the first stressed syllable), thus the descending scale is interrupted. This phenomenon is referred to as “an accidental rise”. An accidental rise in the pitch of a scale is marked by an upward arrow in the text. It is located before the syllable which is responsible for the pitch upward movement.

Jim frequently brought fishing parties here to the river.

['dʒɪm 'fri:kwəntli 'brɔ:t ↑ fɪʃɪŋ 'pɑ:tɪz 'hɪə tə ðə ,rɪvə ||]

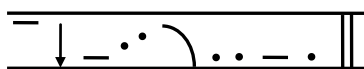


An accidental rise often appears in English long sense-groups. It makes the pronunciation of long sense-groups more convenient, as it is quite difficult to pronounce a sense-group consisting of 5-6 words while pitching the voice down on each subsequent stressed syllable. The voice can fall down to the lowest level, not having reached the last stressed syllable of a sense group. In this case, after an accidental rise, the descending melody of the scale can be continued.

Alongside with the accidental rise of the voice in the descending head, there can occur an interruption of melodic regularity, a monotony in the scale caused by an accidental fall in the pitch of the voice within the ascending head. After an accidental pitch fall, the melody within the succeeding syllables of the head increases gradually up to the initial level of the nuclear syllable pitch. An accidental pitch fall in the head is represented in the text by a downward arrow, placed before the syllable responsible for the abrupt fall in the tone.

Pete may go to a technical college.

['pi:t ↓ meɪ ɡoʊ tə ə 'teknɪkəl ,kɒlɪdʒ ||]



8.2.3.3.11. Head Pitch Levels

It has already been mentioned that the pitch in the head is defined by the level of the highest syllable, that is why a level scale can be of a low, average and high level; as to the descending or an ascending heads they can only be of an average or a high level.

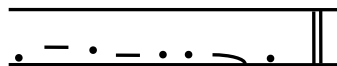
She will have to manage by herself.

[ʃi wil ɪ hæv tə ɪ mænədʒ baɪ hə: _self ||]



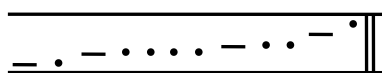
She never asked you to stay there.

[ʃi ɪ nevə ɪ ɑ:skt jə tə _steɪ ðeə ||]



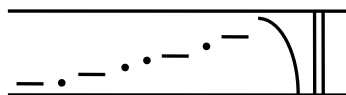
Is he interested in historical places?

['ɪz hi 'ɪntɪrɪstɪd ɪn hɪs 'hɪstɒrɪkəl 'pleɪsɪz]



Should I give you a cup of nice tea?

['ʃʊd aɪ 'gɪv jə ə 'kʌp əv 'naɪs 'tiː]

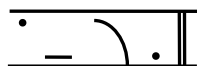


The head of a high or low level usually belongs to the utterances that possess a higher degree of emphasis than the speech fragments, accepting an average pitch in the scale.

8.2.3.4. Prehead

In some sense-groups there can be one or several unaccented syllables before the first stressed syllable. These syllables form the so-called the prehead. According to the pitch they can be divided into low, mid and high preheads. Judging the changes in the direction of pitch movement, an ascending and a level preheads are distinguished. In contrast to the existing rule – low semantic importance of the unstressed syllables in an English sense-group – the unstressed syllables of the prehead can sometimes play a certain part in semantics of the utterance. The high prehead, in particular, is often used in emotional speech.

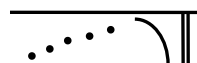
And here is she? [ənd 'weə ɪz ʃiː]



The ascending prehead often conveys the attitudinal and emotional meanings of an argument – contradiction in English.

A peculiar case is demonstrated when the sense group is characterized by a strong emphatic stress. In this case, all the words in the sentence that precede the nucleus practically lose their stress and can be regarded as a type of the prehead. Such a configuration of the initial weakly stressed syllables develops an ascending melody, provides their contrast and opposes the high fall in the nucleus.

But why did you tell Dave? [bʊt waɪ dɪd jə tel 'deɪv]



In addition to pitch changes in a sense-group, there are some other important units correlated with the meaning; they are pitch differences (intervals) within separate segments of a sense-group and on the borders between them. The role of pitch modifiers of the meaning is carried out not only by the absolute values of the pitch component changes, but also by the rate of this change. The gradual perception of the speed in the pitch rise or fall by a person has been confirmed by the results of experimental phonetic research. [Nevalainen, 1987; Типологія інтонації мовлення, 1977].

Brief inventory-taxonomic analysis of melody components, stated in this section, shows that their sense-defining abilities are determined by the character of changes in the terminal tone and the pre-nuclear parts of a sense-group, the level of the pitch component of intonation, and the range of its variability. Thus, the realization of communicative goal, logical, semantic, attitudinal and emotional relations of an utterance are not produced by means of some peculiarities in the melody of a certain segment of a sense-group, but they are the result of interaction among the intonational constructions of the prehead, the head (scale) and the nucleus which are functionally connected in the act of speech.

Some sets of various combinations of the above-named melody components of intonation can potentially be used in the communicative process. But keeping in mind the aim of this book – to learn the initials of phonetics, the number of pitch patterns under analyses should be limited; thus the most usable melody models in communication are to be discussed here.

8.3. DYNAMIC COMPONENT

8.3.1. PERCEPTIVE PARAMETERS OF A SENSE GROUP DYNAMIC STRUCTURE, ITS ARTICULATOR AND ACOUSTIC CORRELATES

The character of interaction between the pitch and sound wave pressure are of special significance in the course of interpreting the data of prosody examination. It is the sound wave pressure that is the characteristic of the dynamic component of intonation – the sound loudness.

The dynamic component of intonation, interpreted at the perceptive level as speech loudness, has the variability of the air stream pressure on the vocal cords (the increase of which results in the growth of their vibration amplitude) as the correlate at the articulation level. The strength of the vocal pressure is caused by a number of factors, among which those of the purely physiological nature prevail. These being the different muscular efforts of the speaker and different degree of the respiratory muscular tension in the process of phonation. It should be remarked that loudness (the perceptive parameter) depends not only on the amplitude of the vocal cords vibration but on their vibration frequency as well. Therefore, their separate analysis is conventional to a great extent. At the acoustic level, the intensity (**I**) of the speech signal, which is characterized by the power (**W**) of the vocal signal, that spreads in a resilient (air) medium and distributes per unit of the medium's area. In physics it is habitual to measure the intensity in relative logarithmic units - decibels (db):

$$I = \lg (W_x / W_0) \text{ [db]},$$

where **W_x** is the power of the measured signal, and **W₀** is the power of the signal corresponding to the minimum threshold of perception.

It is useful to get acquainted with the following indexes of loudness levels of some well-known sounds in the environmental medium [Давыдов, 2002, p. 183]:

- 0 db Threshold of hearing
- 20 db The leaves rustling in light breeze

40 db	One typewriter in a small room
50 db	An animated conversation
70 db	A range of symphony orchestra
100 db	An underground train
120 db	An airplane above your head
130 db	Loudness becomes painful

In the practice of speech acoustic analysis, the conventional units of intensity are used, they are determined as a ratio of the measured amplitude of a speech signal wave and some amount of amplitude value, which is characteristic for this series of the phonetic material.

8.3.2. LOUDNESS GRAPHIC REGISTRATION IN TEXT

The dynamic component of intonation, in contrast to the melody, does not have any commonly used system of signs reflecting it in written text. Nevertheless, for teaching purposes it is quite useful to exploit any system of conventional signs in order to register such an important component of intonation as loudness in writing. For this purpose it is convenient to mark different degrees of speech signal loudness in the following way:

- a) a usual (normal) loudness is not marked;
- b) _____ very loud;
- c) _____ louder than usual;
- d) ----- quieter than usual;
- e) very quiet

E.g. : Listen, Tom, you just don't understand.

The interrupted underlining demonstrates the fact that the speaker pronounces the utterance (or its segment) more quietly than usually.

Tell them, for they are in need of telling!

A thick uninterrupted line shows that the utterance is pronounced very loudly. If separate segments of the utterance are pronounced with different loudness, each segment should be marked by the due sign.

In cases where the quantitative characteristics the qualitative evaluation of the speech acoustic parameters are needed (as has been mentioned), the diagrams based on the results of the experimental analysis of the sounding fragments will be used. Thus, the dynamic component is characterized in detail by the amplitude-temporal diagram $A=f(t)$, where A – the intensity of a speech signal, t – time (see fig. 1.11 and 1.12).

8.3.3. MAIN FACTORS OF THE DYNAMIC COMPONENT INFLUENCE ON SPEECH PROSODIC STRUCTURE

The dynamic component of a speech signal can be examined as an independent parameter of speech prosody on the one hand, and as a component part of word-stress, sentence stress, and rhythm organizing factor on the other.

In Part 1, the role of the dynamic component in organizing the word stress was discussed. Now attention should be drawn to the character of the dynamic

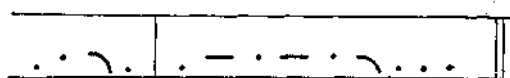
parameters alteration used in the process of word-for-word pronunciation and single word pronunciation within a context. One of the most important differences between these lies in the fact that the intensity maximum of a word pronounced in isolation can be localized both on a stressed and an unstressed syllable. At the same time, pronouncing a word within a context leads to the intensity maximum localization primarily on the stressed syllable. The amount of intensity difference between the initial and final vowel in a word is important for dynamic component analysis. This index is substantially higher if a word is uttered in a speech continuum in contrast to being pronounced in isolation.

The role of a dynamic component in organizing sentence stress will be examined further in Section 8.8.2.

In this section, the problem of speech loudness as a direct influence on the intonation of a sense group (neglecting the loudness participation in stress and rhythmic structure execution in an utterance) needs to be discussed.

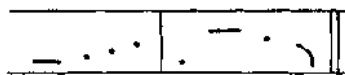
The change of loudness is used in order to oppose the most important speech fragments to those remarks, notes and explanations that are beyond the topic of communication: *I am sorry, he said apologetically.*

[aɪ əm ˌsɒrɪ | hi ˌsed əˈpɒləˌdʒetɪkəlɪ||]



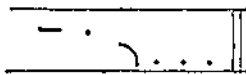
In this case, the loudness of the whole sense groups is being contrasted. At the same time the dynamic contrast is characteristic of separate words within the sense group. The form words and the semi-notional ones are, mainly, characterized by loudness downfall: "Freddie," he said, "has left the room."

[ˌfredi hi sed | həz ˈleft ðəˌrʊm||]



Take it easy, my boy.

[ˈteɪk ɪt ˌiːzɪ maɪ bɔɪ||]



The dynamic component of intonation plays an unimportant part in expressing different emotional and attitudinal shades of meaning in speech. In this case loudness can be varied from a very low one (when expressing meanings of timidity, desire to calm a communicator down) up to a very loud one (when expressing a stormy objection, indignation, desperation and the like).

Обережно. (Timidly)

Обережно. (Informing)

Обережно! (Desperation)

It is necessary to keep in mind that loudness deviations from the middle level can be caused by a number of reasons unconnected with the semantic aspect of speech. In regards to reasons of extra-linguistic origin, the following can be referred to: different communicative conditions in which speech loudness is falling down such as during a confidential talk in the place full of the strangers, here the voice lows down. Canversely,

out of necessity loudness will naturally rise if communication takes place in a noisy location or the speakers are at a great distance from each other.

Certain aspects speech loudness in a class room should also be focused upon. Speech which is too greatly amplified tends to make an audience tire rather quickly and can even cause irritation among the listeners. The efficiency of speech perception rises when the speech continuum is pronounced within the middle of loudness range. Thus, variation of speech loudness produces a positive influence and allows to the avoidance of monotony and reduces fatigue in listeners.

8.4. TEMPORAL COMPONENT

8.4.1. DURATION AND TEMPO

The temporal relation of speech fragments is an important characteristic of intonation in communication. The main parameters which characterize this aspect of intonation are the duration of the speech signal and the tempo at which its different segments are being pronounced. At all the three levels (speech production, acoustic level and perception), the temporal component of intonation is physically homogeneous. Nevertheless, in the process of production and perception here is an element of subjectivism at the quantitative evaluation of this parameter.

The speech tempo is the speed at which certain segments (sounds, syllables, words, phrases, and longer fragments) are produced. This is determined as a rule by the number of syllables pronounced per unit of time (1 second). The rate can be rapid, normal or slow depending on the style of communication, emotional state of the speaker, individual characteristics of personality, and a number of other factors.

The temporal component of intonation in contrast to the melodic one does not have any adequate graphic registration in a written text. Nevertheless, any system of signs can be used in the teaching process to register such an important component of intonation as tempo in writing (see М. Давыдов, 2002). Different rate of a speech signal production can be marked for this purpose in the following way:

- a) a usual (normal) tempo is not marked;
- b) ~~~~~ a very quick tempo;
- c) ~~~~~ a greater speed than usual;
- d) ~~~~~ a slower speed than usual;
- e) ~~~~~ a very slow tempo:

What has all this got to do with coffee?

The interrupted stroke line indicates that the speaker pronounces this utterance slower than usually.

I'll settle up with you later.

The thick wavy underlining indicates that the utterance is pronounced at a very fast speed.

If different segments of an utterance are pronounced at various speeds, the above stated markers are to be used in every case of speed variability in the speech segment.

If not only the qualitative characteristics but the quantitative evaluations of acoustic speech parameters are needed as well (as it has already been noted) the frequency-temporal and the amplitude-temporal diagrams are used; these diagrams are created due to the experimental data of sounding speech fragments. The duration of either of the

utterance's segments is easily determined as the difference of readings on the axe **t** (see fig. 1.11 and 1.12).

As has already been stated, the speech tempo depends on many factors. Thus, it is known, for example, that lectures and public speeches are pronounced slower than ordinary remarks of a colloquial style. Known information is absorbed more quickly than new. Facts of special importance are pronounced slower than parts of the utterances that are not of such value. Rate of speech is closely related to phonetic interpretation of such intonational phenomena as reduction and assimilation of sounds in the speech continuum. Therefore, the quicker the speech tempo is, the greater the amount of the reduced and assimilated sounds.

In the Ukrainian language the character of the temporal component usage in speech resembles that of the English language. Any definite difference is conditioned by the fact that in English (unlike Ukrainian) duration is a relevant phonetical feature at the segmental level (see part I). On the whole, the rate of speech in English is much quicker than the tempo of Ukrainian colloquial speech.

8.4.2. PAUSES

Tempo of speech is closely related to the concept of pauses. Thus, a pause can be a genuine existing phenomenon or one existing only in our imagination. The first type of the pause is characterized by a complete phonation interruption. The second type of pause (imaginary) can be caused by a number of factors, namely, by changes in the pitch contour, certain alterations in tempo, neighboring stressed syllables elision, and other phenomena. All of the above mentioned changes of the intonation pattern are perceived by the ear as pauses between the intonation groups, although physically in the process of speech production there is no break.

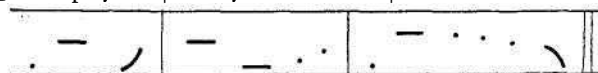
A complete stop in phonation is typical when delimiting the pauses that differentiate the utterances and intonation groups in oral speech and when dividing paragraphs, sentences and parts of sentences while reading a written text. (Often a complete stop in phonation appears in the places where the signs of punctuation are used.)

In natural speech, pauses can significantly vary in their duration. For practical purposes, three types of pauses are usually used according to duration.

- a) First, there are short pauses, which are equal in their duration to the time one rhyme group sounds in speech (see the section Rhyme). They are used to separate sense groups from each other in utterances that consist of many sense groups. They are graphically signed by a vertical line when putting the intonation marks in a text.

He stopped short, looked straight at him and took him by his hand.

[hi 'stɒpt , ʃ:t | 'lʊkt , streɪt æt hɪm | ənd 'tʊk hɪm baɪ hɪz , hænd ||]



Всі наспіх копали землянки, заносили в них найпотрібніші речі, приміщали дітей.

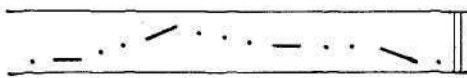
[ВСІ НАСПІХ КОПАЛИ ЗЕМЛАНКИ | ЗАНОСИЛИ В НИХ
НАЙПОТРІБНІШІ РЕЧІ | ПРИМІЩАЛИ ДІТЕЙ ||]

- b) Secondly, we have normal pauses, equivalent by their duration to the time of two rhyme groups sounding. These pauses are usually used to separate

two sentences from each other in a speech continuum. Graphically, they are signed as two vertical lines for marking intonation in a text.

Вони розглядають замасковані доти. Командир лежить на краю насипу.

[ВОНИ РОЗГЛЯДАЮТ ЗАМАСКОВАНІ ДОТИ || КОМАНДИР
ЛЕЖИТ' НА КРАЙУ НАСИПУ ||]



c) Finally, long pauses are equivalent in their duration to the time-period long enough for three rhyme groups production. They separate paragraphs and larger super phrasal unities from each other. For marking intonation in a text, they are signed as three vertical lines:

“Patricia believed in the devil too. || There had been a succession of devils in her life. || When she was two and a half years old, | the devil was the landlord, | parked in his car | while the bailiffs piled the Dunn family’s furniture on the sidewalk. |||

Later, | the devil gave Pa three hours work a day in a non-union shop |, had the family cut off relief | because the father was working | and got Frank and Joe in trouble with the police for stealing spoiled fruit in the railway yards. ||” (Extract from “Tomorrow is with us” by Dyson Carter).

Quiet often, it is difficult to realize with a large degree of certainty whether or not phonation is completed. In this case, a pause is marked by the vertical wavy line in the text.

Well, egs help to make the cake raise nicely if you beat them, and then I add the rest of the dry things. [wel | 'egz 'help tə 'meɪk ðə 'keɪk ,raɪz naɪsli | ɪf jə ,bi:t ðəm ||]

It should be remembered that in fact pause duration in these three types is not strictly fixed and may also depend on many extra-linguistic factors. However, it is not absolute pause duration that is being discussed here but rather its relative length in time.

For the research purposes, when the length of a pause is to be measured exactly, the pause duration in milliseconds is placed under the vertical lines that symbolize these pauses:

Well, | I know him.

(20)

It should be remembered that the pauses that are obligatory at definite points of an utterance can be absent in rapid colloquial speech, and vice versa. The appearance of pauses in unexpected locations is a frequent phenomenon in unprepared or spontaneous speech (hesitative, psychological and other kinds of pauses). Pauses of hesitation, appearing as the result of speech planning, can be filled or unfilled:

He lives in | the south. Where have you found, mmm, this thing?

Він живе на | півдні. Де ти зійшов, ммм, цю штуку?

Researched data in experimental-phonetics has shown that not only is the tempo of colloquial speech quicker than the tempo of official speech, but also that pauses in colloquial style are far shorter than the pauses in standart speech.

Tempo and pauses in speech are closely related to other components of intonation: melody, loudness and rhythm. Some combinations of the listed components of intonation with the temporal one serve the purpose of expressing numerous logical, semantic attitudinal and emotional meanings in utterances. In this respect, numerous combinations of tempo containing of complex pitch components of intonation and stress variants are of particular interest.

8.5. SUMMARY ACOUSTIC ENERGY

Alongside with separate analysis of the above mentioned characteristics – intensity and duration, it is useful to regard their interactions in speech. The capability of a person's ear to integrate an acoustic signal in time testifies to the necessity of considering the summary energy of a speech signal. This is the intensity impulse – the product of a speech signal intensity and the time of its pronunciation:

$$W = I \Delta t.$$

In Chapter 6, the importance of this component for word-stress was examined. This is caused by a greater stability of the discussed phonological characteristic which is the relevant feature of the stressed (unstressed) syllable in comparison with the components that are involved in forming summary energy – the intensity and duration of an acoustic signal. Being one of the intonation components, the summary acoustic energy insures the various logical and semantical meanings as well as the emotional and attitudinal connotations that are to be conveyed in speech. In addition, the energy components of intonation play an important role in organizing the rhythmic structure of an utterance.

When carrying out an acoustic analysis of the energetic volume of a speech signal, the most important data to be considered are average magnitude of the summary energy in an utterance and either of its segments.

8.6. TIMBRE

Timbre characteristics of speech play a rather specific role in conveying the semantics of an utterance by means of speech intonation. It is caused by the fact that no timbre changes participate in realizing the basic communicative functions of intonation in speech but show up only when expressing a certain attitude or emotion. Timbre is usually defined as a "coloring" of the voice which allows one to distinguish both the psychological and physiological condition of the speaker, his attitude to the object of speech, and the situation. The various approaches that exist in works devoted to the problems of timbre and the absence of a common terminology for its description have led to certain complications when interpreting the prosody phenomena. Thus, the supporters of the acoustics and articulation approach for the purpose of timbre analysis use such terms as "sonorous, hoarse, low, high, opened, closed, nasal", etc., while those who support timbre examination from the point of view of its semantics stick to such characteristics as "joyful, cheerful, rough, friendly, gentle, hostile", etc.

A standardized set of timbre markers has yet to be established by phoneticians. Nevertheless, the use of some such signs in special research is necessary. Thus, in a work by M. Davydov [Давыдов, 2002] the following system of the timber characteristic symbols has been offered:

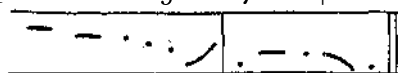
- | | |
|-----|-----------------------------------|
| br> | - breathiness (aspiration) |
| gl> | - glottalisation |
| pl> | - plaintiveness |
| sp> | - spread (lips or phonetic smile) |
| cr> | - creak |

ns>	- nasality
ts / lx>	- tenseness vs. laxness of articulation
l / dl>	- labialization vs. delabialisation
mx / mm>	- maximal vs. minimal degree of opening one's mouth
wh>	- whisper
tr>	- tremolo (vibrato)
cl>	- clenched teeth

The symbol that signals the timbre characteristic of a speech segment is placed before the sign > , which is located at the beginning of a described segment; the end of a delimited segment is marked by the sign < :

cl > *He won't get a reward*, < *if I can help it*.

['hi: ' wɒnt get ə rɪ,wɔ:d | ɪf 'aɪ kən ,help ɪt ||]



The core acoustic correlates of timbre characteristics of a speech signal are the parameters of high-frequency areas that strengthen a sound energy (i.e. the second, the third and the fourth formants of a vowel spectrum and broadband "noises" of consonant spectrograms) allocated in the course of the spectrographic analysis (see. fig. 1.13).

It should be mentioned that in oral speech perception even skilled phoneticians can fail at interpreting the effects of intonation. This includes attitudinal and evaluative connotations such as melancholy and grief (the latter being the result of exploitation of such intonational components as tempo and pitch range). In the meanwhile, spectral analysis testifies that the effect stated above is created due to formant characteristics, that is it is caused by the timbre peculiarities of speech.

At the level of articulation the aforementioned acoustic characteristics correlate with the phenomena of secondary oscillations generated within the resonator cavities of vocal organs: glottal, pharyngeal and nasal cavities. Modulation of these resonators and the distribution of the sounds in them can be presented by an unlimited quantity of combinations; thus the voice can become much too guttural or nasal, more or less laryngeal, pharyngeal to a certain extent, etc. When the volume of the larynx cavity increases in the process of speech production, it creates the effect at the perceptive level that the pitch of the sounds is lower, making the voice "deeper" and "darker" to the listener. In reality, the pitch of the voice (the basic tone frequency) remains constant, while the level of the second and the third formant decreases. Similarly, when the pharyngeal cavity volume increases in the course of phonation (from the minimal size up to maximal) it is possible to convey the attitudes and emotions in speech which range from "grief" up to "triumph".

It is not only the volume of the resounding cavities of the vocal organs that influences timbre characteristics of speech but the dynamics in which this parameter changes in time. For example, a wavy change in resonator cavities leads to voice vibration that provides the maximal degree to display various emotions (love, hatred, enthusiasm and fear).

These examples demonstrate that for the purpose of getting the correct conclusion concerning the problem of prosodic means correlating with the corresponding semiological units, it is necessary to compare the three levels of speech fragments under investigation: articulatory, perceptive and acoustic.

At the same time it should be remembered that timbre, as an intonation component expressing emotional and attitudinal meanings in speech, acts in close interaction with other components of intonation. For example, when pronouncing

utterances bearing negative emotional and attitudinal connotations, it has been proved that alongside with the use of the corresponding timbre characteristics in speech the key word of the utterance is emphasized by means of a pause lengthening, the increase in the speed of melody component alteration within the stressed vowel, and the growth of the pronouncing time of the terminal unstressed syllables (in comparison to the neutral utterances). Thus, emotional and attitudinal meanings are presented in sounding speech by acoustic attributes of different nature, this allowing them to be interpreted correctly at perception.

8.7. RHYTHM

8.7.1. GENERAL CHARACTERISTICS OF A SENSE GROUP RHYTHMIC STRUCTURE

One of the most important characteristics of utterance phonetic shaping in oral speech is the rhythmic organization of speech pieces. Much attention is paid to this question in modern linguistics [Антипова, 1979; Арват, 1997]; however, up until this point this problem has been still insufficiently studied.

Rhythm is the regular, natural alternation of commensurable sound elements in speech process. Rhythm is created through a complex interrelationship of intonation components. The production of rhythm is primarily connected with the time organization of speech phonetic elements and their regular recurrence which determines the dynamics of speech continuum. Alongside with time characteristics, there are other prosodic components (melody, intensity and timbre) in rhythm arrangement.

Rhythm has the complex multileveled structure that enables us to state that there exists a hierarchy of speech rhythms – syllabic, verbal and syntagmatic. Syntagmatic rhythm acts as the basic speech rhythm; it is conditioned by two aspects of speech – intellectual and semantic on the one hand, and physiological on the other. The essence of the physiological nature of a speech rhythm is defined, first of all, by a regularity of the respiratory cycle. Breath movements are connected with a regular alternation of the respiratory cycle phases as to their length and depth. Thus, inhalation is shorter than an exhalation, this being important for speech production. Speech is produced in the course of breathing out.

An intellectual adjustment of the natural respiratory rhythm of speech can occur due to the existence of a feedback between breath and neuro-physiological activity of the brain; this allows for an adjustment of exhalation time depending on a specific task of speech production. Competent structure of every utterance does not allow a speaker to break off the words, word-combinations (incorporated by a strong semantic link) by a breath act.

Speech rhythm can be considered a phenomenon of periodicity, orderliness in time alteration of both phonetically marked and phonetically unmarked units, and that of an isochronism of repeating segments.

Various elements of speech are considered by various researchers to be the basic minimal structural unit of the rhythmic organization of an utterance, among them being a rhythmic structure, a phonetic word, a rhythmic group, a foot and some others [Потапов, 2004].

Despite the numerous existing points of view on the problem of singling out elementary basic units of rhythm, a uniform approach to the definition of the major factor that insures the rhythmic organization of speech unites all these opinions. Stress is just this kind of a factor; it naturally follows from the nature of speech production. Structurally organized syllabic complex, which is called “rhythmic group” (RG), is mostly regarded as the principle unit of a phrase rhythmic structure. One or some words (notional or form ones) united by one word stress are considered to be a RG. Peculiar peaks of sonority in a word are formed by stressed vowels. Depending on the stressed syllable location within a rhythmic group (RG), various languages are subdivided into three groups in accordance with their rhythmic structure:

1 languages characterized by the initial position of the stressed syllable in RG (for example, the Czech language);

2 languages characterized by the terminal position of the stressed syllable in RG (for example, the French language);

3 languages characterized by the medial position of the stressed syllable in RG (for example, the Polish language).

Due to certain peculiarities of their rhythmic organization, some languages cannot be straightforwardly placed in one of these three groups since three types of speech rhythm manifest themselves in these languages. English, German, Ukrainian and Russian are among some languages that belong here. In the English language, the rhythmic structure is mostly characterized by the RG organization according to the first type (the stressed syllable is located at beginning of the RG and the unstressed syllables following it – enclitics – join the stressed syllable). The initial unstressed syllables in a sense – group, the so-called proclitics, the unstressed syllables attached to succeeding stressed syllable in a RG, make an exception.

In the Ukrainian language proclitics are more frequent than in English though enclitics prevail in the RG organization on the whole. One can characterize the RG as a ratio, where the numerator shows the number of syllables in the RG and the denominator signifies the stressed syllable’s position in the RG (e.g., 2/1 marks the two-syllable RG with the stress on the first syllable). The RG boundaries in the text are usually marked by the vertical interrupted line:

*They’ve **come** | too late.* (2/2, 2/1)

Кyду | запaз | їде | хазяїн? (2/2, 2/1, 2/1, 3/2).

8.7.2. BOUNDARIES OF RHYME GROUPS

When limiting the RG boundaries, one can make use of the laws connected with the syllabic word stress, peculiarities of intonation shaping the RG and physical characteristics of adjacent (juncture) sounds in a RG. However, RG delimitation, with the help of certain boundary signal, is not obligatory. The difficulties connected with fixing the boundaries (the latter frequently can’t be exactly established at the level of auditory perception) testify to the fact that there is no unique phonetic marker delimiting the RG. It is possible to say that the RG extraction out of speech continuum is provided by a set of prosodic characters. Moreover, peculiar features of RG prosody demonstrate themselves in different kinds of speech.

Thus, when describing the acoustic means that take part in rhythmic division of a speech continuum – a special role of such phonetic characteristics as a pause and melody – a dynamic component should be mentioned. In the English language – for the purpose of

RG bordering in a speech continuum – one can use the objective criterion; that is the physical characteristics of sounds at the words' juncture. Here melodic and temporal characteristics of sounds in the English RG are the most essential. In the Ukrainian language, the dynamic and the melodic components of intonation are the most important in creating rhythmic figures. Therefore, recurrent appearance of the dynamic characteristics peculiarities that evolve in the process of rhythmic figure creation (weakening or strengthening of syllabic and word energy) gives support to the text-organizing function of intonation [Алексівець, 1999, p. 148; O'Connor , 1977]. Smoothness or contrast of transitions that exist between segments of speech range variability of such changes may produce accent in rhythmic structure of speech.

The situations in which a rhythmic group is equal to word form occur most often in speech continuum: *Чого? Pardon? Well, English winters aren't very cold.*

Although some researchers acknowledge the influence of boundaries between the words on an utterance rhythm [Белій ,1999], word forms are not unique rhythm -organizing units. Boundaries between the rhythmic groups rather often pass within the words; moreover, one RG frequently unites parts of different words:

Herrold was reported to be missing.

Ми тут добре влаштовані.

Unification of two and more word - forms into one RG is characteristic to the connective words that refer to the adjacent meaningful words. An enclitic combination in the English language can be illustrated by the following sequence of three word – forms: a verb, a monosyllabic preposition, a two-syllable pronoun: *Wash up yourself.*

A proclitic combination in the Ukrainian language can be illustrated by the following sequence of two word – forms and a two-syllable preposition, a monosyllabic numeral and a monosyllabic noun: *Понад сім фраз.*

However, not all words (within certain classes only) are stressed in a speech continuum. They are the so-called, notional words in contrast to the auxiliary ones. The following utterance can be treated as the examples illustrating the above:

I've been living here for six years already. You can come tomorrow if you like.

However, the negative reduced forms of the same verbs are always stressed: *He couldn't come in time. He isn't so big. We won't have dinner when we get home.*

It should be kept in mind that conjunctions and conjunctive words are emphasized by stress at the initial position:

When he gets home, we'll have dinner.

The most frequent types of words that are not stressed in the English language are listed in the following table.

Table 8.1.

The list of words that are usually unstressed in English

Form Words	Examples and Remarks
Articles	He was <i>an</i> unknown poet. <i>The</i> weather is fine.
	The definite article is stressed in the meaning “the best, the only one”: It's the book of the year.
Particles: <i>to, there</i>	<i>There</i> can be no doubt about it. He is always ready <i>to</i> help.

	<i>I've been</i> living here for six years already. She is away on holiday now. You <i>can</i> come tomorrow if you like.
	Negative reduced forms of these verbs are always stressed: He couldn't come in time. He isn't so big.
	When placed at the beginning and at the end of the sentences these verbs are stressed, too: Can you help me? Does he know it? We'll come as soon as we can .
Auxiliary and Modal Verbs	In case of emphasis the verbs are stressed (when agreement or disagreement are expressed): I am tired. He did write the letter.
	The following modal verbs are always stressed: ought , should in the first person singular when conveying <i>obligation</i> ; will , would when conveying <i>intention</i> ; may , might , must when conveying <i>probability (supposition)</i> .
	<i>It's very kind of you. You probably know him.</i>
Personal Pronouns	
Possessive Pronouns	Where is <i>my</i> book?
Reflexive Pronouns	I'll wash <i>myself</i> .
Reciprocal Pronouns	Except the cases when the reflexive pronoun is an emphatic one: You can't hurt me, you can only hurt yourself .
местоимения	I saw them looking at <i>each other</i> with interest. Our students are helping <i>one another</i> in their work.
	We were walking <i>down</i> the street.
Monosyllabic Prepositions	At final position monosyllabic prepositions are partially stressed: What are you looking for ?
	They are partially stressed when followed by a pronoun: Take no notice of him.
Conjunctions and Juncture Words	We'll have dinner <i>when</i> we get home. I think he is cleverer <i>than</i> I am. You'll see it <i>after</i> I've done it.

It should be remembered, however, that the auxiliaries, given in the table, can be logically or emphatically stressed (see the following sections 8.8.3. and 8.8.4.), and in this case they form the peak of sonority in the RG they belong to: *Look out!*

8.7.3. SPEECH RHYTHM AND THE SYLLABLE STRUCTURE RELATION

The speech rhythm is inseparable from the syllabic structure of a language, but the character of their correlation is not identical in various languages. For one type of languages, the so-called «syllabic rhythm» is a norm. In this case the syllables are characterized by the same time duration. In some other languages «the accent rhythm» is available. Here the stressed syllables are pronounced at equal time intervals. Thus, in English and the Ukrainian language the accent rhythm is realized, and in French the syllabic rhythm.

Isochronism – equal intervals of time between the stressed syllables – is the most important trait in terms of rhythmic organization in English speech. The following characteristics of rhythm are connected with this property in the English language [Потанов, p. 275]:

1. Stressed syllables follow each other at regular intervals. In case the rhythmic group is too long (i.e. contains many unstressed syllables) this rule is not strictly to.

2. Adhered (non-initial) rhythmic groups begin, as a rule, with a stressed syllable; unstressed syllables tend to join the proceeding stressed one, thus forming enclitics; the initial unstressed syllables of a sense-group are the only ones that join the following stressed syllable, thus forming proclitics.

3. Greater the number of the unstressed syllables in a rhythmic group is, the quicker the rate they are pronounced at.

4. Unstressed syllables at the initial position of a sense-group are always uttered quickly.

5. Every rhythmic group is characterized by its own tempo (average syllable duration) which depends on a degree of semantic importance that the given RG possesses within the sense-group:

She wants some | writing | paper.
180 150 170

In Ukrainian uninterrupted speech, RG demonstrates a tendency to isochronize, too. In cases when the number of the unstressed syllables in the potential RG comes to 5-7 elements, speech isochronism is preserved at the expense of the secondary stress that appears within this multisyllabic structure.

For example: *Школу закінчила | у | шестидесятому | році.*

However, the RG isochronisms in the Ukrainian language do not manifest themselves as brightly as in English. Some research has shown, that more typical of the Ukrainian language is the presence of the so-called rhythmic framework in a sense-group (isochronism of the initial and final unstressed syllables), while at the same time regular cyclic repetition of the middle RG of the utterance is not available. For example:

Ще маленьким хлопчиком...

50 20 30 20 80 100 50 (milliseconds)

The character of alterations in long vowel and diphthong pronunciation depends on their position in a rhyme group and should be especially discussed. In English language diphthongs that follow a stressed syllable lose their quality – the characteristics available in the stressed position – and are pronounced as short rather homogeneous sounds. For example, in the utterance, “*What were the details?*”, the posttonic digraph “ai” (corresponding the diphthong [eɪ] in the word “*details*”) is pronounced as a homogeneous sound [e].

For Ukrainians who study the English language, the problem of the secondary (weaker or of the same strength) stress is the one of particular complexity. In modern English, there is a large quantity of words with both main and the secondary stress: *civilization, conversation*. At the same time there are many words in which the so-called equal stress is executed, i.e. both stressed syllables have identical prosodic prominence: *fifteen, eighteen, unknown, rewritten*.

These words, being pronounced in isolation, demonstrate that prosody of the two stressed syllables in either of the words keeps to the laws characteristic of the word stress (see the section « Word Stress »). Thus, the status of the secondary stress depends on the relative size of the pitch change in the stressed syllable: equal stresses are characterized by the identical pitch change in both stressed syllables; the secondary stress is characterized by a smaller (but noticeable enough) pitch alteration.

In speech continuum, the general rhythmic structure of a sense-group influences the prosodic shaping of the main and the secondary stressed syllables. If the secondary stress precedes the main one, then the corresponding syllable forms an independent rhythmic group and in this case it preserves, of course, all phonetic attributes of a stressed syllable. Note the word «civilization» in the following utterance: *Columbus discovered a **wonderful civilization***.

When the secondary stress retains second position in a word, all features of stress are leveled and the corresponding syllable becomes a part of the RG as an enclitic. Note the word «disengaged» in the following utterance: *Mr. **Thackery's disengaged***.

The phenomenon of word stress disappearance in some notional words in speech, due to the need to meet the requirement of the rhythmic organization of an utterance, leads to a shift of the normative sentence stress from the final (normal) position in the sense-group (see 8.8.3. and 8.8.4.).

8.7.4. PROSODIC MEANS SHAPING THE RHYTHMIC GROUPS

As it has already been mentioned, the rhythmic structure of speech is defined to a substantial degree by stylistic variety and attitudinal and- emotional connotation of an utterance. Stylistic and emphatic peculiarities of prosody frequently lead to complete reorganization of the intonation patterns, including the rhythmic structures of sense-groups. Thus, cases of sheer loss of the main stress and its shift to the place of the secondary stress are rather widespread:

*I didn't say **the** book, I said **a** book.*

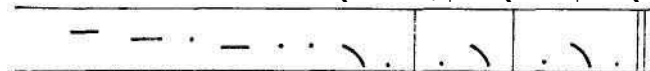
[aɪ 'dɪdn't 'seɪ ðiː bʊk | aɪ 'sed ,eɪ bʊk ||]

Habitual stereotypes of the accentual and rhythmic organization in a sense-group or in some separate words are destroyed because of the use of non-standard ways of stress embodiment: a sharp increase in loudness; a change in the direction of the basic tone movement and an increase of the interval in its alteration; a pause appearance between the part of a word that carries secondary stress; and the syllable under the main stress.

The usual prosodic means complex usage for the purpose of RG phonetic shaping is one of a scale configurations used in a sense-group, this depending on the attitudinal and emotional coloring of the utterance. If in an emphatically neutral speech the stepping head (syllables within the limits of one rhythmic group being pronounced at the same level, see A) or a monotonous head (unstressed syllables within one rhythmic group continuing the pitch movement of the stressed syllables, see B) are considered to be the norm, in an emphatically marked speech the pitch movement in RG is defined by a melody component specificity in a sliding (see C) or a scandant head (see D):

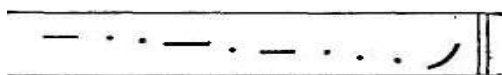
A The smile made his face understanding and sweet and gentle.

[ðə 'smɪl 'meɪd hɪz 'feɪs ʌndə ,stændɪŋ | ənd ,swi:t | ənd ,dʒentl ||]



B. Is he a very absent-minded man?

['ɪz hi ə 'veri 'æbsənt maɪndɪd ,mæn ||]



C. *It's so nice you're here.*

[Its 'sɒv 'naɪs ju ə ˌhɪə ||]



D. *What he played in his mother's heart he knew not yet.*

['wɒt hi 'pleɪd ɪn hɪz 'mʌðəz , hɑ:t | hi 'nju: 'nɒt ˌjet ||]



E. *I've been thinking of you.*
[aɪv biːn ˌθɪŋkɪŋ ɒf ju ||]
Sometimes an attempt to emphasize the phonematic structure of a word leads to the use of a syllable-by-syllable speech (for example, in a didactic or a political discourse); thus, prosodically marked (rhythm organizing) are all the syllables involved in the structure of this or that word.

Speech timbre characteristics perception also promotes the recognition of rhythmic figures both in English and in the Ukrainian language since there is an almost universal tendency for the vowel quality in weak syllables to be open compared to stressed ones.

8.8. SENTENCE STRESS

8.8.1. GENERAL REMARKS

Сказать о суммарной энергии – единственном корреляте словесного ударения (сослаться на часть 1), а затем сказать, что в синтагматическом ударении важную роль начинают играть и остальные компоненты интонации. Проверить во всем параграфе преобладание длительности в ударении украинском

As has been shown in Part 1, one of the main characteristics of a word's phonetic presentation is accent. Being an integral part of the mechanism involved in uniting words into a sense-group, the word stress is not unique. In structural units larger than a word, several types of semantically important stresses are distinguished: normative (syntagmatic), logical and emphatic. Sentence stress reveals itself in the stressed syllables of the words that form the above mentioned units. Such type of a syllable in a sense group is the nucleus.

One type of word stress distinguishes the most important word in a sense group; this is the word that forms the semantic and prosodic center of the sense group. This type of a stress is named *syntagmatic*. The semantic (intonational) center of the phrase that is formed by the stressed syllable of the word (most important in the communicative sense in an utterance that consists of many sense groups) is similarly characterized by the so-called *phrasal stress*. The semantic stress that is maximally emphasized and precisely marked by intonation and performs certain special semantic functions is named *logical stress*. In these cases logical stress carries out the

function of syntagmatic (or phrasal) stress. Quite often this type of a stress is not only of a logical character but that of an emotional character as well. In this case the stressed word is the center that manifests either the speaker's emotional state or his emotional and attitudinal evaluation of the contents of the utterance. This is said to be under *emphatic stress*.

Logical and emphatic stresses differ from the (normative) syntagmatic stress not only by the degree of semantic and intonational accentuation of the word it falls on and by a set of phonetic means that execute this stress in conversation, but also by this word's position in a sense group. The terminal position of the word containing the nucleus in the sense group is the normative location of ordinary syntagmatic stress:

*Frock-coats have quite gone out of **fashion**.*

The place of the logical (and the emphatic) stress is not fixed by formal rules and entirely depends on the speaker's aim. One and the same utterance can be realized in the speech with different localization of the words that are logically stressed: *Навіщо тобі чини? Навіщо **тобі** чини? Навіщо тобі **чини**?*

8.8.2. NORMATIVE (SYNTAGMATIC) STRESS

As has already been noted, the localization of a nuclear syllable in the terminal position in a sense group corresponds to the norm. However, it should also be noted that the normative syntagmatic stress in a number of cases shifts to the left from the terminal position in a sense group (the shift including one or more words). The realization of the semantic and intonation center of the sense group in a non-final position depends on communicative and syntactic factors on the one hand, and on the factors enumerated here on the other hand – how full the meaning of the sense group lexical units is and what kind of morphological means and stylistic elements are used in the text.

The following conditions are regarded to be the most typical ones for normative (syntagmatic) stress localization in a non-final position:

1. when the form-words that are stressed in connected speech in some language are the final words (word) in a sense group;
2. when notional words that lose their stress under certain conditions (while they are stress – marked in isolated pronunciation) are the final words in a sense group;
3. when the rhythmic structure of an utterance requires the shift of syntagmatic stress from the final position to the preceding notional word.

The fact that the indicated regularities are typologically common in Ukrainian and English is of great interest. However, the specific manifestations of these regularities in the same languages differ substantially.

In English, the specific manifestation of the normative (syntagmatic) stress shift can be explained by the following factors:

1. The presence of form-words that are not capable of becoming the semantic center of a sense group even though they execute the function on their own; this is why they lose regular word stress in speech continuum and, consequently, are incapable of displaying normative (syntagmatic) stress. This group consists of auxiliary and modal verbs, prepositions, conjunctions, articles and particles: *There's no reason why you **shouldn't** have one.*

At the same time, such formally notional parts of speech as personal, possessive, reflexive and relative pronouns also lose stress in English speech continuum because of their relative lexical deficiency: *I got my **raincoat** myself*.

However, form – words that are in the terminal position turn into the communicative center of an utterance and acquire the normative (syntagmatic) stress:

a) auxiliary verbs that are used instead of the notional verbs:

*Do you know where it happened? - I **do**.*

b) the auxiliary verb “to be” that is preceded by the subject which is expressed by a pronoun: *Here we **are**.*

c) complex prepositions that stand before the unstressed personal pronoun at the end of a sense group: *Don't you ever dare to talk **about** it!*

d) personal pronouns that are connected with a noun by the conjunction “and”: *My friend and **I** | could move up a little.*

2. When a noun, a verb and other notional parts of speech, being at the final position in a sense group, lose a certain part of their nominal semantic meaning, they also lose the function of being the intonational and semantic center of an utterance. The mostly widespread cases of this type include the following:

a) the word “street” in the names of the streets: ***Downing** Street;*

b) a noun that stands after the adjective which specifies the meaning of this combination of words on the whole: ***telephone** book, **evening** paper;*

c) a noun that stands at the final position and means some place: *He is without a **shilling** in the pocket;*

d) the adverb «so» in the word combinations “to do so”, “to think so” etc.: *Charge them for the programs if you regularly **do** so.*

3. The rhythmic marking of a sense group can execute a significant influence on normative (syntagmatic) stress localization.

In Ukrainian, the three aforementioned occurrences of syntagmatic stress shift from a terminal word can also be observed; however, the specific realizations of these phenomena differ substantially.

1. The number of form-words incapable of accepting syntagmatic stress in Ukrainian is considerably less than the English prepositions, conjunctions, and other particles referred to here. Furthermore, in Ukrainian pronouns practically always preserve an appropriate stress and when placed at the final position can be syntagmatically stressed.

*Після стількох літ він ще й досі без пам'яті від **вас**.*

2. The loss of a certain part of the nominative semantic meaning in some notional parts of speech in Ukrainian is as widespread a phenomenon as in English: *гаряча голова.*

When considering sentence stress facilities, the following should be emphasized. The nuclear syllable, like any stressed syllable, differs from the neighbouring unstressed ones by larger magnitudes of the summary energy and its components (intensity and duration) in a speech signal. As to the distinctive characteristics of the nuclear syllable with respect to the other stressed syllables in a sense group, the kinetic pitch changes (falling, rising, complex), interval and speed of its alteration (being an important characteristic of the nucleus) determine the sentence stress character.

Beside the kinetic tone a certain role in English sentence stress is played by a loudness increase in the nucleus. In Ukrainian, duration is of greater importance in shaping the nuclear syllable than the power component of intonation.

In conclusion, it should be emphasized that all of the above-mentioned situations characterize the regularities of normative stress (except logical or emphatic).

8.8.3. LOGICAL STRESS

Unlike normative (syntagmatic) stress, logical stress can make any word in the sense group prominent; in this case it is strongly accentuated. It brings some cardinal changes into an utterance's meaning while its vocabulary and grammar remain unchanged.

***She** didn't ask you to go there.* (Somebody else asked you about it).

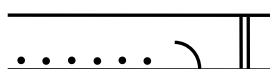
*She didn't ask **you** to go there.* (She asked another person).

*She didn't ask you to go **there**.* (She asked you to visit another place).

The syllables that precede the logical stress can be pronounced in different ways:

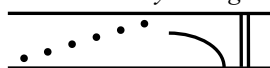
1. as unstressed ones on a low level ,

e.g. *She didn't ask you to go **there**.* [ʃi dɪdnt ɑːsk ju tə gou ˌðeə ||]



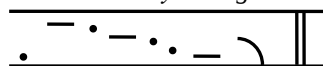
2. as unstressed syllables with the pitch gradually growing up, starting with the initial syllable towards the stressed one,

e.g. *She didn't ask you to go **there**.* [ʃi dɪdnt ɑːsk ju tə gou ˌðeə ||]



3. as stressed syllables and stress is preserved in accordance with the general rules of the word stress in an English utterance; thus an ascending or a descending stepping head is formed,

e.g., *She didn't ask you to go **there**.* [ʃi 'dɪdnt 'ɑːsk ju tə 'gou ˌðeə ||]



In the final example the word under main stress is more prominent.

Thus, not only notional words but also the form- words as well (*That **was** very smart*) and even separate parts of a word can be marked by the logical stress.

*I didn't say **inclusive**, I said **exclusive**.*

In rare instances, stress can move from its regular place in a word to some other syllable.

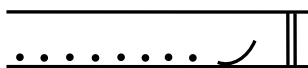
The above-mentioned qualities are typical both in the English and Ukrainian languages. The corresponding examples are given in the section on "Word stress".

The intonational means that bring the logical stress in a sense group to life are similar (by their quality) to the ones used in the normative (syntagmatic) stress. However, in the quantitative aspect they are marked much more strongly. The high fall and the accidental rise are often used for this purpose:

*I can't under**stand** it.* [aɪ 'kɑːnt ʌndə'stænd ɪt ||]



Do you think he was going to **Leeds**? [də jə θɪŋk hi wəz goʊɪŋ tə ,li:dz ||]



Moreover, in both English and Ukrainian the role of the dynamic and temporal components increases when executing logical stress: the syllable, being under logical stress, is pronounced very loudly and with a drawl:

To був швидккуй поїзд.

To був швидккуй поїзд.

8.8.4. EMPHATIC STRESS

In cases where the major stressed word is the center that expresses the speaker's emotional state or his attitudinal evaluation of the reported, normal (syntagmatic) stress is referred to as *emphatic* stress. It allows the speaker to manifest his attitude to the reported in the same way as logical stress. The location of the emphatic stress is not standardized and is entirely determined by the context:

*She has a **nasty** cough. She has a nasty **cough**. **She** has a nasty cough.*

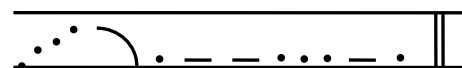
The intonation differences between the emphatic and the logical stress are demonstrated by the greater degree of prominence in the first one. This is caused by the wide range of nuclear tone and greater loudness on the main stressed word:

*There was an e'**normous** queue waiting at the theatre.* (Logical stress)

[ðeə wəz ən ɪˌnɔːməs ɪkjuː ɪweɪtɪŋ ət ðə ɪθiətrə ||]



*There was an e''**normous** queue waiting at the theatre.* (Emphatic stress) [ðeə wəz ən ɪˌnɔːməs ɪkjuː ɪweɪtɪŋ ət ðə ɪθiətrə ||]



The differential feature of the emphatic stress (in comparison to the normative and logical ones) is a noticeable part of the timber characteristics in the emphatically marked nuclear syllable. In addition, the following specific characters are to be mentioned among intonational means that increase emphasis effect:

the lengthening of consonant sound in the nucleus,

a clear demonstrated glottal stop before the initial vowel of the nucleus located at the beginning of the word,

an intentional accentuation of a normally unstressed syllable in a word for emphasis: *I **remind** it to you.* ;

emphasizing form-words (articles, possessive pronouns etc.) : *He is **the** painter.*

In Ukrainian, the emphatic accent possesses similar properties. The differences are observed only in the language means prevailing in expressing attitudinal and emotional meanings (see section 9).

8.8.5. STRONG AND WEAK FORMS OF THE FORM-WORDS

In English a certain number of monosyllabic words (about 50) have strong (full) and weak (reduced) forms. They are auxiliary and semi-auxiliary verbs, personal pronouns in nominative and objective cases, articles, some prepositions, and conjunctions.

In the strong forms of the above-mentioned words, the vowels and consonants have full quality and quantity.

In weak forms the sounds undergo some changes. Vowels are very often reduced; e. g. the indefinite article *an* in the strong form is pronounced [æn], in the weak form [ən]; the vowel [æ] is reduced to the neutral sound [ə]. Similarly, the words *as* [æz] and *us* [ʌs] are pronounced [əz] and [əs] in their weak forms.

In weak forms long vowels may become shorter or may be reduced to short vowels. For instance, the strong forms of *he* [hi:], *she* [ʃi:], *be* [bi:] are pronounced with the long vowel [i:], but in the weak forms the vowel [i:] may lose some of its length or even its quality, e. g. [hi·], [ʃi·], [bi·] or [hi], [ʃi], [bi].

Vowels and consonants of words in their weak forms may fall out completely; e. g. the weak forms of *from* [frɒm], *shall* [ʃæl], *can* [kæn] in rapid speech may be [fr̩m], [ʃl̩], [kn̩].

A form-word may have one or several weak forms. Within several variants of weak forms of one and the same word we may find one, two or all three of the above-mentioned changes, e. g.

And don't you want to hear me?

[ənd 'daʊnt ju , wɒnt tə hɪə mi ||] (the vowel [æ] is reduced to [ə]).

Here and there.

['hɪər ən , ðeə ||] (the vowel [æ] is reduced to [ə], the final consonant [d] falling out).

Up and down.

['ʌp n̩ , daʊn ||] (both the initial vowel and final consonant have fallen out).

Sometimes there appear different variants of the weak forms depending on the type of the neighboring sounds; e. g. the auxiliary verb *has* [hæz] may have the weak form [z] if the preceding sound is a vowel or a voiced consonant and the form [s] if the preceding sound is a voiceless consonant, e. g.

Ben's finished his work.

['benz 'fɪnɪʃt hɪz , wɜ:k. ||]

Jack's come.

['dʒæks , kʌm. ||]

English form-words have weak forms in conversational English. They rarely have their strong forms unless they are stressed (see "Sentence Stress") in some exceptional cases:

The preposition *on* has no weak form and is always used in its strong form [ɒn], e.g.

He sat with his elbows on his knees.

[hi 'sæt wɪð hɪz 'elbəʊz ɒn hɪz , ni:z. ||]

The waves broke on the shore.

[ðə 'weɪvz 'brʊk ɒn ðə , ʃɔ: ||]

In table 8.1, the list of the form-words containing the strong and weak variants of their pronunciation are read.

Table 8.1.

List of strong and weak forms

Word	Strong forms	Weak forms	Examples	Notes
1	2	3	4	5
			ARTICLES	
a	[eɪ]		This is an apple, but not the apple you wanted.	
an	[an]		[ˈðɪs ɪz ,æn æpl bət 'nɒt ,ði: æpl ju wɒntɪd]	
		[ə]	Do you prefer a lower or an upper berth?	The form
		[ən]	[ˈdu: ju prɪ'fɜ:r ə ,ləvə ɔr ən ,ʌpə bɜ:θ]	[ən] is used
		[n]	Read an article! [ˈri:d n ,ɑ:tɪkl]	before vowels
the	[ði:]		He is the man (you asked for).	
			[hi ɪz 'ði: ,mæn]	
		[ðə]	Have you got the tickets, Ann?	
			[ˈhæv ju 'ɡɒt ðə ,tɪkɪts ən]	The form
		[ði]	He tore the envelope open.	[ði] is used
			[hi 'tɔ: ðɪ 'envɪləʊp ,əʊpən]	before vowels
			CONJUNCTIONS	
and	[ænd]		And is a conjunction.	
			[ˈænd ɪz ə kən ,dʒʌŋkʃn]	
			— I had an appointment for noon and ...	
			— Well?	
			— He was out.	
			[aɪ həd ən ə'pɔɪntmənt fə ,nu:n ,ænd. ,wel hi wəz ,aʊt]	
		[ənd]	He walked over to the phone and picked up the receiver.	
			[hi 'wɔ:kt 'əʊvə tə ðə ,fəʊn ənd 'pɪkt 'ʌp ðə rɪ ,si:və]	
		[ən]	You must work the phone hook up and down slowly.	
		[n]	[ju məst 'wɜ:k ðə 'fəʊn hʊkʌp ən 'daʊn ,sləʊli] or ['ʌp n 'daʊn]	
		[nd]	He stopped and asked after her health.	
			[hi 'stɒpt nd 'ɑ:skt ɑ:ftə hə ,helθ]	

1	2	3	4	5
as	[æz]		As he was busy, he couldn't come. [ˈæz hi wəz , bɪzi hi ˈkʊdnt , kʌm]	
		[əz]	He was out as he was at the meeting. [hi ˈwəz , ʌt əz hi ˈwəz ət ðə , mi:tɪŋ]	
but	[bʌt]		The conjunction but has only one weak form [ðə kənˈdʒʌŋkʃn ˈbʌt ˈhəz ˈoʊnlɪ ↑ wʌn ˈwi:k , fɔ:m]	
		[bət]	But still it's true. [bət ˈstɪl its , tru:]	
for	[fɔ:]		The conjunction for has two weak forms of pronunciation [ðə kənˈdʒʌŋkʃn , fɔ: həz ˈtu: ˈwi:k ˈfɔ:mz əv prənʌnsɪ , eɪʃn]	
	[fɔ:r]		For is a conjunction. [ˈfɔ:r ɪz ə kən , dʒʌŋkʃn]	The form [fɔ:r]
	[fə]		You have to tell them, for they won't believe it. [ju hæv tə , tel ðəm fə ðeɪ ˈwʊnt bɪ , li:v ɪt]	is used before
		[fər]	Don't ask me for I can't do that. [ˈdʌvnt , ɑ:sk mi fər aɪ ˈkɑ:nt ˈdu: , ðæt]	vowels
				The form [fər] e
				is used before
or	[ɔ:]		The strong forms of the conjunction or are [ɔ:] and [ɔ:r]. [ðə ˈstrɒŋ ˈfɔ:mz əv ðə kənˈdʒʌŋkʃn , ɔ: a ˈr ˈɔ: ænd , ɔ:r]	vowels
				The strong form [ɔ:r]
	[ɔ:r]		Or is a conjunction. [ˈɔ:r ɪz ə kən , dʒʌŋkʃn]	is used before
				vowels
		[ɔ]	The boy's name is Jack or Jim. [ðə ˈbɔɪz ˈneɪm ɪz , dʒæk ɔ ˈ(ə) , dʒɪm]	The weak
		[ə]		forms [ɔr],
		[ɔr]	Is he in or out? [ˈɪz hi , ɪn ɔr , ʌt]	[ər] are used
		[ər]		before vowels.
than	[ðæn]		The conjunction than is stressed here. [ðə kənˈdʒʌŋkʃn , ðæn ɪz , streɪt hɪə]	
		[ðən]	It's warmer to-day than it was yesterday. [ɪts ˈwɔ:mə tə , deɪ ðən ɪt wəz , jesterdeɪ]	
that	[ðæt]		The conjunction that is used in its strong form rather seldom. [ˈðə kənˈdʒʌŋkʃn , ðæt ɪz ˈju:zd ɪn ɪts ↑ strɒŋ ˈfɔ:m ˈrɑ:ðə , seldəm]	
		[ðæt]	I know that you are busy. [aɪ ˈnʌv ðæt ju ə , bɪzi]	

1	2	3	4	5
			PREPOSITIONS	
at	[æt]		He placed the chair at the desk, not behind it.	
			[hi 'pleɪst ðə 'tʃeər , æt ðə desk 'nɒt bɪ , haɪnd it]	
			What are you looking at ?	
			[wɒt ə ju , 'lʊkɪŋ , æt]	
			She looked at him. [ʃi 'lʊkt , æt him]	
		[ət]	He will be back at five.	
			[hi wɪl bi 'bæk ət , faɪv]	
for	[fɔ:]		I am for this project.	The strong
			[aɪ əm , fɔ: ðɪs praɪdʒekt]	form [fɔ:r] is
	[fɔ:r]		I am for it.	used before
			[aɪ əm , fɔ:r ɪt]	vowels.
		[fə]	They set out for Moscow.	
			[ðei 'set 'aʊt fə , mɒskəʊ]	The weak form
		[fər]	I bought it for eight roubles.	[f ər] is used
			[aɪ 'bɔ:t ɪt fər ɪt ert , ru:blz]	before vowels.
from	[frɒm]		He took the book from the table.	
			[hi 'tʊk ðə 'bʊk , frɒm ðə teɪbl]	
		[frəm]	[We are six miles from the town.	
•		[frɪm]	['wɪ ə 'sɪks 'maɪlz frəm ðə , taʊn]	
into	[ɪntu:]		Put it into the box.	
			['pʊt ɪt 'ɪn , tu: ðə , bɒks]	The weak form
		[ɪntv]	He put it into a box.	[ɪntu] is
			[hi 'pʊt ɪt , ɪntv ə bɒks]	generally used
		[ɪntə]	Go into the garden!	before vowels,
			['ɡoʊ ɪntə ðə , ɡɑ:dn]	the form
of	[ɒf]		Of is a preposition.	[ɪntə] before
			['ɒf ɪz ə prepə , zɪfn]	consonants
		[əv]	He is a man of great energy.	
			[hi ɪz ə 'mæn əv 'ɡreɪt , enədʒi]	
to	[tu:]		He is going to Moscow.	
			[hi ɪz 'ɡoʊɪŋ , tu: mɒskəʊ]	The weak form
		[tə]	Come for a run to the lodge gates.	[tə] is used
			['kʌm fər ə 'rʌn tə ðə , lɒdʒ ɡeɪts]	before conso-
		[tv]	They wrote to an architect.	nants, the form
			[ðei 'raʊt 'tv ən , ɑ:kɪtəkt]	[tv] before
upon	[ə'pɒn]		This depends upon you.	vowels
			[ðɪs drɪ'pendz ə , pɒn ju]	
		[əpən]	I insist upon you staying with us.	
			[aɪ ɪn'sɪst əpən , ju: , steɪɪŋ wɪð əs]	

1	2	3	4	5
			SEMI-AUXILIARY, AUXILIARY AND MODAL VERBS	
			The Verb to be:	
am	[æm]		Am I reading Jerome K. Jerome?	
			[ˈæm aɪ ˈriːdɪŋ dʒəroʊm ˈkeɪ dʒəˌroʊm]	
			Am I to answer? [ˈæm aɪ tu , ɑːnsə]	
			Yes, I am. [ˌjes aɪ , æm]	
		[əɪ]	I am tired [aɪ əm , taɪəd]	
		[m]	I am tired [aɪ m , taɪəd]	
are	[ɑː]		Are they ready? [ˈɑː ðeɪ , redɪ]	
	[ɑːr]		Are airmen to go there?	
			[ˈɑːr ˈeɪmən tə , goʊ ðeə]	
		[ɑː]	What are you doing? [ˈwɒt ɑː ju , duːɪŋ]	
		[ə]	They are listening in. [ðeɪ ə ˈlɪsnɪŋ , ɪn]	
		[ɑːr]	The books are interesting.	The weak
			[ðə ˈbʊks ɑːr , ɪntrɪstɪŋ]	forms [ɑːr],
		[ər]	[ðə ˈbʊks ər , ɪntrɪstɪŋ]	[ər] are used
		[r]	They're all boys. [ðeɪ r ɔːl , bɔɪz]	before vowels.
be	[biː]		Be ready! [ˈbiː , redɪ]	
		[biː]	I'll be here.	
		[bi]	[aɪl bi ˈ , hɪə] [aɪl bi , hɪə]	
is	[ɪz]		Is he on duty? [ɪz hi ɒn , djuːti]	The form [ɪz]
			What is ready?	is also often
			[ˈwɒt ɪz , redɪ]	used when
		[s]	What's ready?	unstressed.
			[ˈwɒts , redɪ]	The weak forms
		[z]	Ted is out.	appear in quick
			[ˈted z , aʊt]	colloquial
was	[wɒz]		Was it possible?	Speeches: [s] be-
			[ˈwɒz ɪt , pɒsɪbl]	fore voiceless
		[wəz]	It was impossible.	consonants, [z]
		[wz]	[ɪt wəz ɪm , pɒsɪbl]	before voiced
			[ɪt wz ɪm , pɒsɪbl]	consonants
were	[wɜː]		We were busy on that day.	The strong
	[wɛə]		[wi ˌ wɜː , bɪzɪ ɒn , ðæt , deɪ]	forms [wɛə],
	[wɛːr]		They were interested in the problem.	[wɛːr] are used
	[wɛər]		[ðeɪ ˌ wɜːr , ɪntrɪstɪd ɪn ðə , prɒbləm]	rather seldom
		[wə]	The documents were locked up in the safe.	
			[ðə ˈdɒkjumənts wə ˈlɒkt ˈʌp ɪn ðə , seɪf]	
		[wər]	The lessons were over.	
			[ðə ˈlesnz wər , oʊvə]	

1	2	3	4	5
			The Verb to have	
have	[hæv]		Have you called on him?	
			[ˈhæv ju , kɔ:ld ɒn him]	
		[həv]	The geologists have found copper.	
			[ðə dʒɪˈblədʒists həv ˈ faʊnd , kɒpə]	The verb <i>to</i>
		[əv]	I have read the article. [aɪ əv ˈred ðɪ , ɑ:tɪkl]	<i>have</i> when
		[v]	[aɪ v ˈred ðɪ , ɑ:tɪkl]	it is a notional
has	[hæz]		He hasn't worked on the night shift.	verb is used in
			[hi ˈhæznt ˈwɜ:kt ɒn ðə , naɪt ʃɪft]	its strong form
			The boy has a pen about him.	though
			[ðə bɔɪ , hæz ə , pen əbaʊt hɪm]	unstressed.
		[həz]	It has been done in time.	
			[ɪt həz bɪn ˈdʌn ɪn , taɪm]	
		[əz]	He has just come. [hi əz ˈdʒʌst , kʌm]	The weak
		[z]	[hi z ˈdʒʌst , kʌm]	forms [əz], [z]
had	[hæd]		Had they translated it by five?	are used in
			[ˈhæd ðeɪ ˈtrɑ:nsˈleɪtɪd ɪt baɪ , faɪv]	rapid speech.
		[həd]	The man had made a mistake.	
			[ðə ˈmæn həd ˈmeɪd ə mɪs , teɪk]	
		[əd]	[ðə ˈmæn əd ˈmeɪd ə mɪs , teɪk]	The form [d] is
		[d]	He had done with it.	used only
			[hi d , dʌn wɪð ɪt]	after a vowel.
			The verb to do	
do	[du:]		Do come. [ˈdu: , kʌm]	The weak form
		[dʊ]	So do I. [ˈsɒv dʊ , aɪ]	dʊ] is used
		[də]	So do they. [ˈsɒv də , ðeɪ]	mainly before
		[d]	How do you do? [ˈhʌv d ju , du:]	vowels and [w].
does	[dʌz]		She doesn't know about it.	The weak form
			[ʃɪ ˈdʌznt , nəv əbaʊt ɪt]	[d] is generally
		[dəz]	So does he [ˈsɒv dəz , hi:].	used before un-
				stressed "you".
			The Verbs shall, will, should, would	
shall	[ʃæl]		Shall I take it? [ˈʃæl aɪ , teɪk ɪt]	
		[ʃəl]	We shall arrange it. [wi ʃəl ə , reɪndʒ ɪt]	
		[ʃl]	We shall arrange it. [wi ʃl ə , reɪndʒ ɪt]	
should	[ʃʊd]		He thought I should go there.	
			[hi ˈθɔ:t aɪ , ʃʊd ɡoʊ ðeə]	
			Should we go there? [ˈʃʊd wi , ɡoʊ ðeə]	
		[ʃəd]	You should have done it.	

1	2	3	4	5
will	[wɪl]		Will you come? [ˈwɪl ju ,kʌm]	
		[1]	She'll come. [ʃɪl ,kʌm]	
would	[wʊd]		He said he would come. [hi sed hi 'wʊd ,kʌm]	
			Would you do it? [ˈwʊd ju ,du: ɪt]	
		[wəd]	He said he would come. [hi sed hi wəd ,kʌm]	
			I would like it. [aɪ wəd ,laɪk ɪt]	
		[d]	I would like it. [aɪ d ,laɪk ɪt]	
			The Verbs can, mus't	
can	[kæn]		Can I take it? [ˈkæn aɪ ,teɪk ɪt]	
		[kən]	He can make it in no time.	
			[hi kən 'meɪk ɪt ɪn 'nʊv ,taɪm]	The weak form
		[kn]	[hi kn 'meɪk ɪt ɪn 'nʊv ,taɪm]	[kn] is used
		[kɪ]	You can go . [ju kɪ ,ɡoʊ]	before [k], [g]
could	[kʊd]		— Could he? [,kʊd hi]	
			— Yes, he could. [,jes hi ,kʊd]	
		[kəd]	Yesterday he could come here.	
			[,jestədi hi kəd ,kʌm hɪə]	
		[kd]	I could go there if I knew.	
			[aɪ kd 'ɡoʊ ,ðə ɪf aɪ ,nju:]	
must	[mʌst]		Must I copy it? [ˈmʌst aɪ ,kɒpi ɪt]	The weak
		[məst]	You must help your friends.	forms[məs],
			[ju məst 'help jə ,frendz]	[ms] are ge-
		[mst]	You must agree [ju mst ə ,ɡri:]	nerally used
		[məs]	I must get it. [aɪ məs ,get ɪt]	before
		[ms]	I must get it. [aɪ ms ,get ɪt]	pure plosives.
			PRONOUNS	
he	[hi:]		It was he who had taken it.	
			[ɪt wəz ,hi: hʊ həd ,teɪkn ɪt]	
		[hi:]	He has taken the book.	
		[hi]	[hi həz 'teɪkn ðə ,bʊk]	
		[i]	Will he come? [wɪl i ,kʌm]	
she	[ʃi:]		She is on duty today.	
			[,ʃi: ɪz ɒn dju:tɪ tə ,deɪ]	
		[ʃɪ]	She lags behind. [ʃi: 'lægz bɪ ,haɪnd]	
		[ʃi]	She lags behind. [ʃi 'lægz bɪ ,haɪnd]	
we	[wi:]		We were present. [wi: wə ,preznt]	
		[wi:]	We were present at the lesson.	
		[wi]	[wi: wə 'preznt ət ðə ,lesn]	
			[wi wə 'preznt ət ðə ,lesn]	

1	2	3	4	5
you	[ju:]		You have to fulfil the task.	
			[ju: həv tə fʊlˌfɪl ðə ˈtɑːsk]	
		[jʊ]	I'll call on you . [aɪl ˌkɔːl ɒn jʊ]	
me	[mi:]		It's me . [ɪts ˌmiː]	
		[miː]	She has taken care of me	
		[mi]	[ʃi əz ˈteɪkn ˌkeər əv miː]	
			[ʃi əz ˈteɪkn ˌkeər əv mi]	
him	[him]		She recognized him not me.	The weak form
			[ʃi ˈrækəɡnaɪzd ˌhim nɒt ˌmiː]	[ɪm] is used
		[him]	I've seen him . [aɪ v ˌsiːn him]	only in collo-
		[ɪm]	I've seen him . [aɪ v ˌiːn ɪm]	quial speech.
her	[hɜ:]		They met him yesterday, not her .	
			[ðeɪ ˈmet ˌhim jesterdeɪ nɒt ˌhɜː]	
	[hɜːr]		He is her neighbour. [hi ɪz ˈhɜː ˌneɪbə]	The weak
			They met her in the office.	forms [ə] or [ər]
			[ðeɪ met ˌhɜːr ɪn ðɪ ˌɒfɪs]	are used only
		[hɜː]	It's her book. [ɪts hɜː ˌbʊk]	in colloquial
		[hə]	They've talked to her . [ðeɪv ˌtɔːkt ˌtuː hə]	speech
		[ə]	They've talked to her . [ðeɪv ˌtɔːkt ˌtuː ə]	The weak
		[hər]	Her eyes were opened.	forms [hər] and
			[hər ˈaɪz wər ˌoʊpnd]	[ər] are used
		[ər]	[ər ˈaɪz wər ˌoʊpnd]	before vowels
us	[ʌs]		You had to inform us . [ju həd tu ˈɪnfɔːm ˌʌs]	
		[əs]	Let us finish with it. [ˈlet əs ˌfɪnɪʃ wɪð ɪt]	
		[s]	Let us finish with it. [ˈlet s ˌfɪnɪʃ wɪð ɪt]	
them	[ðem]		Wake them at eight [ˈweɪk ˌðem ət eɪt].	
		[ðəm]	Make them shorter. [ˈmeɪk ðəm ˌʃɔːtə]	
		[ðm]	Make them shorter. [ˈmeɪk ðm ˌʃɔːtə]	
your	[jɔ:]		Take your seat. [ˈtæɪk ˌjɔː siːt]	The strong
	[jɔːr]		Your idea is ridiculous.	form [jɔːr] is
			[ˈjɔːr ˈaɪdɪə z rɪ ˌdɪkjʊːləs]	used before
		[jə]	Please, take your seats.	vowels
			[ˈpliːz ˈteɪk jə ˌsiːts]	The weak form
		[jər]	Don't put your elbows on the table.	[jər] is used
			[ˈdaʊnt ˈpʊt jər ˈelboʊz ɒn ðə ˌteɪbl]	before vowels.
some	[səm]		Some of them were present.	
			[ˈsəm əv ðəm wə ˌpreznt]	
		[səm]	Bring some fruit, please.	
		[sm]	[ˈbrɪŋ səm ˌfruːt pliːz]	
			[ˈbrɪŋ sm ˌfruːt pliːz]	

CHAPTER 9

FUNCTIONS OF INTONATION

9.1. INTRODUCTION

In scientific literature extremely contradictory tendencies are reflected on not only problems concerning the number and specific contents of intonation functions, but in the approach to the dilemma itself: that is whether intonation possesses some functions within the framework of the linguistic system at all.

The broad range of proffered points of view reaches from assertions of complete absence of linguistic functions in intonation to clear - cut lists of non-overlapping functions of intonation. For example, in the work of L. Haldzen [L.S.Haldzen, 1962, p.658] intonation is fully deprived of any functions, and according to the author's way of thinking passes information only in cases when logic and semantic meanings of words are completely neglected (as it turns out in the following example, illustrating indignation in the utterances of the type: *Дякую! Thank you!*). In other cases, the role of intonation is minimized. However, the approach asserting the functionally significant status of intonation also prevails. Many researchers agree with the point of view that the basic function of intonation is to convey the emotional and attitudinal concept of the speaker in the content of an utterance [Интонация, 1978, с.7-8; Pittenger, 1960, с.254]. Still, if some researchers consider the emotional function of intonation to be the major one in conveying the utterance's semantics [Shubiger, 1953, с.7-8], others eliminate it completely from the sphere of linguistics [Николаева, 1971, р.169-175; Типологія інтонації мовлення, 1977, с.17; Halliday, 1966, p.112]. Providing reasons of support on the first point of view, V. A. Artyomov asserts that the basic function of intonation is that of expressing some feelings and willingness, without which any vital communication is unthinkable [Артемов, 1966, с.13]. He underlines that syntax in particular has no facilities to encode attitudinal and emotional volitive information. This role rather is executed through vocabulary and intonation [Артемов, 1966, с.12].

Stating the importance of emotional and attitudinal function of intonation, some researchers consider this role to be primary and absolute. In contrast to this, there is yet another point of view which asserts, that intonation serves mainly as a grammatical function [Gleason, 1965, p.171; Halliday, 1966, p.112; Halliday, 1963, p.169].

Nowadays most phoneticians hold the opinion that both above-noted functions are executed by intonation. One of the first works where the role of intonation was interpreted in connection to the possibility of passing on syntactic meanings was that carried out by V. A. Artyomov [Артемов, 1966]. He divided the syntactic meanings of intonation into two types: a) an utterance division of sense groups adequate to the speaker's comprehension depending on the situation of communication; b) a syntactic connection of parts of an utterance reflecting logical plans and logical modality of the idea expressed in the utterance. The intonation of casual, conditional-connection and definite/indefinite intonation, as well as intonation of vagueness, contrast, comparison, apposition and others are referred here.

Further specification and generalization regarding the role of the grammatical function of intonation brought different researchers over the possibility of singling two [O'Connor, Arnold, 1961], three [Николаева, 1977, с.169] and four [Александрова, 1984, с.8; Светозарова, 1982, с.18-23] autonomous functions out of it. The discrepancy of researchers' opinions on the principles of the classification of intonation functions are nowadays caused, foremost, by the fact that the concept of a "function" is ambiguously interpreted in modern linguistics. This has resulted in the appearance of heterogeneous in principle and contrariness in the contents systems of classification of intonation functions. Different authors have suggested singling out the following intonation functions: emotional and intellectual [Pittenger, 1960]; verbal and vocal [Berkovits, 1984]; logical and accenting [Huang, 1971]; emotional and physiological [Kingdon, 1972], etc.

Among numerous approaches to the question about the functional variety of intonation, there is, undoubtedly, one approach that has lately drawn attention [Зиндер, 1983; Николаева, 1977; Светозарова, 1982; Торсуева, 1979]. It differs by internal logic and systemic character of the classification principles of intonation functions, which is understandable on the basis of L. R. Zinder's interpretation of the term "linguistic function". In accordance with this interpretation, the following functions of intonation must be included with the basic ones: an intellectually-logic function (division into sense groups, connection between sense groups, and accentual prominence of some elements of sense group; a function of communicative types (situations) distinction; a function reflecting the attitudinal and emotional relations.

It should be noted that there is some original information in the intonational structure of speech that cannot be accorded the term "linguistic function" which is defined in this work. These are sociolinguistic characteristics and individual features of speech, phonostylistic varieties of vocal communication, and many others [Fant, 1987; Hide, 1987]. It is clear how important intonation is in the course of conveying the above-named information; however, there are no "linguistic categories, and, consequently, there are no linguistic units here" [Светозарова, 1982, с.24].

The systemic character of examined functions of intonation, their relative independence, and mutual relationship come to light, firstly, because of their ability to form special semantic units and, secondly, by the inventory and quantitative manifestation of those phonetic facilities which are mainly used to realize the intonation functional load under discussion.

It becomes of special importance when taking into account multiple variety of aspects of these functions: a part of them (communicative types differentiation, emotional and attitudinal functions) are mostly correlated with the semantic aspect of the functions of intonation, while the other part (division into sense groups, sense groups connection and actual division) executes another functional aspect alongside semantic function; i.e. it participates in organizing those internal systems of the language that are not directly connected with any semantic units.

9.2. COMMUNICATIVE FUNCTION

9.2.1. GENERAL REMARKS

The communicative purposefulness of speech divides all utterances into three communicative types: statements, imperatives, and interrogations.

A detailed analysis of various communicative types of sentences in correspondence with their meaning and functions provides us an opportunity to regard each of the three aforementioned types in detail. Declarative sentences are usually subdivided into the following communicative subtypes: an assertion, a report, a statement, an explication, a correction, a narration of a descriptive plan, etc. Imperative sentences form the zone of command and of recommendation and request. The communicative subtypes of the interrogative sphere are: a general question, a special question, an alternative question, a disjunctive question, and a tag question.

The important role of prosody in executing the utterance's communicative target is acknowledged by practically all phoneticians. However, as to the problem of the inventory of intonational means that express the communicative aim of the utterance, there is no common point of view among linguists [Калита, 2001; Петрянкина, 1977].

The reason for such a discrepancy is due to the following: a) when the expansion of the communicative perspective of an utterance takes place under real conditions of communication, it is specified as its aim as a statement, an inducement or an interrogation; b) at the prosodic level all communicative types of speech are the result of the interaction of prosodic markers of those emotional and attitudinal meanings which match the given communicative type of a sentence.

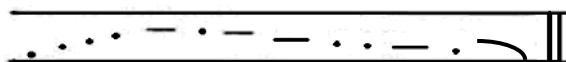
9.2.2. INTONATION OF THE DECLARATIVE SENTENCES

The fact that declarative sentences can be used with any tone type testify against the notion that either communicative type of a sentence is associated with certain nuclear tones; i.e. a rising tone is a marker of interrogation, and a falling one marks declaration. The tone character depends mainly on the degree of completeness of thought.

If a declarative sentence is grammatically and semantically complete and the thought expressed in it is also complete then this sentence is pronounced with a falling tone. The most typical in this case (if there are no emotional or attitudinal connotations) is the low fall combined with the high descending head (monotonous or stepping) in English.

You may have to order this pilot to start his flight.

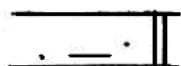
[ju meɪ hæv tu 'ɔ:də 'ðɪs 'pailət tə 'stɑ:t hɪz ˌflaɪt ||]



The use of such a descending type of a tone makes the meanings of assertion, negation, agreement and some others stronger; this is why such a tone is to be regarded as an emphatic variant of a falling tone in declarative utterances. This is also the reason for a falling tone prevalence in monologues in all kinds of descriptions, while a high fall is mainly used in lively conversations.

Declarative sentences, being grammatically complete but incomplete in their semantics, are pronounced with a rising tone:

She was there... (but didn't take the book) [ʃi ,wɒz ðeə]



The comparison of the intonation of interrogation and incompleteness is one of the most picturesque illustrations of intonation making interrogative and declarative communicative types come close to each other. The coincidence of semantic center tone configuration in these communicative types gives support to the point of view that the nuclear tone type is not the universal prosodic differentiator of a communicative type of sentence. As the experimental results have shown, a question is associated with an upper pitch level and non-finality – with a low pitch register in general cases. Experimental data analysis testifies to a terminal syllable being highly informative, but the first place in this respect belongs to the initial syllables in a sense group, those located far from the nucleus. Thus, a communicative type of the utterance is, evidently, identified by the contrast in the range and level of the pitch in the head.

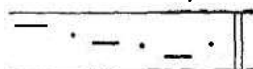
We met an old acquaintance of ours who told us two interesting things about him.

[wi 'met ən 'əʊld ək'weɪntəns əv ,avəz | hu 'təʊld əs ʔtu: 'ɪntrɪstɪŋ ,θɪŋz əbaʊt hɪm ||]



Was the boy in danger?

[ˈwɒz ðə 'bɔɪ ɪn ,deɪŋdʒə ||]



In cases where the ascending terminal tone is used, the differentiator of a communicative type is the place of maximum BTF location in an utterance. If in a question the BTF maximum is prevailing in the nucleus in a non-final (and analogical to them in the pitch configuration) declarative sentence, the maximum location in the pre-nuclear part is more frequent.

A rising tone in a nucleus is typical not only for the uncompleted types of declaration. A similar contour is used when pronouncing greetings, partings, and short answers (in the English language).

He, llo!

Good ,morning!

Excuse me! – ,Yes.

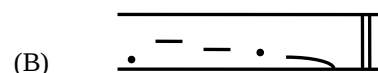
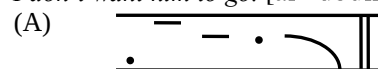
One of the sources that ruins the prosodic structure invariance of different communicative types in speech is the fact that under natural conditions of communication there is always a place for communicative perspective expansion, this being caused by specification of purpose [Плюш, 1976]. It is reflected in a variety of declarative sentences such as assertion, statement, report, detailing, narration of a descriptive character, etc.

A substantial part of relevant prosody characters capable of distinguishing these types of declarative sentences is bound with temporal and dynamic characteristics; however, the frequency component takes part in their differentiation. The higher frequency level distinguishes the statement and the report from the assertion and the descriptive narration.

Various types of narration which possess certain common prosody in contrast to the interrogative communicative types have a substantial specificity in the intonation that

differentiates the named types from each other. The essential part of the prosodic relevant features distinguishing these types of declarative sentences comes to the temporal, dynamic and timber characters; the frequency component also takes part in their differentiation. The widened frequency interval of the nucleus is typical for a statement; an upper register differs a statement and a report (A) from the declaration of a descriptive character and the sentence stating some fact (B).

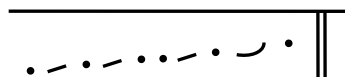
I don't want him to go. [aɪ 'dɒnt 'wɒnt tə ˌɡoʊ ||]



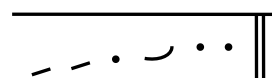
The most illustrative in this respect are the following characteristics: the degree of the melody curve "indentures"; reduction /fullness of the stressed syllables vowels; the correlation between the vowels/consonants duration; timbre; etc.

In conclusion, it should be stressed that the above-mentioned distinctions are not caused by communicative differences of speech realizations but by the character of the subjective attitudinal evaluative meanings and emotional evaluative meanings that are accompanying the intonation of these communicative types of sentences (see 9.5.5.). Thus, the rising tone is typical for English declarative sentences conveying agreement, contradiction, rage, distrust, encouragement and some others. Similarly, in the Ukrainian language many attitudinal and modal meanings are realized by means of rising tone used in declarative sentences, expressions of uncertainty, contradiction, agreement, doubt, wish, offer and the others referred to here.

Навряд чи я це зроблю відразу. (Uncertainty).



От якби він був тут. (Wish).



9.2.3. INTONATION OF QUESTIONS.

9.2.3.1. GENERAL REMARKS

According to current approaches in linguistics, the following types of purpose may be assigned to any given question: general, special, alternative and disjunctive. Rhetorical questions, echo-questions, and others make up a separate group. Each of these listed types of questions possesses characteristic peculiarities of lexical and grammatical construction in addition to their phonetic organization.

If in the most simplified descriptions of intonation the ascending contour is considered to be one of the basic intonation markers of interrogation in contrast to the descending contour as a marker of a declaration, in more sophisticated classifications such

an approach is unacceptable. As a matter of fact, in the English language there exists only two kinds of questions out of six (the general question and the echo question) which are most often shaped by different types of the rising tones, and only under condition are there no emotional and attitudinal connotations in an interrogative utterance. Special questions are pronounced, as a rule, with the falling tones. Other types of questions (alternative and disjunctive) are used in the utterances consisting of two sense groups, and the specification of type via intonation means is carried out at the expense of opposing the rising and falling tones in sense groups.

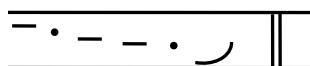
Thus, depending on the aim, each type of question in English and Ukrainian can be uttered with a rising or falling terminal tone and can be characterized by various types of sentence stress and rhythmic structure.

9.2.3.2. General Questions

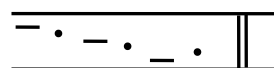
General questions are those which require a short answer in an affirmative or a negative form (i.e. "yes" or "no").

It should be kept in mind that in the English language there is a fixed word order characteristic for each communicative type of sentence. General questions in English are formed, as a rule, by means of auxiliary or semi-auxiliary verbs that are placed at the beginning of the sentence. Such general questions are usually pronounced with an ascending tone:

'Does he 'speak 'English, well?

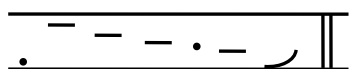


'Was the 'boy in ,danger?

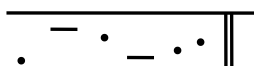


Sometimes in the English language the word order in general questions does not differ from that of statements. Intonation in this case is the only means by which a communicative type of sentence is revealed. Such interrogative sentences are also pronounced with a rising tone:

You ' know what ' happened last, night?



He might have ,called to you?



The free word order of the Ukrainian language the primary use of the second type of question form (without inversion). The character of the terminal tone coincides with that used in the English language.

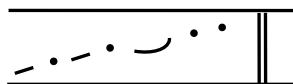
General questions built with the help of inversion or parenthetic words like *чи*, *хіба* are pronounced with a rising tone, too:

Хіба він не чекав на мене?

[Х'ІБА ВІН НЕ ЧЕКАВ НА МЕНЕ ||]



Ви підете з нашими? Поставить значки
[ВИ ПІДЕТЕ З НАШИМИ ||]



The melody contour in the head of special questions in the Ukrainian language is of an ascending character, and it considerably differs from the pitch direction in the head of special questions in the English language.

The melody curve in the head of the general questions in the Ukrainian language can be of a descending, an ascending or a combined configuration. If the word emphasized by the logical stress is located in the middle or at the end of an utterance, then the syllables preceding this word are pronounced with an ascending or level melody. The logically stressed syllable is said to be at the highest pitch of the voice.

If the word bearing the logical stress is located at the beginning the utterance, the following words are pronounced with a descending melody:

У вас є час?

[У ВАС ЇЄ ЧАС ||]



The logical stress in the English language does not change the melody configuration of the syllables that follow it to such an extent as in the Ukrainian language:

Is he a very absent - minded man?

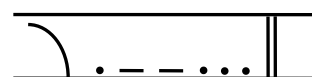
['iz hi ə ,verl əbsənt maɪndɪd mæn ||]



In English, some sentences, having the form of a question, express a statement, a denial, or an order. These sentences are pronounced with a falling tone.

Can't you stop bothering me?

[kɑ:n 't jə 'stɒp 'bɒðərɪŋ mi ||]



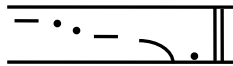
9.2.3.3. Special Questions

Special questions begin with an interrogative word (with a preposition or without) that shows exactly which information is requested.

Special questions in the English language are usually pronounced with a falling tone.

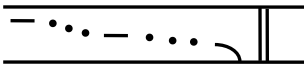
Where does the wind come from?

['wɛə dəz ðə 'wɪnd ,kʌm frəm ||]



Who have I the honour to address?

['hu: həv ɪ ði 'ɒnə tə ə ,dres ||]



Ukrainian special questions are also pronounced with a falling tone; however, the pitch configuration is of another character.

Хто це прийшов?

[ХТО ЦЕ ПРИЙШОВ ||]



Де він був?

[ДЕ ВІН БУВ ||]

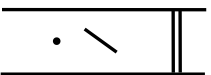


In Ukrainian special questions, the pitch goes down on the logically stressed word. All the syllables (stressed and unstressed) following it can continue the descending melodic curve and even rise upwards.

The pitch in the head of special questions (consisting of one word) is of an ascending form in the Ukrainian language, and this is its principal difference from the melody direction in the head of English special questions.

The melody of short special questions (consisting of one word) is simpler in its form in the Ukrainian language. The voice usually falls down within the stressed syllable and the fall is quite sharp:

Колі? [КОЛІ ||]



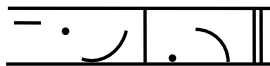
The character of the terminal tone movement described above (in both English and Ukrainian utterances) is typical only in the cases when there is no logical or emphatic stress in the sense group and the utterance is free of attitudinal and emotional connotations.

9.2.3.4. Alternative Questions

Alternative questions are connected with a problem of choice. Alternative questions consist of two parts joined by the conjunction "or". The first part of an alternative question, being the non-final sense group, is closely connected with the second sense group by its meaning. It is pronounced with the rising tone in English and Ukrainian. The final sense group of an alternative question is pronounced with the falling tone. For example:

Is it slow or fast?

['ɪz ɪt ,sləʊ | ɔ: ,fɑ:st ||]



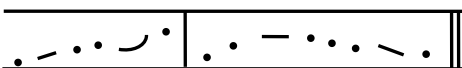
Do you belong here or are you just here on a visit?

['du: jə bɪ,lɒŋ hɪə | ɔ:r 'ɑ: jə dʒʌst 'hɪə ən ə ,vɪzɪt ||]



Чекати на, нього, чи прийти через годину?

[ЧЕКАТИ НА Н'ОГО | ЧИ ПРИЙТИ ЧЕРЕЗ ГОДИНУ ||]



9.2.3.5. Echo - Questions

An echo – question is typical in everyday speech when the question asked by one of the speakers is repeated by the other. For example:

- *Is he guilty?*

- **Is he guilty?** *Oh! Of course, he is.*

The question « *Is he guilty?* » is repeated by the listener.

The following fragment contains one more example of repetition:

- *I should like to see him very much.*

- **Would you?** *That's easily done. Come this way.*

- *Thanks. I'll follow you.*

In the English language the repeated questions are pronounced with a rising tone.

Why that? – I asked.

- **Why?** [,waɪ ||]

- *Yes, why?*

- *What have you done? – he asked.*

- *Nothing.*

- **Nothing?** [,nʌθɪŋ ||]

- *Yes.*

In the Ukrainian language, echo questions are pronounced with a rising tone:

- *Чекати на нього чи прийти через годину?*

- **Через годину?** [ЧЕРЕЗ ГО,ДИНУ ||]

- *Так.*

- *Гаразд.*

9.2.3.6. Disjunctive Questions

A disjunctive question consists of a declarative sentence and a subsequent brief question that repeats the meaning of the declarative sentence. It is formed by means of repeating the auxiliary verb and the subject of the preceding sentence. If the declarative sentence is affirmative, the interrogative part contains negation. If the declarative part is negative, the interrogative one does not contain negation.

The declarative part is pronounced with a falling tone; the interrogative one can be pronounced either with a rising tone or with a falling one, depending on a shade of meaning that is to be conveyed. The second part of a disjunctive question is pronounced with a descending tone if the question is formal; i.e. it just requests whether the speaker's opinion is agreed upon or denied:

It is lovely outside, is it not?

[ɪt ɪz 'lʌvli ,aʊtsaɪd | 'ɪz ɪt ,nɒt||]

The bell hasn't gone, has it?

[ðə 'bel 'hæznt ,gɒn | ,hæz ɪt||]

The book is very interesting, isn't it?

[ðə 'bʊk ɪz 'veri ,ɪntrestɪŋ | ,ɪzn't ɪt||]

The first part of the disjunctive questions in the Ukrainian language can be pronounced with the falling tone, too, in cases where the question is formal and the speaker is sure of a definite answer:

Сьогодні оперує лікар. Кречет, чи не так?

[С'ОГОДН'І ОПЕРУЄ Л'ІКАР КРЕЧЕТ | ЧИ НЕ ТАК ||]

The first part of a disjunctive question in the Ukrainian language is uttered with a rising tone if the speaker doubts the answer and would like to get some information:

Ви підете з, нашими, чи не так?

[ВИ П'ІДЕТЕ З НАШИМИ | ЧИ НЕ ТАК||]

As a rule, the interrogative part of a disjunctive question in the Ukrainian language is pronounced with a falling tone. It can be said, however, with a rising one if the disjunctive question expresses doubt and a desire to get confirmation:

Ви підете зі мною, хіба, ні?

[ВИ П'ІДЕТЕ З'І МНОЮ | Х'ІБА Н'І ||]

9.2.4. INTONATION OF IMPERATIVES.

9.2.4.1. GENERAL REMARKS

The intonational organization of imperative utterances, just as that of interrogative and declarative ones, depends completely on extra linguistic conditions of communication and the speaker's intention to convey this or that attitude to what is being discussed. Here there is no strict dependence of intonation on a communicative type of the sentence.

The peculiarity of semantic fields of the imperative sphere consists of a many-sided nature of this type of meaning. On the one hand, it is conditioned by the pragmatic character of this field of relations [Петров, 1982], and the modification of the aim changes the communicative purpose of the utterances. On the other hand, the imperativeness, being one of the components of the objective-modality semantic field (see “Objective modality”, 9.4.2.5.), represents itself as one of the types of the utterances that demonstrate the relationship of the reported with reality. And finally, the character of personal attitude influences the semantics of this sphere of meanings in a considerable way, too.

The interaction of these aspects results in the development of some set semantic complexes which refer to the sphere of imperative subjective-modal attitudes. The peculiar feature of these modal meanings is a detailed elaboration of the imperative; they form heterogeneous functional-semantic fields which should be considered in a semantic respect as the product of the communicative and modal units’ interaction (see 9.5).

Examining imperatives exceptionally from a language communicative function approach, one usually abstracts oneself from the numerous subjective connotations which include a wide range of personal estimations that graduate the imperative into a large quantity of gender and aspect functional-semantic fields; thus commands, recommendations, and requests refer to the basic types of imperatives. As described in the chapter on subjective modality (see 9.4.2), intonation patterns which realize the imperative communicative aim can be conventionally spoken about: within each of the named types of the imperative sentences there are some most typical of “central” components of the corresponding functional and semantic fields of the subjective-modal sphere.

9.2.4.2. Commands

Commands in English and Ukrainian are pronounced with a falling tone, e.g.:

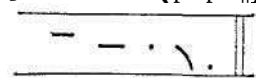
*Attention! Stop **talking!***

Увага! Припиніть розмови!

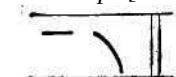
In the English language while realizing absolute orders the pitch of the voice falls from the highest level to the lowest one. In other types of commands the pitch of the last stressed syllable is not so high and the voice does not fall so sharply; e. g.:

Hand in the paper!

[ˈhænd ˈɪn ðə ˌpeɪpə ||]



Hands up! [ˈhændz ʌp ||]

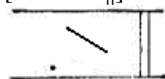


9.2.4.3. Recommendations

Imperative utterances of the recommending group are pronounced with a high falling nuclear tone in both contrasted languages. Nevertheless, a peculiarity of the Ukrainian language is a narrower interval of a falling tone (one that starts on a lower level and ends on a higher one than that in English utterances).

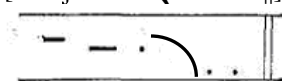
Examples: *Чу.май.*

[ЧИТАЙ||]



Switch on the radio.

[ˈswɪtʃ ˈɒn ðə ˌreɪdɪʊ ||]



Some definite subjective-attitudinal meaning of recommendation is conveyed at the expense of melodic peculiarities (level, descending, ascending) in the head. Meanwhile, the following extra-linguistic factors, characterizing the communicative situation, play the leading role:

1. the best variant in action development is advised (from the speaker's point of view, the listener's opinion is taken into consideration, or the listener's position is neglected);

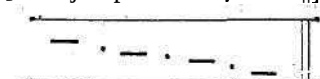
2. it is not the best variant of the action development that is advised (the conditions needed for the best variant development are not available at the moment; there is no chance to think the matter over thoroughly; there is no way out).

9.2.4.4. Requests

English requests are pronounced with a rising tone in the nucleus; e.g.:

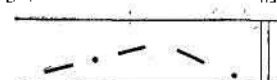
Would you speak a little louder.

[ˈwʊd ju ˈspi:k ə ˈlɪtl ˌlaʊdə ||]



Дай мені. квітку.

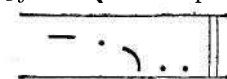
[ДАЙ МЕНІ КВІТКУ||]



Melody can differentiate communicative types of sentences, changing a command into a request and vice versa. One and the same sentence when pronounced with a falling tone expresses an order, but pronounced with a rising tone a polite request:

Shut the window, please!

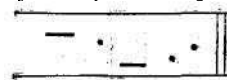
[ˈʃʌt ðə ˌwɪndəʊ plɪz ||]



A request

Shut the window, please.

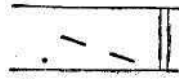
[ˈʃʌt ðə ˌwɪndəʊ plɪz ||]



In the Ukrainian language requests like commands are pronounced with a falling tone; e.g.,

Зроби це.

[ЗРОБИ ЦЕ||]



Still, one can easily tell an order from a request. This fact is explained by different types of the pitch shape in these two communicative types of sentences.

Initial syllables are low while pronouncing requests and rather high when producing orders. The first unstressed syllable in Ukrainian may be pronounced higher than the stressed syllable following it.

The melody range of commands and requests in Ukrainian is different, too. While pronouncing requests the melody range is widened; when pronouncing orders it is narrowed. A request takes approximately twice as much time as a command. A regular falling head is typical of a request. The pitch of the voice falls gradually within the final syllables. An irregular falling head is often typical of a command. The pitch of the voice falls sharply within the final syllables.

9.2.5. INTONATION OF EXCLAMATIONS

Affirmative exclamations are pronounced with a falling tone in the English and Ukrainian language, e.g.:

Fine! [faɪn ||]



Який чудовий день!

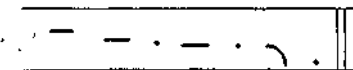
[ЙАКИЙ ЧУДОВИЙ ДЕН' ||]



Slogans are pronounced with a falling tone, too, in the compared language, e.g.

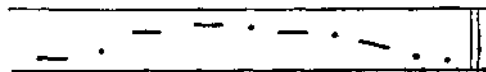
Long live the friendly peoples!

['lɒŋ 'lɪv ðə 'frendli ,pi:plz ||]



Хай живе дружба між народами!

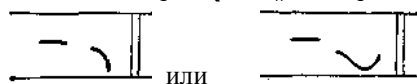
[ХАЙ ЖИВЕ ДРУЖБА М'ІЖ НАРОДАМИ ||]



When greeting people at meetings a falling tone is generally used. In English greetings, the word *good* may be stressed in this case and is pronounced with a slight rise.

When parting, a falling or low rising nuclear tone is used. The word “good” being stressed may be pronounced with a slight rise in melody:

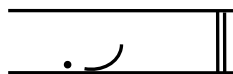
Good bye! ['gʊd ˌ baɪ ||] or ['gʊd ˌ baɪ ||]



In English and Ukrainian, excepting “affirmative” exclamations, there are some “interrogative” ones which are pronounced with a rising tone; e. g.:

There must be some mistake. – *Mistake?! Oh, nonsense.*

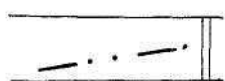
[mɪs, teɪk ||]



Чекати на нього чи прийти через годину?

Через годину?!

[ЧЕРЕЗ ГОДИНУ ||]



9.2.6. PECULIARITIES OF THE COMMUNICATIVE FUNCTION OF INTONATION IN A POLYSYNTAGMAL UTTERANCE

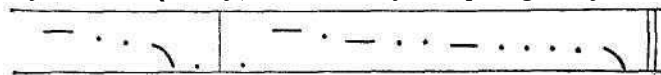
If a sentence consists of two or more sense-groups, the tone in the last sense-group is determined by the communicative type of the sentence in accordance with the principles described in the preceding chapters. That is, categorical statements, special questions, commands, affirmative exclamations, etc. are pronounced with a falling terminal tone, but non-categorical implicit statements, general questions, requests, etc. take a rising tone.

Intonation of non-final sense-groups is determined by the semantic weight of the group, and the selected tone depends on the degree of logical independence of this sense-group, the degree of its semantic completeness, the possibility for it to be used on its own or its close semantic relation with the following sense-group, and by the possibility of an implicit continuation (see 9.3.3.).

If a non-final sense-group is logically more or less independent, and it makes complete sense and can stand by itself it is generally pronounced with the falling tone in English; e. g.

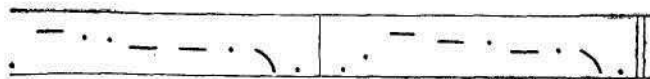
Dew has been falling; a thousand dew drops are glittering in the sun.

['dju: həz bɪn ˌ fɔ: lɪŋ | ə 'θaʊzənd 'dju: drɒps ə 'glɪtərɪŋ ɪn ðə ˌ sʌn ||]



The lights of the town lay behind now, and an odd silence fell between them.

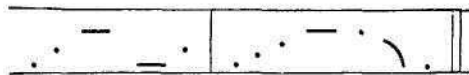
[ðə 'laɪts əv ðə 'taʊn 'leɪ bɪ ˌ haɪnd naʊ | ənd ən 'ɒd 'saɪləns 'fel bɪt ˌ wi:n ðəm ||]



If a non-final sense-group is closely connected in meaning with the following sense-groups, implies a continuation, doesn't make complete sense and can't stand by itself, it is pronounced with the rising tone, e. g.

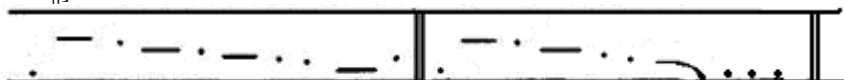
I could not see him as I was very busy.

[aɪ kəd 'nɒt ,si: hɪm | æz aɪ wəz 'veri ,bɪzi ||]



We met an old acquaintance of ours who told us two interesting things about him.

[wi 'met ən 'əʊld ək'weɪntəns əv , əvəz | hu 'təʊld əs ↑tu: 'ɪntrɪstɪŋ , θɪŋz əbaʊt hɪm ||]



In the Ukrainian language, non-final sense-groups are pronounced with a rising tone as a rule, irrespective of the semantic independence of the group; e. g.:

Коли вони йшли на, вогневу, Гай щораз оглядався на офіцера.

[КОЛИ ВОНИ ЙШЛИ НА ВОГНЕ , ВУ| ГАЙ ЩОРАЗ ОГЛ'АДАВС'А НА ОФ'І , ЦЕРА. ||]

In the above sentence the non-final sense-group is closely connected in meaning with the following sense-group, does not make complete sense, and takes a rising tone.

In the sentence:

Чоловіки поблизу шарахнулися. вбік, дехто скрикнув обурено.

[ЧОЛОВІКИ ПОБЛИЗУ ШАРАХНУЛИС'А , ВБ'ІК | ДЕХТО СКРИКНУВ О , БУРЕНО ||]

where the non-final sense-group, though logically more or less independent and can stand by itself, also takes the rising tone.

Non-final sense-groups with a falling tone are met very rarely in Ukrainian as a rule, they take the falling tone only for the sake of emphasis (see 9.4.5.).

9.2.7. INTONATIONAL TYPOLOGY OF THE COMMUNICATIVE TYPES OF UTTERANCES

While comparing peculiar features of intonation of the communicative types of utterances in English and Ukrainian, it is necessary to remark that there is no direct correlation of any definite intonation contour with certain communicative types of sentences. Thus, if we speak about the correlation of some intonation patterns with some definite communicative types of utterances, then a "pure" manifestation of the communicative aim without any influence of emotional and attitudinal connotations is meant. The latter changes the intonation in speech to a considerable extent. Taking into

account the aforesaid, one can state the following prosody common features in Ukrainian and English speech (different communicative aims are regarded).

Concerning declarative sentences, it should be mentioned that there are no definite prosodic patterns correlated with the basic types of declarative sentences (a statement, a report, an explanation, a correction, a narration of a descriptive character) in the examined languages. In typologically common characteristics of the declarative sentences prosodic organization in English and Ukrainian speech, one can refer the use of a falling tone to convey meanings of finality and completeness, while the use of a rising nuclear tone conveys meanings of non-finality and hesitation. However, in cases where attitudinal and emotional connotations are superimposed, the melody configuration of the declarative utterances can change considerably irrespective of the narration type.

Depending on emotional and attitudinal colouring, each type of questions in English and Ukrainian (general, special, disjunctive, alternative, repeated questions) may be pronounced with a rising or falling terminal tone, being characterized by different types of the syntagmatic stress and rhythmic structure.

Nevertheless, when considering the most frequent cases of prosodic organization in interrogative utterances (not accompanied by any attitudinal and emotional connotations), the following typologically common features can be stated. General questions, repeated questions and echo questions are pronounced with a rising tone in both languages; the terminal part of the alternative questions and the special questions takes a falling tone.

In this chapter, imperatives are examined from the point of view of the language communicative function alone, abstracting from subjective attitudinal connotations which include a wide range of personal estimations. The most typical "central" components of either of the imperative semantic fields, without any attitudinal and emotional connotations, refer to the basic types of the imperative sentences (an order, a recommendation or a request). This explains why one can speak about the intonation patterns shaping the communicative purpose of the imperative only conventionally. The variability of imperative intonation, depending on different subjective attitudinal shades of meaning superimposed on this or that type of the imperative sentence, is analyzed in the chapter devoted to the problems of attitudes.

On the basis of such an approach, one could hardly create a certain generalized prosodic pattern, the one that can directly correlate with each of the above-mentioned communicative types of utterances. Only from a rather generalized point of view can a falling tone be regarded as a correlate of commands and recommendations, while a rising tone acts as a correlate of requests.

The peculiarities of each of the two languages are caused by some distinctions in prosodic organization of the communicative types of sentences in the Ukrainian and the English languages. Thus, a special question takes a falling nuclear tone in English, while in Ukrainian this type of a question is often pronounced with a rising nuclear tone.

A specific feature of the Ukrainian language involving intonation shaping of recommendations is a falling tone narrower interval in the nucleus; it starts lower and ends at a higher level than in the English language.

There is a significant difference in the melody of utterances sounding as an official request in English and Ukrainian: a rising tone is used in English and a falling tone in Ukrainian (see fig. 9.1).

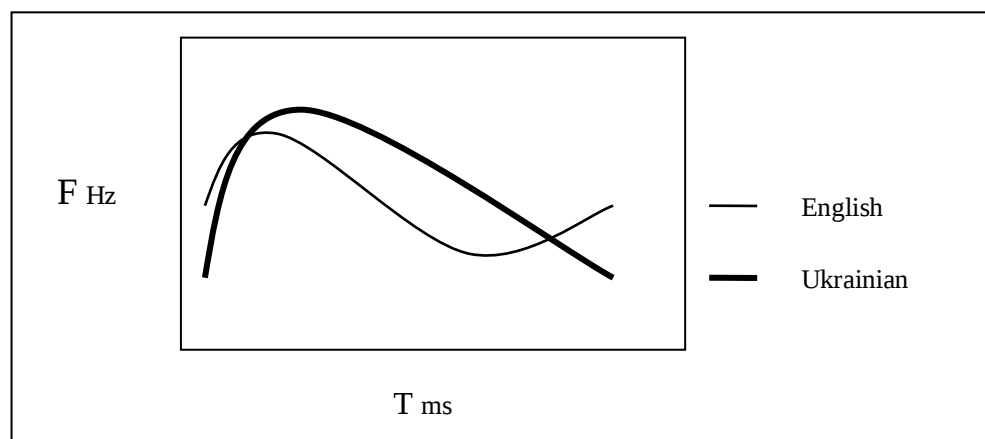


Fig. 9.1. Melody distinctions of a request in Ukrainian and English.

9.3. LOGICAL AND SEMANTIC FUNCTION.

9.3.1. LOGICAL AND SEMANTIC FUNCTION GENERAL CHARACTERISTICS

Logical and semantic function of intonation solves three problems which manifest themselves in the prosodic organization of a speech passage, these being: a division into sense-groups; reflection of the degree of dependence of sense-groups; and relations between the elements of sense-groups.

9.3.2. FUNCTION OF SENSE-GROUPS DIVISION

This function, performing the role of the speech flow division into relatively independent sense-groups, provides delimitation of sentences in connected speech, singling out the subordinate and principal clauses into independent sense-groups within the complex sentences and separation of one or several neighboring elements (e.g. the subject expressed by a noun, the subject and the predicate, adverbial modifiers, an apposition, an address, an object, etc.) [Чаочень, 1987; Уанк, 1987; Cooper, 1977]. The necessity to separate the sentences following each other by means of intonation is quite obvious. Among the rest of the above-enumerated units which are singled out into a separate sense-group in English the most frequent (according to D. Crystal) are the cases when the subordinate clauses are singled out (they make 28% of the use) [Crystal,

1964]; and the least frequent are the cases when the two neighboring elements in the sentence are singled out (12.5%).

In Ukrainian the same situation takes place [Бармут, 1980].

Semantic distinctions, depending on the way a sentence is divided into sense-groups, are various. Thus, compare two sentences:

1) *Це вчитель, Павло Петрович. It's the teacher, Mr. Green.*

2) *Це вчитель, | Павло Петрович. It's the teacher, | Mr. Green.*

In the first case, “Павло Петрович” and “Mr. Green” are addresses, and they continue the melody of the nucleus; in the second case, they are appositions and form a separate sense-group by means of the preceding pause and the kinetic tone.

Here are two more examples:

a) *○, Ann, | my | daughter, | and her \ children.*

b) *, Ann, | my, daughter | and her ○ children.*

Depending on the pause and the nucleus tone used in the sentence, the meaning of the words "my daughter" is changed – they can be perceived as an apposition or as an enumeration.

Have a look at the following sentences:

You ' know it is \ here.

You ○ know | it is \ here.

Depending on the presence of the pause and the kinetic tone, "you know" is either a parenthetic element or a principal clause in a complex sentence. In this a similar picture may be observed in the Ukrainian language:

Звичайно вони в бібліотеці у цей час.

Звичайно, / вони в бібліотеці у цей час.

Specific prosodic markers of syntagmatic division used in a certain language include the following: a higher beginning of a sense-group melody contour in English, and a temporal component of greater significance in the main stressed syllable accentuation in Ukrainian.

9.3.3. FUNCTION EXPRESSING THE DEGREE OF THE SENSE-GROUPS RELATION

The division of a speech continuum into sense-groups cannot alone solve the problem of utterance semantic organization. Relatively autonomous groups of words, singled out into sense-groups, if necessary enter into more or less close semantic relations with one another. The function of intonation that provides such a correlation may be named as the function expressing the degree of relation among the delimited units [Черемисина, 1999].

Such an enumeration of semantic aspects, which are executed by the function showing the degree of the sense-groups relation (strong, medium, weak, relations of government, equality, subordination, etc.), leads to the conclusion that there is a great variety of intonation markers involved in the process of providing this relationship.

In cases where the most independent and semantically completed single utterances are regarded, the examined function of intonation demonstrates a weak kind of relation between the neighbouring sense-groups, each of them being located within a simple sentence. The character of these relations becomes considerably more variable when semantically independent groups of words within a simple sentence are singled

out into a separate sense-group [Nevalainen, 1987]. Thus, in sentences containing enumerations with a conjunctive or a conjunctionless type of connection, the use of the same kind of tones (e.g. rising tones) strengthens the meaning of the semantic affinity of each item of the enumeration; and the use of different tones (rising and falling ones) emphasizes the semantic independence of each of these items and sometimes their contrastivity.

Not less but more possibilities of this intonation function manifest themselves in the sphere of subordinative types of relations between the constituent parts of complex sentences [Bolinger, 1984], especially in the case of a principal clause pre-position. Here, while conveying the meanings of condition, consequence, result, contrast and attributive relations, the function of intonation is reduced to the one indicating the completeness or incompleteness of parts of the sentence. Compare:

Дім, | у якому ми живемо, | зовсім новий и
Дім, у якому ми живемо, | зовсім новий.

In the first sentence the semantic importance and independence of the sense-group "у якому ми живемо" expressed by the attributive subordinate clause is intonationally emphasized. In the second case the weakening of the semantic independence of the sentence «у якому ми живемо» is expressed with the help of a rising tone and a pause absence before this piece of speech.

In compound sentences, intonation normally marks a coordinative connection at the point of a sentence parts juncture; the possibilities of intonation variability expressing finality or non-finality are limited in this case by the regulative - consequential and the adversative relations.

The ways in which intonation expresses the above-mentioned relations (both subordinative and coordinative) are most variable in asyndetical sentences where there is no basic syntactic marker of these relations and the role of intonation in the asyndetically combined parts (conveying these relations) and their semantic interaction is intensified. For instance, both sense-groups of the asyndetical combination can be pronounced with the intonation of finality:

Не під , ходьте: я не , навиджу вас.

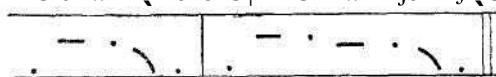
The intonation of the second part of the sentence strengthens the meaning of "because". The second part of the compound sentence may take the rising tone which is characteristic of marking a close semantic interaction with the preceding context.

The choice of tone in non-final sense-groups is closely connected with the syntactical function of the clause.

In English, as a rule, non-final sense-groups of compound sentences are pronounced with a falling tone, as their parts are more or less independent; e. g.

The sky was cloudless, the sun was shining brightly.

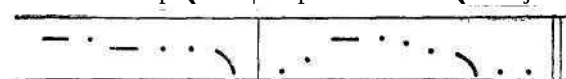
[ðə 'skaɪ wəz , klaʊdlɪs | ðə 'sʌn wəz 'faɪnɪŋ , braɪtli ||]



Statements containing an opposition which also form two equally important, more or less independent sense-groups have a falling tone.

This is comrade Petrov, the professor of the Institute.

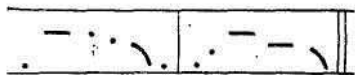
[ðɪs ɪz 'kɒmrɪd pe , trɒv | ðə prə'fesər əv ðɪ , ɪnstɪtju:t ||]



Non-final sense-groups of complex sentences are pronounced with a falling tone most often in cases when the principal clause is a non-final sense-group; that is, it precedes the subordinate clause. In this case the non-final sense-group is semantically more or less independent; the following subordinate clause adds something to its meaning but the principal clause contains the main idea expressed by the speaker.

He was at the station when the train pulled in.

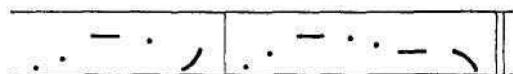
[hi 'wɒz ət ðə ,steɪʃn | wen ðə 'treɪn 'pʊld ,ɪn ||]



When the subordinate clause precedes the principal one, the non-final sense-group is usually pronounced with a rising tone, e. g.

If I have spare time, I shall do it by all means.

[ɪf aɪ 'hæv spɛə ,taɪm | aɪ ʃəl 'duː ɪt baɪ 'ɔːl ,miːnz ||]



But in all the cases the choice of tone after all is chiefly determined by semantic factors.

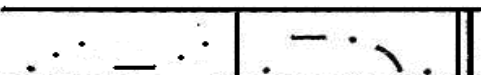
Speaking about the semantic factor as the main one in determining the melody of a sense-group, G. P. Torsuyev said that the main rule of the sequence of tones may be formulated as follows: The most important is the tone of the final sense-group which is determined by the communicative type of the sentence.

The tone of non-final sense-group is determined by the semantic weight, the degree of completeness, and the independence of a given sense-group. The more important and independent its meaning is, the more categoric is the statement, and stronger is the tendency of a given sense-group to take a falling tone. The more insignificant the semantic weight of the statement is and the less categoric and independent the statement is itself, the closer the connection of the given sense-group with the following one is, — and stronger is the tendency of the given sense-group to take a rising tone." [Торсуев, 1960].

Thus, the principal clause which precedes the subordinate clause may be pronounced with a rising tone (if it is closely connected in meaning with the following subordinate clause).

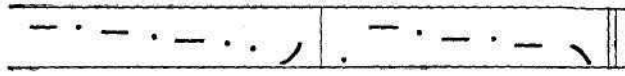
There is a man downstairs who wants to see you.

[ðeər ɪz ə ,mæn daʊnstɛəz | huː 'wɒnts tə ,siː ju ||]



Arthur almost worshipped the ground that Montanelli walked on.

['ɑːθə 'ɔːlmʌst 'wɜːʃɪpt ðə ,graʊnd | ðæt ɪ ,mɒntə'nelɪ 'wɔːkt ,ɒn ||]



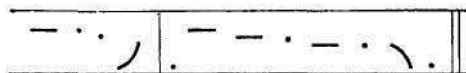
In the first sentence attention is drawn mainly to the first sense-group (the principal clause) which is rather independent semantically and can stand by itself; therefore it is pronounced with a falling tone. Both parts of this sentence (the principal clause and the subordinate clause) are equally important. The clauses of the second sentence are

closely connected in meaning. The first part ("Arthur almost worshipped the ground...") taken separately is not complete in meaning and acquires sense only together with the second sense-group (the subordinate clause).

If the subordinate clause precedes the principal clause the subordinate clause, takes the rising tone.

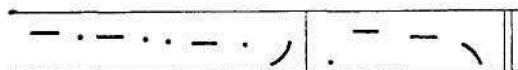
When she was gone, he sat still for quite a minute.

[ˈwen ʃi wəz ˌɡɒn | hi ˈsæt ˈstɪl fə ˈkwɪt ə ˌmɪnɪt ||]



What he played in his mother's heart he knew not yet.

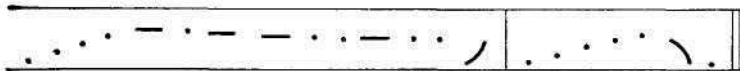
[ˈwɒt hi ˈpleɪd ɪn hɪz ˈmʌðəz ˌhɑ:t | hi ˈnju: ˈnɒt ˌjet ||]



In the same way a non-final sense-group of a compound sentence may be pronounced with a rising tone if it is closely connected in meaning with the second part of the compound sentence; e. g.

You may have to order this pilot to start on a flight, he will have to obey you.

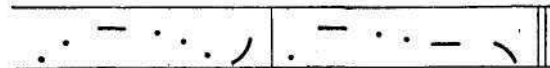
[ju meɪ hæv tu ˈɔ:də ˈðɪs ˈpaɪlət tə ˈstɑ:t ɒn ə ˌflaɪt | hi wɪl hæv tu ɒ ˌbeɪ ju ||]



In sentences with participle constructions, both in English and Ukrainian, the non-final sense-group is pronounced with a rising tone. The final sense-group takes the falling tone irrespective of the place occupied by the participle construction; e. g.

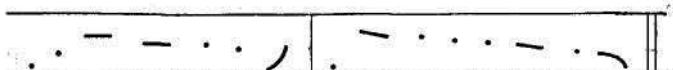
The professor being ill, the lecture was put off.

[ðə prəˈfesə bi:ɪŋ ˌɪl | ðə ˈlektʃə wəz ˈpʊt ˌɒf ||]



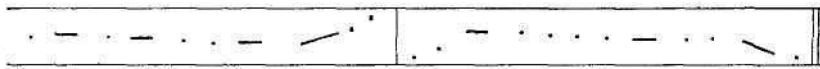
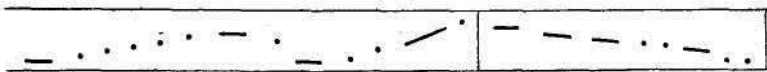
We could not enter the house, my sister having lost the key.

[wi kəd ˈnɒt ˈentə ðə ˌhaʊs | maɪ ˈsɪstə hævɪŋ ˈlɒst ðə ˌki: ||]



Стежачи як офіцер читає газету, Гай ще більше примружився. Черниш лежав на краю насипу, розглядаючи замасковані доти.

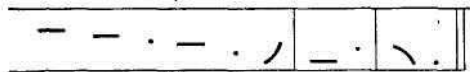
[СТЕЖАЧИ ЙАК ОФІЦЕР ЧИТАЙЕ ГАЗЕТУ | ГАЙ ШЧЕ БІЛЬШЕ ПРИМРУЖИВС'А || ЧЕРНИШ ЛЕЖАВ НА КРАЙУ НАСИПУ | РОЗГЛ'АДАЙУЧИ ЗАМАСКОВАНІ ДОТИ ||]



In sentences, containing an enumeration, each enumerated word or a group of words makes, as a rule, a separate sense-group and takes a rising tone both in English and Ukrainian. The final group in the enumeration takes the falling tone, e. g.

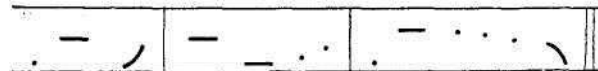
Don't use a knife for *fish, cutlets, or omelettes*.

[ˈdaʊnt ˈjuːz ə ˈnaɪf fə ˈfɪʃ | ˌkʌtlɪts | ˌɒmlɪts ||]



He *stopped short, looked straight at him, and took him by his hand*.

[hi ˈstɒpt , ˌɔːt | ˈlʊkt , streɪt æt hɪm | ənd ˈtʊk hɪm baɪ hɪz ˌhænd ||]



If the last two items in an enumeration are connected by *and* or *or*, they may make one sense-group; e. g.

And now he was in his room-rising, dressing, *shaving and washing*.

[ənd ˈnaʊ hi wəz ɪn hɪz ˌruːm | ˌraɪzɪŋ | ˌdresɪŋ | ˈʃeɪvɪŋ ənd ˌwɒʃɪŋ ||]



Very often *and* is repeated before each item of the enumeration for emphasis. In this case the falling tone is used in each sense-group.

The smile made his face *understanding and sweet and gentle*.

[ðə ˈsmaɪl ˈmeɪd hɪz ˈfeɪs ʌndə ˌstændɪŋ | ənd ˌswiːt | ənd ˌdʒentl ||]



If the enumeration is at the beginning of the sentence or in the middle of it, and the last enumerated word is not final, it may form a separate sense-group pronounced with a rising or falling tone. An enumeration takes a falling tone if it is not connected in meaning with the following sense-group. If it is connected in meaning with the following sense-group, it takes a rising tone; e. g.

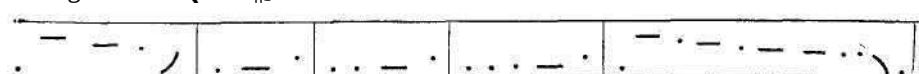
Old and young, men and women, Negro and white were drawn into participation in the May Day celebration.

[ˈoʊld ənd ˌjʌŋ | ˈmen ənd ˌwɪmɪn | ˈniːɡroʊ ənd ˌwaɪt | wə ˈdrɔːn ɪntə ˌpɑːtɪsɪˈpeɪʃn ɪn ðə ˈmeɪ ˈdeɪ | selɪ ˌbreɪʃn ||]



They took *bathing suits, a towel, an umbrella* and in a minute they walked across the dark green to the river.

[ðeɪ ˈtʊk ˈbeɪbɪŋ ˌsjuːts | ə ˌtaʊəl | ən ʌm ˌbrelə | ənd ɪn ə ˌmɪnɪt | ðeɪ ˈwɔːkt əˈkrɒs ðə ˈdɑːk ˈɡriːn tə ðə ˌrɪvə ||]



A *dull, heavy* sound was heard.

[ə ˌdʌl | ˈhevi ˈsaʊnd wəz ˌhɜːd. ||]



Similar rules are observed when pronouncing enumerations in the Ukrainian language; e. g.

Всі наспіх *копали* землянки, *заношили* в них найпотрібніші речі, *приміщали* дітей.

[ВСІ НАСПІХ КОПАЛИ ЗЕМЛАНКИ | ЗАНОСИЛИ В НИХ
НАЙПОТРІБНІШІ РЕЧІ | ПРИМІЩАЛИ ДІТЕЙ ||]

9.3.4. FUNCTION EXPRESSING THE SEMANTIC RELATIONS BETWEEN THE SENSE-GROUP ELEMENTS

Intonation is widely used with the aim of focusing the listener's attention on some aspects of an utterance which turn out to be the most important in conveying certain semantic relations between separate aspects of the utterance. [Уанк, 1987; Bolinger, 1984]. Thus, two spheres involving this function are to be distinguished. Within one sense-group it contributes to separate words accentual emphasis; that is, the actual division is carried out, the logical stress is realized, and semantic relations between words are established. In structures of connected speech containing many sense-groups, this function signals the relative importance of the elements in the neighbouring sense-groups and it provides contrastive comparison of words located in different sense-groups. This function of intonation is conditioned by non-linguistic (situative) factors; it is usually impossible to predict which word the speaker will single out as the most important one judging by the lexical and grammatical structure of the sentence:

*She speaks **English** and some **other** languages well.* (She speaks not only English).

*She speaks English and some other languages **well**.* (She speaks several languages well).

Nevertheless, there are some cases when actual division of the sentence and its intonation peculiarities are predetermined by the grammatical structure of the sentence, and they are invariant (as in the alternative questions). Here the speaker has no choice in distributing the accentual prominence because of the coordinative connection that exists between the stressed elements of the grammar construction:

*То **ваша** ручка чи **моя**?* Is it a **black** hat or a **grey** one?

The word's prominence caused by logical stress is of great importance for the purpose of interpreting the meaning of the sentence and marking the relationship between its elements; e.g.:

'Any thing will do и *'Any **thing** will do.*

In particular, the use of tones of different direction contributes to the act of drawing attention to the new (that is the rheme) in the utterance in contrast to the known (the theme) [Roach, 1984, с.148].

The function of the accent prominence is not confined within one sense-group but also serves to convey the semantic relations between the words in adjacent sense-groups or utterances; this is why it is also called the function expressing relations between the elements of intonational units [Николаева, 1977, с.9]. Such, for instance, is the intonation contrasting the most prominent words in two adjacent sense-groups:

*Сьогодні в клубі вечір відпочинку, а **завтра** буде лекція.*

While performing the function of drawing the listener's attention to the most important, intonation can emphasize certain sense-groups as being more important in comparison with the others. Such secondary sense-groups involving broken information are, for instance, the second and forth ones in the following sentence:

The Japanese| for some reason or other|'drive on the left| like us.

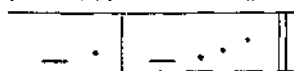
9.3.5. INTONATION OF THE INDEPENDENT ELEMENTS

The sentence independent elements have no direct syntactic relation with the other sentence members. The following elements can be treated as the independent ones: direct address, parentheses, and interjections.

Direct address and parentheses in English and Ukrainian may come at the beginning, in the middle, and at the end of a sentence. When the direct address is at the beginning of the sentence, it forms, as a rule, a separate sense-group and is pronounced with a rising tone (more emphatic) or with a falling tone (less emphatic) depending on the attitudinal and estimative shade of meaning it expresses; e.g.

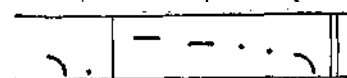
Darling, take it for me.

[,dɑ:lɪŋ | ,teɪk t fɔ mɪ ||]



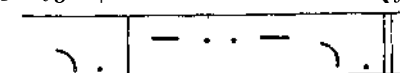
Alan, how deep is the well?

[.ælən | 'hau 'di:p ɪz ðə ,wel ||]



Fungus, answer the boy's question.

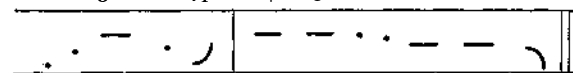
[.fʌŋɡes | 'ɑ:nsə ðə 'bɔɪz kwɛst ,fən ||]



Parentheses, put at the beginning of the sentence, make a separate sense-group, too, and are pronounced with a rising tone.

To his great surprise, Jesse wanted to take that job.

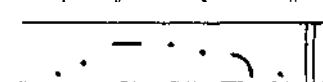
[tə hɪz 'ɡreɪt sə ,praɪz | 'dʒes wɒntɪd tə 'teɪk 'ðæt ,dʒɒb ||]



If the parenthesis is closely connected in meaning with the words following it, the parenthesis does not form a sense-group of its own; e. g.:

It appears you can do it.

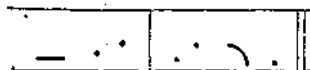
[ɪt ə 'prɪəz ju kən ,du: ɪt ||]



With direct address, if interjections or parentheses appear in the middle of the sentence, they do not form a separate sense-group but refer to the preceding sense-group and continue its melody; e.g.:

"Thank you, dear, for your kindness"

[,θænk ju diə | fə jə , kaɪndnɪs ||]



"Freddie," *he said*, "has left the room."

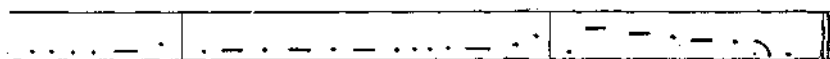
[,fredɪ hi sed | həz 'left ðə ,rum. ||]



If a parenthetical sentence put in the middle of the utterance is too long and more or less independent in meaning, it may form a separate sense-group pronounced at a low pitch level, e.g. :

When he had recovered — *a glass of home-made elder-berry assisted him* — he paced up and down the kitchen.

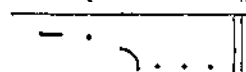
[wen hi həd rɪ ,kʌvəd | ə ɪglɑ:s əv ɪhoum meɪd ɪelberi ə ,sɪstɪd hɪm | hi 'peɪst 'ʌp ən 'daʊn ðə ,kɪtʃɪn ||]



The direct address and parentheses at the end of the sentence do not generally make a separate sense-group but continue the melody of the preceding part of the sense-group; e.g.:

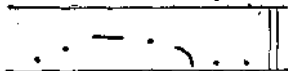
Take it easy, *my boy*.

[ˈteɪk ɪt ɪ :zɪ maɪ bɔɪ ||]



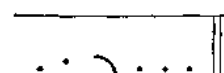
There is something more, *I think*.

[ðeər ɪz 'sʌmθɪŋ , mɔ: aɪ θɪŋk ||]



"I am sorry," *he said*,

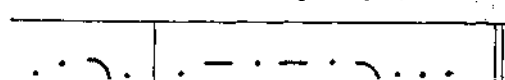
[aɪ əm , sɒri hi sed ||]



If the parenthesis is rather long and more or less independent in meaning, it may make a separate sense-group or even several sense-groups, with the pitch of the voice being considerably lower than in the preceding sense-group expressing the main thought.

I am sorry, *he said apologetically*.

[aɪ əm ,sɑɪ | hi ɪsed əɪpələ , dʒetɪkəlɪ ||]



['ʃæl aɪ , lʌv ju | ɪ sed ðə , swɒləʊ | hu | laɪk tə | kʊm tə ðə ɪ pɔɪnt
æt , wʌns ||]



Alas, his father is no better!

[illegible]

		
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Ванько, гайда на село!

Добрий вечір, Катре.

Year	Percentage of Total Population
1950	55
1955	65
1960	60
1965	70
1970	75

Здрастуй!" — *віповіла стримано, і далі викладала сноп.*

ВИКЛАДАЛА СНОПИ ||



- Що ж це тобі, *молодице*, дня немає?

[ЩО Ж ЦЕ ТОБ'І МОЛОДИЦЕ | ДН'А НЕМАЙЕ ||]



9.4. ATTITUDINAL AND EMOTIONAL FUNCTION OF INTONATION

9.4.1. GENERAL CHARACTERISTIC

Was remarked upon in Section 9.1., the majority of researchers consider this function of intonation dominating in comparison with its other functions [Shubiger, 1953].

In order to reveal the natural character of the isomorphic relation between the semiological and intonational units of emotional and attitudinal sphere, a systemic approach involving a linguistic model is to be applied.

When modelling the system of different leveled and structurally heterogenous language means the approach based on the concept of functional and semantic fields (FSF) [Бондарко, 1984, p.21] is extremely productive. FSF generally represents a multileveled system of functionally homogeneous and semantically variable language units united by some general semantic character. The degree of this character intensity changes the process of the semantic field components transition from those that form its nucleus to those that form the periphery of this field.

Such an approach appears to be the most productive for the purpose of revealing the correlation mechanism of certain semantic character gradual increase with the corresponding alteration of some differential prosodic features.

9.4.2. FUNCTIONAL AND SEMANTIC FIELDS OF THE MODAL SPHERE

9.4.2.1. Types of the Language Modality

In spite of the polysemy of the term “modality”, the range of phenomena involved in the concept of this term has commonalty in modern linguistics: these phenomena are called upon to convey the correlation between reported information and reality or the speaker’s attitude to what is said. This very principle is the basis of the classification of

modality functional types in the researched works of many native linguists and in the works of the Prague School Representatives.

According to this approach, the language modality, on the one hand, conveys the speech content correlation with the reality; in this sense, any complete expression of a thought reflects reality in a particular form of an utterance. It conveys one of the meanings which form the category of objective modality in integrity. On the other hand, modality fulfils the function of expressing the speaker's attitude to the reported information. These modal meanings express the subjective evaluation of some thought; some message are not considered to be obligatory ones for any utterance in the opinion of many linguists [Виноградов, 1975 ,p.80], and, in contrast to modal meanings which correlate the content of speech with the reality, may be missing in an utterance. The terms "the objective" and "the subjective" modality are correlated, accordingly, with the two types of the modal meanings manifestation.

The meanings of objective modality are the meanings included into the closed system of abstract syntactical categories, the meanings of correlation between the reported and the reality; that is to say the meanings of reality (syntactical indicative: syntactical Present, Past and Future Tenses) and unreality (syntactical unreal moods: subjunctive, conditional, desirable, imperative and debitive) [Русская грамматика, 1980, p. 216].

Expressing the speaker's attitude towards the content of the utterance is one of the tasks which are realized by the attitudinal function (subjunctive) of intonation. With the help of this function one and the same fact of reality can be presented as a true or a false message from the point of view of the speaker. It can be opposed to something, correlated with other facts or events of a situation or source of information, it can be qualified in different ways, and it can gain some particular qualitative evaluation.

The system based on the acknowledgement of four main functions of subjective modality [Королева, 1989] is the basis of the classification of attitudinal meanings functional types. These four basic functions are: evaluative proper, imperative evaluative, emotional evaluative, and evaluative characterizing.

The evaluative proper function demonstrates itself in the sphere of subjective evaluation and characterizes a variety of the shades which comprise the personal and subjective attitude of the speaker towards the content of the utterance [Русская грамматика, 1982, p.216].

The imperative-evaluative function is aimed at transferring a complex of subjective meanings of the imperative sphere which turns out to be a kind of decoding, grading and detailing of the objective-modal meanings of a non-indicative character – the imperative. When studying the imperative as one of the types of attitudinal meanings, the aspects connected with the personal attitude of the speaker towards the content of speech stimulus are included in the analysis. These are the aspects dealing with the degree of indisputability of the imperative utterances, the character of moral and legal relations between the communicators, the situative conditionality of the communicative act, etc.

Another important function of a personal attitude demonstration which is not involved in the complex of evaluative proper attitudinal meanings is the emotional evaluative function.

The evaluative proper function manifests itself in the sphere of subjective judgment and characterizes a variety of shades that comprise the personal and subjective attitude of the speaker towards the content of the message.

The Evaluative – characterizing function combines "expression of the subjective attitude to the reported with such a characteristic that can be considered not a

subjective one, resulting from the fact of the event, from its qualities, properties, from the character of its existence in time, or its connections and relations with other facts and events" [Русская грамматика, 1980, p.216].

9.4.2.2. Evaluative Proper Subjective Modal Meanings (Attitudes)

In phonetic experimental research, this sphere of modal relations has been investigated rather widely [Старикова, 1988; Cramer, 1961; Crystal, 1964; Hide, 1987; O'Connor, 1977]. As a rule, the presented analysis of intonational characteristics is based on the opposition of final members of the antonymous-synonymic semantic field. However, the components of functional-semantic fields of this type do not, as a rule, form binary oppositions but get combined into groups according to the intensification of a certain attitudinal shade of meaning, grading a degree of its intensity within some paradigmatic row.

The character of semantic change of the components in the attitudinal field "degree of approval/disapproval" (praising, approving, indifferent, critical, disapproving, reproving and condemning) can serve as one of the examples illustrating the position described above. In this semantic field, the differential semes change in the range of gradual variation of sense within final members of the row, these final members being antonyms. Further on it will be proved that when the semantic character within the members of the gradual row (involved in conveying the given modal meaning) increases insignificantly, some change of intonation characteristics which execute this semantic meaning takes place (it can be said that prosodic variations also have a gradual character; to be more exact, the more intensively some definite semantic feature grows, the more changes in the prosody of a corresponding seme are observed).

The components of the attitudinal – evaluative field "the degree of approval / disapproval" are analyzed as an example. From the point of view of semantics, this field is bipolar. The last members are the elements "praise" and "condemnation" that are regarded to be the antonyms.

The semantic character increase can be illustrated by the following components: praise, approval, neutral, critical, disapproval and condemnation. The components of the field "the degree of approval/disapproval" are distinctly differentiated and marked by melody and timbre parameters. Therefore, **approval** is conveyed by the increase of melodious register of a speech segment, by a broad range of an utterance phonation on the whole, and by a velvet voice timbre. While expressing **the appraisal**, all the aforementioned characteristics are increased and the voice is perceived by listeners as a clear one. Due to specific characteristics of the Ukrainian and English languages, the method of the prosodic shaping of the strongest approving attitude – the approval should be added. In the English language, the approval is manifested by a high falling tone, and in the Ukrainian language, by a rising-falling tone. At the same time, a rising-falling melody can be used not only in the terminal syllable of the sense group, but also in every stressed syllable of an utterance.

In the two languages being compared **disapproval** is conveyed by a falling-rising nuclear tone, lowered register and muffled timbre. **The critical** attitude of a speaker is expressed by a complex rising-falling tone in the nucleus (which strengthens the emphatic colour of an utterance and intensifies definiteness of the opinion), through a slower tempo of the utterance being pronounced and by the occurrence of sharp notes in the speaker's voice. **Condemnation** in English and Ukrainian can be conveyed with the help of a low melody level, a hoarse voice, an average pitch range and a low descending

tone. Owing to these peculiarities the intensification of the categorical notes in condemnation is distinctly noticeable. In instances when notes of incompleteness are present when conveying condemnation (conviction), a falling-rising tone is most often used in English, while in Ukrainian a rising-falling tone is the norm.

The direction of a melody movement in the pre-nuclear part of utterances (strengthening or smoothing the meaning which is conveyed by the main stressed syllable) can be of any form. Thus, the descending scandent head in combination with a low-rising tone in the English language (when conveying **disapproval**) strengthens the degree of intensity of the expressed attitude, while a level high or low head demonstrate the speaker's desire to calm the listener down. While conveying **the negative** attitude in the Ukrainian language, the change of a high level head into a scandent one strengthens the meaning of condemnation and reprimand.

Speech tempo on the whole, while conveying the meanings of the examined paradigmatic row, is characterized by a degree of slowness. Loudness of pronunciation depends rather on the calm or excited state of the speaker at the moment of speech than on his approving / disapproving attitude.

In Table 9.1, the acoustic characteristics of the components included in this functional - semantic field of attitudinal sphere are presented. Despite the fact that there are some peculiarities in the functional significance of the parameters of the intonation contour in the two compared languages, a great number of general relevant features which convey a given modal meaning can be discerned.

Table 9.1.
The acoustic correlates of the attitudinal meanings of the degree of approval/disapproval, (relative units*)

Modal meanings	FF						
	Pre-nucleus			Nucleus			Utterance
	Level	Direction	Type of the head	Level	Direction	Interval	
The English language							
Praising	2.12	R-F	S	1.88	F	1.51	0.58
Approving	2.00	F	St	1.70	F	1.40	0.47
Indifferent	1.60	F;L	—	1.35	F	0.97	0.18
Disapproving	1.59	F	St	1.39	F-R	1.38	0.24
Critical	1.58	R-F	Sc	1.41	R-F	1.39	0.26
Condemning	1.67	F	Sc	1.17	F;L	1.43	0.23
The Ukrainian language							
Praising	1.88	F	S	1.56	R-F	1.48	0.53
Approving	1.79	F	S	1.50	F	0.44	0.41
Indifferent	1.53	F;L	—	1.29	F;L	1.01	0.15
Disapproving	1.59	L	—	1.32	F-R	1.45	0.20
Critical	1.29	F	St	1.35	R-F	1.45	0.24
Condemning	1.60	R	Sc	1.24	F	1.46	0.22

* S – sliding head; St – stepping head; Sc – scandent head; L – level head.

F – falling tone; R – rising tone; R-F- rising-falling tone; F-R falling-rising tone; “–” – irrelevant character.

The character of the prosody contour transformation under the condition of gradual change of a certain attitudinal feature in the adjacent components of the attitudinal – semantic field of the evaluative sphere is rather variable; it concerns the intonation means inventory and the mechanism of their correlation with the degree of intensity of some attitudinal meaning within the synonymic-antonymic row. If in some rows (for example, the degree of certainty/uncertainty) prosodic contrasts between the elements increase together with the growth of semantic distinctions thus reaching the maximum in final members (antonyms), in the rows of another type (for example, the degree of agreement \disagreement) the maximal contrast of the prosody takes place when comparing the medial (neutral) element of the row and its final elements; the final members (antonyms) are close to each other by their prosodic characters.

In the first case, the farther the components are situated from one another within the gradual row (i.e. the greater is the number of differential semes they differ with), the less the number of the coinciding relevant acoustic features available. (see Table 9.2). It can be clearly seen in the regular decrease of a number of the coinciding prosodic correlates as the position of a certain component of the field moves away from the main diagonal.

Table 9.2.

The number of coincident relevant characters within the components of the semantic field “the degree of confidence”

<i>Attitudinal meanings</i>	<i>Unshakable</i>	<i>Convinced</i>	<i>Firm</i>	<i>Categoric</i>	<i>Confident</i>	<i>Evaluating</i>	<i>Presuming</i>	<i>Doubtful</i>	<i>Hesitating</i>
<i>Unshakable</i>	14	12	10	9	7	2	2	1	0
<i>Convinced</i>	12	14	11	9	10	2	2	1	0
<i>Firm</i>	10	11	13	12	10	2	2	2	1
<i>Confident</i>	10	9	12	13	13	3	2	1	1
<i>Neutral</i>	9	10	10	13	13	2	2	2	1
<i>Evaluating</i>	2	2	3	3	2	15	10	8	6
<i>Presuming</i>	2	2	2	2	2	10	15	12	10
<i>Doubtful</i>	1	1	2	1	2	8	12	16	16
<i>Hesitating</i>	0	0	1	1	1	6	10	16	18

In the semantic fields of the second type (for example, the degree of agreement / disagreement), the components which are completely different by the number of differential semantic features (antonyms) appear to be quite close to each other according to the number of the relevant acoustic correlates. For such kind of fields, the picture of quantitative characteristics distribution on the field of the table (Table 9.2) is of another character: big numbers (which characterize the number of the coinciding distinctive features) are not placed only near the main diagonal, but also in the left bottom and the right top corners of the table.

The important conclusion that results from the experimental data analysis is read as follows: each component of the evaluative proper attitudinal-semantic fields is

characterized by significant stability of intonation markers in speech. In other words, quite a definite intonation construction “of its own” can be attached to either of the semantic units of this sphere. The greater part of the discovered relevant prosodic features is related to the number of typologically similar ones in English and Ukrainian.

9.4.2.3. Imperative-Evaluative Function

The analysis of intonation peculiarities of these fields’ components was carried out in three basic communicative groups of imperatives: directive, recommending, and appellative.

Table 9.3.
The classification of meanings of the functional-semantic field of imperatives

<i>Communicative group:</i>	<i>Zone</i>	<i>Attitudinal meanings</i>
<i>Directive</i>	Zone of order	Injunction, command, order
	Zone of demand	Order, demand, direction
	Zone of assignment	prescription, indication, instruction, assignment
<i>Recommending</i>	Zone of advice	Recommendation, advice, proposition
	Zone of exhortation	Warning, precaution, admonition, homily(teaching)
	Zone of conviction	Appeal, conviction, invitation, temptation
<i>Appellative</i>	Zone of request	Application, request, petition
	Zone of persuasion	Persuasion, entreat
	Zone of entreaty	Supplication, appeal, invoke

The attitudinal meaning of the **directive** utterances that convey the meanings corresponding to the constituents of a given semantic field is fixed, in the first place, in the tone used in the main stressed syllable of the utterance in English and Ukrainian. An order is conveyed by a low falling tone, an instruction and a demand are conveyed by a low rising tone and an assignment is conveyed by a high falling tone. Thus, the pitch range of the utterance becomes wider at the same time the utterance’s register becomes higher in case the degree of relaxation increases and the degree of inducement goes down. Acceleration of speech tempo and increase in loudness of pronunciation is evidence of the reduction in the degree of sounding categorical, strict in a directive utterance. Directive utterances in Ukrainian speech are characterized by a higher beginning and ending and a narrowed interval of the terminal part in comparison to English ones.

When getting into the detail of the semantic structure of the functional – semantic field of recommendation, one should take into account the emphasis of the speaker’s position while taking into consideration his participation in the process of thinking over

the variants the situation can come to; the degree the listener's position is involved, attention paid to the objective circumstances that predict the type of behavior in a definite situation.

Imperative utterances of the recommending group in the whole range of attitudinal meanings (from directions up to wishes) do not differ in type of the terminal tone: all of them are produced with the high falling tone in the nucleus. The main prosodic differentiators of their attitudes are the peculiarities of melody in the head. Admonition is usually conveyed by a level head, advice and recommendation by a sliding head (which gives a shade of liveliness to the utterance) and wish by a falling head. The pitch range and its register are informative, too. The meaning of admonition is characterized by a narrowed pitch range and the middle register of the utterance realization, but when producing an opposite member of the row wish, the high register is activated and the pitch range is widened. Speech tempo is accelerated when conveying the meaning of wish in comparison with admonition.

Concerning specific language features, Ukrainian utterances of recommendation are characterized by the use of a narrower type of the falling tone in the nuclear syllable which begins on a lower level and ends on a higher level, and is also characterized by a narrower pitch range of the utterance in comparison with English.

Attitudinal meanings of imperative utterances, including the fields of the appellative group, are also distinctly marked by the prosody structure. The character of pitch used in the semantic center of an utterance signals the attitudinal colouring of an utterance: for example, request, as a rule, is conveyed by a high falling tone, thus gaining a shade of persistence with some elements of liveliness and curiosity while eliminating the elements of sounding sharp and categorical at the same time. Persuasion (entreat) is expressed by a falling-rising type of terminal tone that sounds penetrative and sincere. Entreaty is conveyed by a low-rising tone that distinguishes the utterances which are characterized by a less intensity of will. The zone of persuasion and entreaty, in contrast to a request, is characterized by a widened pitch range of the utterance on a whole. It occurs due to the upward motion of the basic tone upper limit and the increase of register of the produced speech segment. The acceleration of speech tempo and the decrease of its energetic characteristics are also the evidence of the decrease of the degree of persistence in the utterances of the appellative group, they nearing the zone of entreaty.

Alongside typological features of similarity, the compared languages are also characterized by a number of distinctions (concerning the analysed aspect). The peculiarity of appellative Ukrainian utterances in comparison with the English ones is the use of a rising type of head and a somewhat narrower pitch range on the whole.

All the above-mentioned peculiarities testify to the fact that there are quite serious criteria of intonation pattern differentiation which are correlated with definite components of functional-semantic fields within every examined group of imperative attitudes, both at auditory perception (according to their qualitative features), and at acoustic analysis (according to their quantitative characteristics). At the same time, an attempt to create a definite generalized prosodic pattern of each component of aspectual and gender fields of imperatives runs across serious difficulties. If the centers of aspectual modal-semantic fields of each of the three examined groups are more or less distinctly opposed to each other according to their prosodic structure and their peripheral zones cross over to a considerable extent, they interfere semantically and become prosodically indistinguishable. It is true that the categorical order, being the most typical kind of attitudes of the directive group, is characterized by a high pitch level and a falling tone in the terminal part, as well as by a quick tempo and loud pronunciation

of the utterance. Advice, not being persistent and without any shades of personal interest, is considered the semantic center of the recommending group of evaluative-stimulating attitudinal meanings; it differs by an average pitch range of the utterance, by an average steepness of the terminal one, a falling tone being used in the terminal part of the utterance, and by an average loudness and speech tempo. Polite request (most frequent in speech) is a component of the appellative group of the evaluative-stimulating meanings. Its relevant characters at the prosodic level are: an average pitch level and a wide pitch range of an utterance, insignificant steepness in the terminal rising tone and low loudness and reduced rate of speech segment production.

Such distinct prosodic contrast disappears when the peripheral components of the three modal-semantic fields are compared. Thus, an official request, which enters the appellative zone of stimulating and evaluating attitudinal meanings, can be perceived by the listeners as one of the meanings belonging to the directive group, like an order or even a demand when pronounced without the context (*Your telephone number, please*).

In conclusion, it can be therefore affirmed that the following situation appears as a result of comparing the numerous attitudinal connotations of the components of imperative functional-semantic fields in the evaluative sphere and of analyzing the contrastive distinctive prosodic characteristics of utterances which refer to different communicative types of speech acts. As a rule, various communicative types of utterances are opposed to one another at the intonation level not due to "their own" prosodic markers, but due to the attitudinal meanings that refer to the evaluative-proper or emotional-evaluative type accompanied by the typical for the case intonation features (see table 9.5).

It is this fact that is responsible for the absence of a distinct correlation between the communicative type of the sense group and its intonation, as described in the section dealing with the communicative function of intonation.

9.4.2.4. Evaluative-Characterizing Function

Intonation peculiarities, while conveying evaluative-characterizing meanings, are addressed least in the scientific literature [Русская грамматика, 1980; Bolinger, 1984]. The fields of evaluative-characterizing meanings, in contrast to other attitudinal fields, form a hierarchical structure which is limited on the low level by binary opposition of the following types: regularity/irregularity, expediency/inexpediency, admissibility/inadmissibility, ability/inability, occasionality/premeditation, presence/absence of a desirable result, and long term of time/short term of time. If some semantic features of the constituents of these fields are not taken into consideration, many of them can be unreasonably regarded as attitudinal meanings that correlate with definite intonation contours. For example, the intonation of opposition of modal meanings of long term/short term of time is characterized by a contrast demonstration of all prosodic parameters (melody, tempo and dynamics) in English and Ukrainian. The modal meaning of long term is marked by a falling tone, and of short term by a rising-falling tone in the nuclear syllable. Besides this, a short term, in contrast to a long term, is conveyed by a higher pitch level of pre-nuclear part of the utterance and by an accelerated tempo of speech pronunciation. Intonation of the main stressed syllable, when conveying the opposition under discussion, is particularly contrastive: the rate of pitch component growth in the nucleus increases while the nucleus duration is reduced

in three-four times when expressing a modal meaning of short term in comparison with long term.

In Ukrainian, the quantitative characteristics of prosodic features which differentiate the correlation of a long term from a short one are more evident than in English. Therefore, the tempo of utterance production and the degree of nucleus loudness increase are marked more strongly in Ukrainian than in English when conveying the same opposition.

Thus, if the demands of the systemic approach are not met in the course of the evaluative-characterizing meanings analysis, one can gain the impression that the constituents of the aspectual fields of attitudinal meanings of this group possess prosodic contours of "their own". For example, during auditory perception of a regular/irregular action (phenomenon), the auditors point at register distinctions as being available in the utterances and the degree of loudness and tempo of pronunciation as being marked, too. (When conveying the meaning of an occasional action, the stress in the nuclear syllable becomes stronger and the tempo slows down.) However, during a deeper systemic analysis of the perceptive and acoustic characteristics of intonation of regularity/irregularity, it becomes clear that the revealed distinctive features concern the connotative emotional-evaluative or evaluative-proper meanings which are superimposed on the examined evaluative-characterizing ones. In this case, it is the connotative meaning of surprise (unexpectedness and bewilderment) that is superimposed on the meaning of irregularity. When these connotations, possessing prosodic constructions "of their own", are excluded, the intonation characteristics are no longer relevant when telling the opposition regularity/irregularity from each other.

When analyzing the modal-semantic fields of evaluative-characterizing group on the whole, it is possible to note that the components of these fields are related with some prosodic features frequently used in their representation, but these features are the correlates of the fields of the evaluative - proper and emotional – evaluative meanings. It testifies to the following: the system of prosodic constructions which correlate with some evaluative-characterizing meanings in real speech situations is not the intonation portrait of "its own", but rather conveys these meanings indirectly with the help of the prosodic constructions that execute attitudinal connotations of evaluating - proper and emotional-evaluative sphere, these most frequently accompanying definite prosodic constructions. The great variety of such connotations in communicative situations makes the above-mentioned systems of intonation constructions diffusible and unstable to a considerable extent. It is impossible to notice the predominance of some definite prosodic features when conveying the attitudinal meanings which belong to the examined class.

9.4.2.5. Objective-Modal Function

As was stated at the beginning of this section, the functional-semantic field of objective modality forms a two-leveled hierarchical structure of reality/unreality.

An analysis of publications devoted to this question drew attention to the fact that there are no attempts to build intonational models which could be interpreted as the opposed ones on the basis of objective modal meanings alone. For example, in "Russian Grammar" [Русская грамматика, 1980], in the sections devoted to the prosodic structure of forms existing in unreal moods, it is emphasized that each of them can be

practically used with any type of an intonation structure [Шрейдер, 1976; Швейцер, 1988; Cooper, 1977].

This opinion, judged as an unusual one at the first sight, can be quite convincingly explained if two guiding factors of various mechanisms functioning in speech are taken into consideration as well as the mechanisms that convey the relation between the content and the reality. One of them is the leading role of lexical and grammatical means when conveying the meanings of reality/irreality in speech; the other one is the mediated character of prosody correlation with the components of semantic fields of the objective modal sphere.

The first factor is universally acknowledged [Русская грамматика, 1980]: lexical and grammatical means of a language play the leading role in differentiating the two groups of objective modal meanings (reality/irreality); the system of moods is key. Under these conditions, only the question of hierarchy of the language means conveying the corresponding modal relations is possible.

The role of the second factor is not so obvious, but turns out to be dominant.

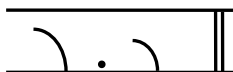
As an illustration, the binary opposition of intonation is examined: the declarative utterance that states the fact and the imperative utterance conveying the recommending attitude; both utterances being verbless constructions. For example:

What did you have? - *Fancy cakes*. What would you advise me to have? - *Fancy cakes*.

['wɒt did jə .hæv || 'fænsɪ , keɪks ||]



['wɒt wəd jə əd 'vaɪz mi: tə .hæv || 'fænsɪ , keɪks ||]



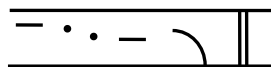
Each of the examined utterances in the binary opposition differs by a quite definite contrast of prosodic markers. Regarding the number of relevant prosodic features which distinguish imperative (recommending) utterances from the indicative (statements) ones, the following should be included: a widened pitch range of the whole utterance, somewhat slowed down tempo, and a higher pitch level of the pre-nucleus part of a statement pronouncement. In addition, the recommending utterances are usually characterized by a rising termination; the tone rise takes place in the nucleus in English utterances, and in the post-nuclear part in Ukrainian.

However, the fact of auditory and acoustic differentiation of the two examined types of speech realization cannot be interpreted as fact confirming the existence of precisely fixed prosodic structures that convey objective-modal relations of different types (indicative and non-indicative). It is connected with the distinction resulting from the objective-modality of an utterance developed in combination with multi-semantic attitudinal meanings. It should be remarked that the above-mentioned peculiarities of prosody of non-indicatives refer to relevant features of such attitudinal connotations as expediency, definiteness, reasonability, participation, etc. which are characteristic of the recommending group of objective modal meanings.

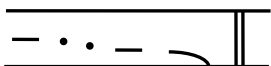
The utterances in the form of a special question with the objective modal meaning of the indicative (question) or non-indicative (wish) sphere can be regarded as another

example of an objective modal meaning influence on the intonational structure. For example,

'Why' don't you 'take tea? It's become already cold.



'Why' don't you 'take tea? It's more useful than coffee.



When examining this binary opposition, a gently sloping shape of the descending basic tone movement in pre-nuclear part of the utterance and a smaller steepness of the nuclear falling tone refer to the characteristic features which mark the intonation of utterances with the sense of desire (expressed by a question), in contrast to the sense of request (conveyed by the indicative objective modality).

Here, as in the first illustrated case, the contrast available of intonation is not a sequence of various kinds of objective modality which compared speech realizations belong to. These realizations differ by simultaneous attitudinal shades specification. They are the attitude of participation, goodwill, interest, and thus these very aspects of the speaker's personal attitude define the character of prosody differentiation.

At the same time, cases of complete identity in melody, tempo, dynamics and timbre of some utterances belonging to various groups of objective modality (while accompanying them attitudinal meanings are not opposed on the intonational level) are rather frequent. An illustration of such a character in the intonation of objective modal meanings is the way the connection between the parts of the conjunctionless compound sentences is carried out in both compared languages. A non-indicative objective modal meaning of condition which is realized with the help of intonation in case the subordinate clause of condition (in the form of the unreal mood) is asyndetically connected with the main clause; it does not differ from the indicative modal meaning conveying casual, temporal and other relations at the intonational level. This is the reasoning in sentences like the following:

1. Мене запросили, я пішов.
2. Мене б запросили, я б пішов.

1. They invited me I went.
2. They invited me I should go

intonation can be considered as the means of conveying any of the modal meanings mentioned above which would otherwise be marked by the lexical units якщо, так як, коли, if, as, and when in cases where conjunctions are being used.

Various cases of intonationally – marked utterances which convey the relation of the content of an utterance with reality can be examined in the same way. No specific intonation features are discovered – the ones that could be regarded as the universal differentiators of semantic fields components belonging to the indicative and non-indicative types of objective modal meanings. Frequently the distinction of prosodic

constructions in the utterances which express different attitudinal meanings of the same objective modality are more contrastive than the ones conveying diametrically opposite kinds of relations of the objective modality in speech. Therefore, in experimental research [Королева, 1989] where a scale of differential features was used (including 40 different characteristics of melody, dynamic and temporal components of prosody) within the non-indicative objective modality of imperatives, individual patterns of a request and an order are opposed to each other by 28 features, while the utterances that refer to various kinds of the objective modality but coincide in their attitudinal connotation differ insignificantly from one another in their characteristics of intonation.

Thus, the analysis of two types of relations existing in objective modality makes it possible to state that an attempt to construct the basis for some generalized prosodic models which can reflect the contrastive opposition of the objective modal relations of reality and unreality on the whole can hardly be built. There are no grounds to consider the intonation distinctions among the meanings of conditionality, obligation, stimulation, desirability, etc. to be the result of the direct influences of objective modality and to interpret the corresponding distinctive features as the prosodic markers of some kind of non-indicative objective modal meanings. The above-stated should not be interpreted as a statement of intonational indistinguishability, identifying speech realizations referring to different types of the objective modal meanings. One can only discuss the idea at the expense of indicative and non-indicative modal meanings (separate non-indicative types of the objective modality being included) that function as the components of the corresponding functional-semantic fields being opposed to each other on the level of intonation. They are not distinguished by some fixed set of the prosodic features "of their own", but by a set of differential intonational characters which belong to those attitudinal connotations (mainly, those of the evaluative proper or emotional -evaluative nature) that accompany this or that type of objective modal relation conveyed in speech.

9.4.3. FUNCTIONAL AND SEMANTIC FIELDS OF EMOTIONAL SPHERE

9.4.3.1. Types of Emotional Manifestations in Speech

Indisputably concurring with researchers on the role of emotions and attitudes in the system of intonation, brings linguists to differ on their points of view on the question of its linguistic identity. The approach suggested in the work [Королева, 1989] allows us to consider three autonomous spheres within the frames of emotional phenomena separately: stating the fact of emotional manifestations; an emotional evaluation of what is being reported; and the emotional state of the speaker.

The intonational design of the first of these spheres is of no interest as there exists no special prosodic models to convey emotional information of this type in speech. The two other areas of emotional sphere turn out to exploit the intonational means as an important aspect of their functioning. When discussing the most typical features of each of these two functions, it is necessary to distinguish first of all the following:

- the direct physiological conditionality, interlingual universality, and unpremeditated production of the prosodic units connected with the speaker's emotional state reflection,

- great affinity to conventional language signs, specificity for the definite language, the conscious character of the prosodic models production – the ones that convey the emotional and estimative attitudes.

The most important conclusion arrived at as a result of this experimental data analysis can be read in the following manner: in order to convey some definite emotions in speech, various components of prosody are frequently used and their combinations depend on whether the speaker's emotional condition is reflected in speech or in his emotional attitude.

It should be remarked that the study of emotional-gene situations influence on speech intonation has been successfully carried out by national and foreign phoneticians, especially as of late. Evidently, the information-genetic technique is the most effective in this respect [Шрейдер, 1976]; the essence of this method consists of the analysis of the so-called energy-informative function which registers in dynamics the relation between the speech act energetic intensity and speech productivity. In regard to the intonation of speech passages produced in an emotional-gene situation, this approach is aimed at the discovery of some correlation between the psychological tension of the situation and the degree in which the relevant prosodic parameters of a speech signal are demonstrated. In numerous experimental works of research, the bell-resembling shape of this function of emotional intonation has been observed. At the beginning, when the emotional-gene tension increases, the informative aspect of the prosody means increases; later, when reaching its maximum, it starts to fall downward. Moreover, the maximum location is in a close relation with the type of the speaker's nervous system [Речь, эмоции, личность, 1978, p.85; Плющ, 1976]. In contrast to this, a monotonous increasing character of the energetic-informative function is typical when the emotional evaluative attitudinal function of intonation is executed.

Much nearer to the language signs (owing to conscious development of prosodic models) are the semantic units that refer to emotional evaluative meanings. Their characteristics are given in Section 9.4.3.2.

Because of the variety of possible situations that reveal the mechanism of the intonation features interaction (caused by the emotional state of the speaker) with the components of intonation used at the emotional - estimative modal function embodiment, a difficult situation is observed. Depending on a relative orientation and the degree of intensity of the stated factors, all types of interaction of the examined functions can be realized: autonomy, domination, equivalence and submission. According to the type of interaction (out of the indicated ones) that is being developed, a resulting intonation contour of an utterance is formed.

9.4.3.2. Emotional - Estimative Meanings

In the detailed descriptions of the intonation contours that are used to express the attitudinal relations, emotional - estimative meanings occupy a significant place [Денисов, 1973; Кодзасова, 1987; Швейцер, 1988].

It is typical of emotional - evaluative meanings, like the evaluative – proper attitudinal meanings, to oppose not only the polar demonstrations of the personal

attitude, but the development of the paradigmatic lines with the gradual intensification of some character [Шаховский, 1987].

The character of correlation of the corresponding semiological and intonational units is illustrated by the data in Table 9.4, which presents the analysis of the semantic field of emotional evaluative meanings “a degree of aggression”

Table 9.4.

Acoustic correlates of emotional meanings of the semantic field “degree of aggressiveness” (relative units)

<i>Emotive – evaluating Meanings</i>	<i>Acoustic Characteristics</i>				
	<i>Pre-nuclear part</i>		<i>Nucleus</i>		<i>Utterance</i>
	<i>FF level</i>	<i>Intensity</i>	<i>FF level</i>	<i>Intensity</i>	<i>FF range</i>
<i>The English language</i>					
<i>Defenceless</i>	1.53	0.72	1.44	0.72	0.46
<i>Timid</i>	1.50	0.85	1.40	0.76	0.45
<i>Peaceful</i>	1.44	0.88	1.30	0.82	0.42
<i>Cocky</i>	1.62	1.52	1.47	1.63	0.78
<i>Provocative</i>	1.60	1.50	1.42	1.62	0.80
<i>Threatening</i>	1.57	1.49	1.40	1.64	0.79
<i>Agressive</i>	1.57	1.51	1.39	1.63	0.80
<i>The Ukrainian language</i>					
<i>Defenceless</i>	1.46	0.81	1.41	0.72	0.45
<i>Timid</i>	1.44	0.82	1.40	0.76	0.43
<i>Peaceful</i>	1.37	0.86	1.34	0.80	0.41
<i>Cocky</i>	1.70	1.50	1.48	1.65	0.60
<i>Provocative</i>	1.58	1.49	1.36	1.64	0.63
<i>Threatening</i>	1.56	1.51	1.33	1.65	0.63
<i>Agressive</i>	1.52	1.50	1.33	1.63	0.62

The results of phonetic research testify that the emotional - estimative meanings, to a much greater extent than the estimative-proper meanings, prosodic characteristics “of their own”. At the same time, the intonation contours that provide the components of modal - semantic fields of emotional - estimative sphere representation in speech are stable and monosemantic; they are typologically similar in both compared languages. The role of the dynamic component of intonation among the other relevant

characteristics is predominant; it is true for all components of the fields referring to the emotional-estimative meanings in comparison with other types of modality.

Language specificity is manifested with some difference between the exploited intonation markers. Thus, in the Ukrainian language the prehead is characterized by a lower pitch level than the prehead in English. When strong emotions are expressed in the English language, the fundamental frequency interval in the nucleus and a frequency range of an utterance are more contrastive. In the English language, the maximal intensity parameters, together with the maximal parameters of fundamental frequency, gravitate to the first stressed syllable; in the Ukrainian language, to the main stressed syllable.

9.4.4. INTONATIONAL MEANS IN EMPHATIC SPEECH

Emphasis in phonetics is interpreted as the intensification of emotional or attitudinal colouring of speech by means of various components of intonation.

As has been shown in previous sections, a rather steady correlation between the semantic units of an utterance and intonational means of their embodiment is observed in non-emphatic speech. However, division of speech portions into emphatic and non-emphatic ones is conventional. Non-emphatic speech of «a pure kind» occurs seldom. In almost each phrase this or that emotional shade of a thought is emphasized; it shows the subjective attitude of the speaker to the stated ideas. The degree of speech emphasis depends on the quantity, quality and intensity of the emotional and attitudinal connotation which is superimposed on the informative, logical and semantic structure of an utterance.

Regardless of the communicative type of an utterance, emphasis exerts such a strong influence on speech intonation that a radical transformation of sense groups' intonational structure, typical of a certain communicative purpose in non-emphatic speech, takes place.

An utterance or a sense group can become emphatically rich in the English language due to the following intonational means:

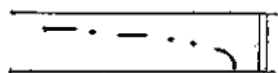
1. Changes of tempo.
2. Changes of the pitch of a voice.
3. Replacements of the rising tone with the falling tone and vice versa.
4. Usage of complex tones.
5. Use of an interrupted ascending or descending scale.
6. Change of syntagmatic stress type.
7. Division of a sense group into two or more parts.

1 Changes of tempo.

a. The tempo in an emphatic speech may slow down, the intervals between the stressed and unstressed syllables increasing. A slow tempo can be accompanied by strengthening of stress. All words are distinctly pronounced. The time intervals between the stressed words are long and approximately equal. The time of the consonants pronunciation (the sonorous in particular, sometimes of the long vowels and diphthongs as well) may increase:

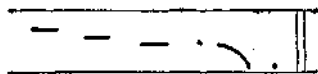
Down upon our heads.

['daun ə 'pɒn auə ˌhɛdz ||]



No more shall we prosper.

['nou 'mɔ: 'ʃæl wɪ , prɒspə ||]

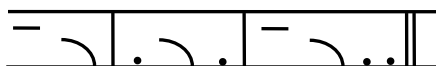


Both utterances written above illustrate rage.

b. The utterance tempo may accelerate in emphatic speech; the time intervals between the stressed and unstressed syllables are minimal:

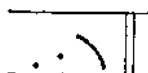
This boy has been reared in the **jungle**.

['ðɪs 'bɔɪ hæz bi:n 'riəd in ðə .dʒʌŋɡl ||]



He is a **wolf**.

[hi z ə , wʊlf||]



The tempo of both utterances is very quick. The tempo of the second one is faster than that of the first. The speaker wants the listeners to realize that the boy was brought to the jungles by wolves.

The given examples convey the attitude of irritation and anger.

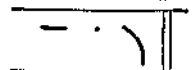
2. Changes of the pitch of a voice.

a. The pitch of the voice in an emphatically rich speech can be higher than usual;

e.g.

Let me look!

['let mi ʌluk ||]



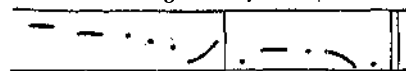
The first stressed syllable is pronounced at a high level.

A sharp fall in the voice takes place in the last stressed syllable.

b. The pitch of the voice can be lower than usual. The first stressed syllable is also pronounced at a low level; e.g.

He won't get a reward, if I can help it.

['hi: 'wəʊnt get ə ri,wɔ:d | ɪf 'aɪ kən , help ɪt ||]



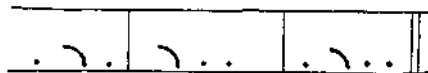
The first sense group is of a normal pitch level. All syllables of the second sense group are pronounced at a low level; it is the characteristic of threat.

3. For the sake of the emphasis, a falling tone can be used instead of a rising one and the other way about.

Enumeration can be pronounced with a falling tone instead of a rising one in order to underline the importance of either element of the enumerated list; e.g.

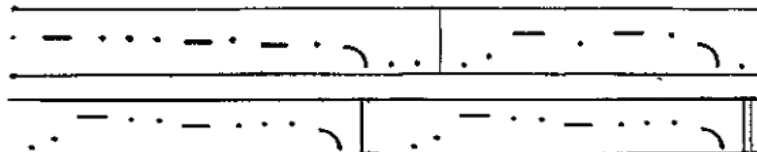
She loved him, trusted him, believed in him.

[ʃɪ ˌlʌvd hɪm | ˌtrʌstɪd hɪm | bɪ ˌliːvd ɪn hɪm ||]



He loved her for her quiet strength of character; for her grave sincere directness, for the steady balance of her mind; for the very expression of her face.

[hɪ ˈlʌvd hɜː fɜː hɜː ˈkwaɪət ˈstreŋθ əv ˌkærəkətə | fɜː hɜː ˈɡreɪv sɪn ˌdɪˌrektɪnɪs | fɜː ðə ˈstedɪ ˈbæləns əv hɜː ˌmaɪnd | fɜː ðə ˈveri ɪks ˈpreʃn əv hɜː ˌfeɪs ||]

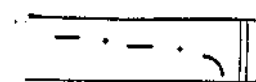


In both utterances special attention is paid to every member of the enumeration. The speaker wants to emphasize that all of them are of equal importance.

D. Jones recalls several cases of the tone alteration for the sake of emphasis. Thus, a falling tone can be used in general questions instead of a rising one to convey an offer or an invitation:

Shall we get some apples?

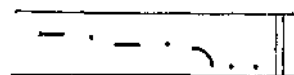
[ˈʃæl wɪ ˈɡet səm ˌæplz ||]



The melody says: "I would like us to take some apples."

Will you come and dine with us?

[ˈwɪl ju ˈkʌm ən ˌdaɪn wɪð əs ||]



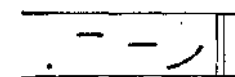
The melody says: "I invite you for dinner."

4. Usage of complex tones.

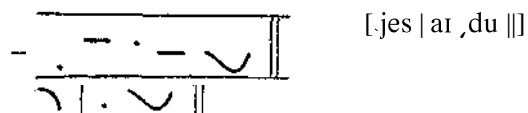
The expressions *I do*, *it is not*, *he can*, *they have*, etc. used as the answer to a special question can be shaped by a fall-rise in order to show disagreement with the opinion that has been expressed; e.g.:

– You don't like that?

[ju ˈdaʊnt ˈlaɪk ˌðæt ||]



– Yes, I do.



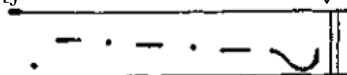
A fall-rise can be used as an emphasis to convey the opposite opinion to the one that has been stated:

She doesn't look tired (she looks bright and cheerful).

[ʃɪ 'dʌznt 'lʊk ˌtaɪəd ||]

She didn't treat them so well (she treated them rather badly).

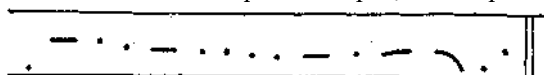
[ʃɪ 'dɪdnət 'tri:t ðəm 'soʊ ˌwel ||]



In a sense group containing a fall-rise, the pitch of the voice falls down and rises within the same syllable in cases where this syllable is nuclear and final. If the last stressed syllable is not final and followed by the unstressed syllables, the voice pitch goes down on the last stressed syllable and goes up on the unstressed syllables following it:

I haven't insisted upon adopting this paragraph.

[aɪ 'hævnt ɪ'sɪstɪd əpən ə'dɒptɪŋ 'ðɪs ˌpærəgræf ||]

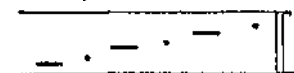


5. Use of an interrupted ascending or descending scale.

The gradually descending head, typical for neutral speech in the English language (in emotional and attitudinal respect) can lose its regular character or be replaced by an ascending head:

Have you never seen it?

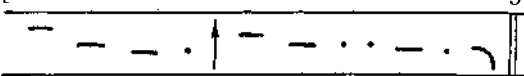
['hæv ju 'nevə ,si:n ɪt ||]



The so-called «interrupted descending scale» is used to accentuate one or several words in English; for example:

That man Crofts does not seem to be good for much.

['ðæt 'mæn 'krɒfts dəzʌnt ˌsi:m tə bi 'ɡʊd fəˌ mʌtʃ ||]



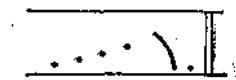
The descending scale, which is typical for the English language, is interrupted and the pitch level in the word "no" is higher than in the previous stressed syllables.

6. The modification of the syntagmatic stress character.

The stressed syllable of the emphasized word can have a very high pitch level. The voice usually goes down within the limits of the stressed syllable and the syllables that follow it (regardless of the degree of stress on them) are pronounced at a low level:

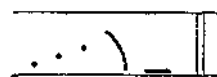
*He is from the **jungle**.*

[hɪ ɪz frəm ðə ˌdʒʌŋɡl̩ ||]



*He is a **wild** boy.*

[hɪ ɪz ə ˌwaɪld̩ ɒɪ ||]



In these sentences, only one word is stressed; the other words are pronounced in accordance to the rules of sentence stress in English. The pitch of the voice falls from a high level on the stressed syllable; e.g.

Who are you, boy?

[hu: ə ˌju ɒɪ ||]



In this sentence, two words are marked by stress. Both are pronounced with strong stress; the pitch of the tone is high enough. The second stressed word "boy" gets a strong stress (though it is a parenthetical word) and forms a separate sense group.

In the three examples cited above, the words under stress are emphatically intensified due to a high level of the tone. The pitch level goes down within the stressed words.

Sometimes when it is necessary to intensify the word which the speaker considers to be of special importance, the other significant words in the utterance lose their stress:

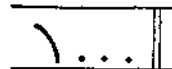
*What do you **mean**?*

[wɒt du ˌju mi:n̩ ||]



*Your way of **life**!*

[jɔ: weɪ əv laɪf̩ ||]



The words «life» and «what» lose their stress in these examples.

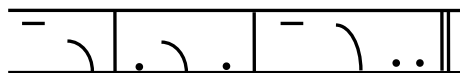
On the other hand, the words that are marked by the main and the secondary stress can be under two main stresses. For example, the word "distribution" ['distri'bju: ʃn] can be pronounced as ['distri'bju: ʃn] for the sake of emphasis.

In the same way, words that bear one stress can get two strong stresses. Thus, the word “unless” [ənˈles] can be pronounced as [ˈʌnˈles] in case of emphatic accentuation.

Several emphatic stresses often appear in an utterance; it leads to the appearance of several sense groups in it. This makes the phrase on the whole sound emphatic. The words that are usually unstressed in an utterance can be under emphatic stress and vice versa- the stressed words can become unstressed.

This boy has never seen fire before.

[ˈðɪs bɔɪ | həz .nevə | ˈsi:n ɪfaɪə bɪfɔː ||]



Three words are pronounced with an emphatic stress in this phrase.

The word "fire" is accentuated owing to the strong emphatic stress. A sharp fall of the voice occurs in this word. The word that follows it loses the stress and is pronounced on a low level. The pitch range is extended.

As a rule, all the words of a rhythmic group are pronounced together in the English language, but sometimes, for the sake of emphasis, “a glottal stop” (graphically presented by the sign ʔ) occurs before the word that starts with a vowel; for example:

They ʔaren't ready. [ðeɪ ˈɑːnt ʔ redɪ ||]

7. Division of a sense group into two or more parts.

With a view to emphasis, a sense group can be divided into two or more parts that are pronounced with a certain tone; a pause is used after each part:

At least, I can keep my own daughter from harm.

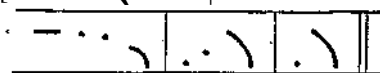
[ət ,lɪːst | aɪ kæn ˈki:p maɪ ˈoun ʔ dɔːtə | frəm ʔ hæ:m ||]



The second sense group is divided into two parts; the last stressed syllables of both parts are pronounced with a falling tone. The voice goes down from a higher pitch level in the stressed syllable of the word “daughter” and from a lower level in the word “harm”. After the word *daughter* there is a pause; it is somewhat shorter than the pause between the first and the second sense groups. The speaker wants to emphasize that he can protect his daughter.

Look at the scars on his arms and legs.

[ˈlʊk ə ðə ʔ skɑːz | ɒn hɪz ʔ ɑːmz | ənd ʔ legz ||]



The sentence is divided into three parts; the voice falls down in each stressed word. The fall is not of the same height in different parts of the sentence. The highest level is in the word “arms”; the lowest level is the word “scars”.

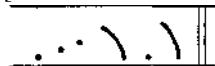
The speaker pronounces the word “scars” with stress and attracts the listener's attention to this part of the body that is covered with scars since scars on the boy's legs and hands testify that he has grown up in the jungle.

Most often the meaning of the whole sentence may be made more emphatic in English by a combination of two or more of foregoing means.

Here are two remarks:

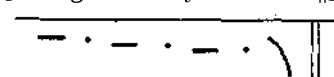
He has the evil eye. I begin to think he has.

[hɪ hæz ðɪ ˈiːvl ˈaɪ ||]



In the first sentence the tempo is quickened. A variation of the falling tone is used. The voice falls on the word *evil* and a fall of the voice takes place within the last stressed word *eye*, too. The sentence expresses increasing certitude in the fact.

[ˈaɪ biˈɡɪn tə ˈθɪŋk hɪ ˈhæz ||]

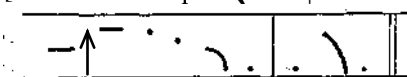


In the second sentence the tempo is slow. The rhythmic structure of the utterance is isochronous. The speaker is felt to be sure of what he says and is eager to assure the listeners that he expresses the only possible opinion.

One more example illustrates complex usage of several phonetic means for emphasis.

Don't look upon evil, Mahara. Get home to bed.

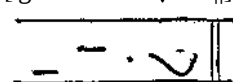
[ˈdɒnt ˈlʊk əpən ˈiːvl | mə ˈhɑːrə ||]



In the initial utterance the tempo is slow. The vowel [i:] of the word [ˈiːvl] is prolonged. The descending scale is broken; the pitch of the second stressed syllable is much higher than that of the first one. The direct address [məˈhɑːrə] makes a separate sense-group pronounced with the falling tone. The voice falls from a rather high level while pronouncing the stressed syllable of this word. The first sense-group expresses restrained anger; the anger turns into a scarlet fury.

Get home to bed.

[ˈɡet ˈhəʊm tə ˌbed ||]



In the second utterance the pitch range is narrowed, the tempo is quick. All the syllables are pronounced on a rather low level. The scale is irregular; the second stressed syllable is higher than the first one. The voice falls and rises within the last stressed word [bed] – a fall-rise is used. The sentence expresses an order mixed with anger and irritation.

The emphasis in the Ukrainian language is achieved due to the same factors as in English, especially due to intensity increase: tempo slow down or acceleration, a high or

low pitch level, etc. An analysis of the following fragments will allow the illustration of all the factors mentioned above.

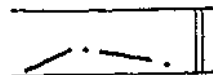
1) «Хто ти, хлопець? 2) Хіба ти не чуєш? 3) Цей хлопець ніколи не бачив вогню. 4) Він з джунглів. 5) Він вовк.»

The intonation of the fragment is emphatic. The degree of emphasis increases with each utterance.

In the first sentence the word "хто" is intensified by the emphasis; the other words are marked by a weaker stress. The tempo of pronunciation is slightly accelerated. The desire to find out something about the boy is expressed:

1) *Хто ти, хлопець?*

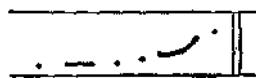
[ХТО ТИ ХЛОПЕЦ' ||]



The second utterance conveys surprise and irritation. The tempo is fast. The pitch of the first stressed syllable is low. The head is ascending. The voice rises within the last stressed syllable and on the subsequent unstressed syllables.

2) *Хіба ти не чуєш?*

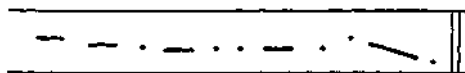
[Х'ІБА ТИ НЕ ЧУЙЄШ ||]



The third utterance conveys strong conviction; the desire to make the others believe it. All the words except for the negation "не" are unstressed; the rhythm is clear and regular, the intervals between the stressed syllables are equal. For this reason they resemble the rhythm of the English language. A regular descending head takes place. The pitch of the voice is low, the fall occurring on the last stressed syllable of the word "вогню". The voice rises somewhat on the preceding unstressed syllable of the word "вогню". The vowels "о" and "ю" in this word are pronounced longer than usual.

3) *Цей хлопець ніколи не бачив вогню.*

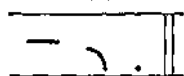
[ЦЕЙ ХЛОПЕЦ' Н'ІКОЛИ НЕ БАЧИВ ВОГН'У ||]



In the fourth utterance the emphasis gets stronger. The sentence denotes a very strong will to make everybody believe what has been said. The word "джунглів" is accentuated by the strongest stress and a sharp fall in the pitch of the voice on the main-stressed syllable. The final unstressed syllable is on a low level:

4) *Він з джунглів.*

[В'ІН З ДЖУНГЛІВ ||]



The same idea is expressed in the last utterance "Він вовк". The effect is achieved by the same means:

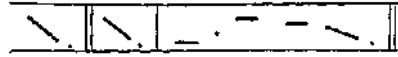
5) *Він вовк.*

[В'ІН ВОУК ||]



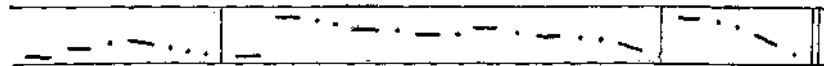
Among other facilities in emphatic speech, the substitution of an ascending tone with a descending one can be noted in the Ukrainian language. This phenomenon is met most frequently in non-final sense groups and enumerations when the speaker wants to attract special attention to the meaning of the statement:

Я хочу квітку. *Чисту, ніжну, про яку я мріяв.*
 [ЧИСТУ | Н'ІЖНУ | ПРО ЙАКУ ЙА МР'ІЯВ ||]



Та все цікаве таке, аж дух затаїть Артем у батька біля колін, не ворухнеться.

[ТА ВСЕ Ц'ІКАВЕ ТАКЕ | 'АЖ ДУХ ЗАТАЙІТ АРТЕМ
 У БАТ'КА Б'ІЛТА КОЛ'ІН | НЕ ВОРУХНЕТ'С'А ||]



9.4.5. TYPOLOGY OF INTONATION CONVEYING THE ATTITUDINAL AND EMOTIONAL MEANINGS

The important task of the comparative study of prosodic means conveying the modal information in speech in the English and Ukrainian language is to define the similar and distinctive features in the sphere of formal (inventory-taxonomic) aspect of prosody and its semantics. The zone of typological similarity of intonational means that correlate with the attitudinal semantics is prevailing. Both, (some separate elements) which correlate with the prosody contour and their complexes (i.e. the prosodic structures which express the sense) are characterized by common features.

While describing the first of these aspects of typological similarity of prosody in the compared languages, it should be remarked that the parameters of the pitch component of intonation are most informative when differentiating attitudinal meanings: the type of nuclear tone and character of melody modification in the other segments of the sense group; the level of fundamental frequency; the interval and the rate of melody component alteration. Usually, a falling tone conveys meanings of definiteness, completeness, and maturity, unlike a rising tone that expresses the opposite attitudinal meanings those of uncertainty, incompleteness, and imperfection. However, the initial level of the kinetic tone and its alteration interval influence the perception and semantic interpretation of the nuclear tone most essentially.

Therefore, a descending tone of a wide interval and its high initial level conveys the attitudinal meanings of being categorical, persistent, and interested in the Ukrainian and English languages. For example,

Перше треба відступитися від Хмельницького.

[ПЕРШЕ ТРЕБА В'ІДСТУПИТИСЯ В'ІД ХМЕЛ'НИЦЬКОГО ||]



I'd like a walk.

[aɪd 'laɪk ə ˈwɔ:k ||]



In case the degree of the intensity of these attitudes is reduced the initial level of fundamental frequency in the nucleus decreases too.

Справа вірна.

[СПРАВА В'ІРНА ||]



I'd like a drink.

[aɪd 'laɪk ə ˌdrɪŋk ||]



The low falling tone of a narrow interval is used to convey an extensive range of attitudes – it conveys the meanings of being restraint, disinterested, and sounding weighty:

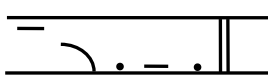
Поки що в грошах потреби немає.

[ПОКИ ЩО ПОТРЕБИ НЕМАЙЕ ||]



Dot isn't attractive.

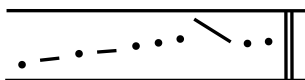
[ˈdɒt ɪznt əˌtræktɪv ||]



When the initial level of the fundamental frequency increases, a falling tone of a narrow interval expresses approval, ease, and an easy - minded attitude.

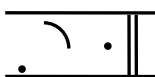
Вони картини малюватимуть.

[ВОНИ КАРТИНИ МАЛ'УВАТИМУТ' ||]



You've guessed it.

[jəv ˈɡest ɪt ||]



The fact that duration in the Ukrainian language in contrast to English is not included a number of phonematic characters at the segmental level, expands its opportunities in developing the intonation of an utterance. Here it assists in distinguishing various attitudinal meanings. It is manifested by various degrees of temporal component participation in producing such attitudinal meanings as a degree of interest, a degree of surprise, etc. in speech in Ukrainian and English.

The distinctions in prosodic peculiarities of attitudes in speech are connected with differences in quantitative characteristics of the acoustic correlates and with the variable frequency of certain intonational units functioning in speech. Thus, the Ukrainian language is characterized by a less sharp character of decrease in the pitch of the voice in a falling nuclear tone, the narrowed range of the latter (a lower initial level in comparison with the English language and a higher final level of the tone). When developing the ascending nuclear tone in the Ukrainian language, a reversed picture takes place: a sharper rise of the voice and a pitch widened range (due to the higher final level of the tone). The broadening of the pitch range of English utterances with attitudinal connotations should be noted in comparison with the Ukrainian utterances; it can be explained not only by distinctions in the nuclear tones but also by the lack of coincidence of the first stressed syllable levels in the two investigated languages: the pitch level of the first stressed syllable in the English language is much higher, as a rule, than in Ukrainian. At the same time, the tone peak localization in English utterances is on the first stressed syllable, unlike in Ukrainian where the tone peak is shifted to the right.

In the compared languages, the quantitative characteristics of the fundamental frequency in the head, which correlates with the differential features of the attitudinal meanings, demonstrate the tendency to display interlingual distinctions: the English utterances which convey the emotionally rich meanings of will are marked with a higher level of head with its broader interval.

Alongside a discrepancy of the acoustic parameters quantitative characteristics, the distinctions in the peculiarities of prosodic correlation with the contents (in the sphere of modal semantics) manifest themselves in the compared languages by different frequency of appearance of certain differential prosodic characteristics in speech. Thus, in the English language, when designing various attitudinal types of questions, a regular ascending tone appears to be the most typical one. In Ukrainian it is used less often. At the same time, the rising-falling tone is functionally more loaded in the Ukrainian language. One more specific feature in the English language is the irregularity of the pitch contour in utterances that contain attitudinal connotations in comparison with a smoother movement of the FF in similar Ukrainian utterances.

Definite specific lingual features are observed in the terminal rising tone of finality in cases where the following attitudinal meanings are conveyed: hesitation, assumption, uncertainty, thoughtlessness, surprise, etc. In these cases the kinetic tone is more often realized in the nucleus in English; in Ukrainian the tone rise in the post-nuclear syllables is more widespread.

The specificity of the dynamic component is manifested in the English language by gravitation of the maximal intensity parameters together with the fundamental frequency maximal parameters to the first stressed syllable; in the Ukrainian language they gravitate to the main stressed syllable. At the same time, in the English language

the intensity is more widely used for the purpose of differentiating the attitudinal relations in speech than in Ukrainian.

The peculiarity of temporal organization of English (compared to Ukrainian) utterances, which contain modal information, consists of less dependence of rhythmic tact duration on the quantity of syllables it contains and of the reduced variability of the time component of the rhythmic units in an utterance. Great variability of a syllable duration in the Ukrainian language allows to execution of this acoustic parameter as a sense distinguishing characteristic when differentiating attitudes more often than in the English language.

If an inventory of perceptual and acoustic differentors, which form the idealized prosodic models of the components of semantic fields of the modal sphere, has both similar and specific features in the Ukrainian and the English languages, the mechanism of these models' correlation with the constituents of various levels of modal fields is mostly identical in both languages.

In both Ukrainian and English, the components of the attitudinal functional semantic fields of the estimative-proper, imperative-estimative, emotional-estimative spheres are characterized by a very certain correlation with the prosodic models "of their own", unlike the components of the objective modality fields where the stated correlation is of a mediated character (see 9.4.2.). The mechanism of prosody models transformation is also typological; it reflects the gradual change of the semantic units within one homogeneous field of attitudes. The isomorphism of the plan of contents and the plan of expression is also typological in both compared languages.

Interlingual generality is also demonstrated by the order attitudes arranged in "the line of activity", which characterizes the degree of stability of the prosodic constructions that convey these attitudinal meanings (see 9.4.4.), and also by the definite character of the mechanism of the intonational structures of two and more attitudinal meanings interaction as they are simultaneously realized in speech (see 9.5.1.).

The variability of the idealized prosody models in both languages is connected with the activity of the same factors (see 9.4.) that cause the universal character of the mechanisms developing the semantic ambiguity of prosodic structures – a homonymy of intonation, a synonymy of intonation, etc. It is natural that, when forming the groups of intonational homonyms (synonyms), their full identity is not always observed in Ukrainian and English. It is caused by the specific lingual features of intonation of various attitudinal meanings as described above.

Finally, the typological generality of the Ukrainian and the English languages is brightly demonstrated by the similar mechanisms of prosodic means interaction in the process of conveying the attitudinal meanings by non-prosodic means that express modality. The intralinguistic specificity of these aspects is connected with the peculiarities of the grammatical and lexical structure of the compared languages and the difference in the significance of the acoustic parameters when executing various functions of intonation. The specificity of interaction between intonation and grammar means when expressing attitudes in Ukrainian and English speech is caused by a degree of distinction between the grammatical systems of the compared languages (synthetical in Ukrainian and analytical in English). This, in turn, instigates an occurrence of particular lingual features in the accent-rhythmic structure of a sense group. Alongside a significant number of the form words that are not stressed in the English language (unlike Ukrainian), the tendency to pronounce semi-notional words (personal and possessive pronouns and modal verbs) as unstressed ones is wide spread.

Specific language features of interaction between the intonational and lexical means of expressing attitudes in Ukrainian and English speech are connected with

certain peculiarities of the vocabulary structure of the compared languages. For example, in English a polite request is not expressed in a one-word utterance that intensifies the role of the lexical component and reduces the necessity of using the prosodic means of conveying a certain attitude in English speech at its full extent.

9.5. INTERACTION OF VARIOUS FUNCTIONS OF INTONATION

9.5.1. TYPES OF MECHANISMS OF INTONATIONAL STRUCTURES INTERACTION

In the majority of the communicative situations, intonation does not accomplish just one of its functions in an utterance, but several of them. At the same time, the intonational structure that is typical in cases when only one function of intonation is executed undergoes transformation when the functions interact. There are two types of mechanisms of interaction. The first one is developed when each of the interacting functions are realized with the help of the "personal" inventory of intonational means, and the second one when both interacting functions are executed due to the same set of intonational means.

In other words, an autonomous or a complex (joint) realization of two or more functions of intonation is possible. Numerous facts testify to the prevalence of the relatively independent realization of several functions of intonation within a sense group; that is their autonomy. Autonomy is characterized by the use of the independent inventory of intonational means that express each of these functions.

Thus, in the utterances:

- 1) *Батько приїхав.* (2) *Батько **приїхав**.* (3) *Батько **приїхав**?*
1) *The **father** has come.* (2) *The father has **come**.* (3) *The father has **come**?*

one type of intonational means (shift of the nuclear syllable in the utterance) is used in order to realize and to oppose two types of actual division that provide the accentuation required by a speech situation (see sentences 1 and 2); the other intonational characteristics (the usage of a falling or a rising tone) provide the adequate identification of the communicative orientation of the utterance (compare sentences 2 and 3).

At the same time, the situation characterized by mutual (complex) realization of two or more functions of intonation and the use of one marked element in an intonation contour is widely widespread. Thus, in the sentences:

- Ви його зустріли?* and *Ви його зустріли?*
*Did **you** meet him?* and *Did you **meet** him?*

the position of kinetic tone localization and its type accentuate the rheme center and mark the communicative type of the sentence simultaneously.

When a complex character of various types of intonational functions takes place, they can enter into two kinds of relations with each other: independence or domination /

subordination. Independence of the functions assumes semantic independence of the interacting functional fields.

Domination of one of the functions is seen under the circumstances when the first function, being not homogeneous with the other function in the given communicative situation, provides the realization of the second function.

When looking at the transformation of intonational constructions correlated with the interacting functions, the character of such modifications is dependent on the tightness of the degree of relation between the executed functions and the type of this relation. Thus, the guiding factors are the way of semantics - the degree of homogeneity of the compatible functions, the way of expressive means - presence / absence of the prosodic constructions "of their own" (see above) in each of the interacting functions and the degree of affinity of their "initial" prosodic constructions.

This phenomenon is typical of the emotional – attitudinal function of intonation which, due to a wide spectrum of attitudes used in speech, can provide the realization of any other functional manifestations of intonation in a quite natural manner.

9.5.2. COMPLEX REALIZATION OF THE SENSE GROUP DIVISION FUNCTION AND THE ATTITUDINAL-EMOTIONAL FUNCTION

When the function of sense groups division and the attitudinal function are acting together, their autonomous demonstration is rather typical. Therefore, there is no interaction between the function of sense groups division and the attitudinal ones in utterances where sense-groups division is aimed at conveying the distinction between the address, the apposition, and the enumeration; the boundaries inside the sense groups of an utterance vary depending on the required logical-semantic character of the message. In such situations, there is an opportunity to transfer the attitudinal connotations within the framework of any of the accepted ways of the sense group division; however, the means that convey these attitudes, including intonation, are completely independent and autonomous in respect to the intonational means of the sense groups division. Thus in the sentences:

*We need **more** experienced people. We need **more** experienced people,*

the use of intonational means (the kinetic tone and the pause) provides the division of the utterance into two sense groups. The basic function of this division is the modification of logical-semantic connections in the sentence. «More skilled people » is replaced by " more the skilled people ". At the same time, in the second sentence the same means actualize a certain amount of definite attitudinal function - discrepancy of the desirable. Autonomy of the two functions is conditioning by their semantic independence and an absence of common features in their functional orientation.

A complex manifestation of the function of sense-groups division and the attitudinal function is seldom found in speech. Thus, semantic equivalence is impossible in principle in the case of a complex execution of the examined functions. It is caused by the specificity of the function of sense groups division which insures syntagmatic contrast between the separated speech fragments and exclusively fulfills the constructing role. The attitudinal function, in contrast to the previously described one, is aimed at conveying some meaning that is capable of entering the relations of paradigmatic opposition with the other functions of intonation.

Domination of the sense groups division function takes place in the course of its complex realization with the function producing the evaluative – characterizing attitudinal meanings; subordination occurs in complex with the evaluative-proper and emotive-evaluative function. The following speech realization can illustrate the dominating function of an utterance division into sense groups: here the opposition of the attitudinal meanings of the fact evaluation (as the one that corresponds to reality or is inappropriate to reality) is carried out on the basis of the utterance's division into two sense groups. Otherwise this phrase's exists as one sense group:

I , thought | it would , rain. I' thought it would. , rain.

The described character of interaction between the attitudinal function of intonation and the function of the utterance division into sense groups is typologically similar in the compared languages. Distinctions are observed only in the inventory means that participate in the interaction under examination.

9.5.3. INTERACTION OF THE FUNCTION THAT REFLECTS A DEGREE OF CONNECTION BETWEEN THE SENSE GROUPS AND THE ATTITUDINAL-EMOTIVE FUNCTION

The semantic aspects which are executed by the function that characterizes a degree of connection between the sense groups include strong, average, and weak connection, the relations of government, equivalence, subordination, etc. The amount of complex manifestation of this function of intonation with an attitudinal one is more numerous and the character of its connections is much more diverse than in the previous case where the function of division into sense groups was discussed. First of all, the difference appears in case of a complex realization of the function that express a degree of connection between the sense groups and attitudinal ones. Under these conditions, the mechanism of equality of these functions becomes possible. This happens especially often when shaping subordinate and coordinate relations in conjunctionless connections, where the intonation, being the unique marker of the connection type between the parts of the compound sentence, provides simultaneously the evaluative-characterizing attitudinal meanings. For example, in the sentence

Вчитель за ,хворів, уроків не , буде.

the rising nuclear tone conveys a subordinate type of connection between the two sense groups, emphasizing simultaneously the consequential relations. When pronouncing this sentence with a falling tone in the nucleus, a coordinating connection between the parts of the compound sentence is expressed; thus, with the help of the same means of intonation, the attitudinal meaning of the events' dependence is produced.

The most widespread type of mutual action of the compared functions is the domination of the function that expresses the type of connection between the sense groups. When the estimative-characterizing attitudinal meanings of grounding, reason, result, opposition, sequence in time or space etc. are conveyed, the role of intonation is reduced to the function that shows a degree of connections between the sense groups. It is frequently reduced to marking the strong connection via the opposing intonation of

completeness/incompleteness in the adjacent sense groups. The specification of an attitudinal meaning is carried out by lexical means or by the context. Thus, for example, the rising tone in the second part of the sentence:

Вам не слід було так хвилюватися: він повернув, книжку.

underlines the close semantic interaction of the two sense groups, and only the supplementary consideration of the context allows for the identification of the attitudinal estimative-characterizing meaning of grounding.

The subordination of the function-demonstrating connection between the sense groups towards the attitudinal function of intonation is manifested in speech often enough, though less often than that of domination. This happens when the degree of strength between the sense-groups relation is indirectly actualized via the means that convey the estimative proper or emotional-estimative relations. Therefore, despite the use of a descending tone (which usually manifests a weak connection between the sense groups) in both sense groups of the utterance

Don't come ☹near me, I ☹hate you.

the presence of some specific markers in intonation conveying the attitudinal meaning of indignation (timbre and dynamic components) makes the listener perceive these sense groups as strongly connected ones.

If the character of the connection between the sense groups is explicitly demonstrated (when conjunctives connect the parts of a compound sentence, form – words, and other lexical and grammatical markers) the intonation means responsible for connection between sense groups are leveled as a rule, and in this case the intonation means that convey the attitudinal relations that become dominating.

The typological generality of the mechanism that combines these two functions does not exclude the manifestation of certain specific prosodic features which result from the variety of certain attitudinal meanings and the discrepancy of some markers differentiating the types of connections between the sense groups in the English and the Ukrainian languages. The following characteristic of intonation illustrates the above-mentioned statement, it being the difference in a rising tone while expressing incompleteness (regarded as the factor that defines semantic dependence between the sense groups): in the Ukrainian language the level of the final part of the nuclear kinetic tone is higher than in the first stressed syllable, while in the English language the level of the ascending nuclear tone does not reach the level of the first stressed syllable in the sense group.

9.5.4. INTERACTION OF THE FUNCTION OF ACCENTUAL PROMINENCE AND THE ATTITUDINAL – EMOTIVE FUNCTION

Considering the mechanism of interaction between the function of accentual prominence and the attitudinal function, it should be noted that the accentual prominence provides the establishment of logical connections between the words in many cases, and the attitudinal relations are either minimally marked here or not made at all:

У минулому році кияни виграли , кубок.

Under these conditions the function of the actual division is not included into the bulk of the medium in respect to the attitudinal function of intonation; these functions are realized autonomously.

If the prominent element of a sense group has the attitudinal semantics or some attitudinal connotation (alongside with intellectual and logical meanings), these two functions of intonation are mutually executed. Therefore, no special markers normally are used to manifest the actual division, and as such the same prosodic markers are exploited here as in case of conveying attitudinal relations. It should be remarked that under the conditions the prosodic means are not simply used as the differentiators revealing some kind of modal relations, but are treated as the markers that amplify these meanings. The meanings of the subjective modality of all types can be conveyed in such a way. In the examples

1) *Рік минув.* (2) *Рік минув.*

the shift of the sentence stress to the word "рік" in the second sentence gives to the utterance an air of emphasis on the attitude of the event's duration.

Such domination of the attitudinal function is most typical in cases of interaction between the function of accentual prominence and that conveying evaluative-proper and the emotional-evaluative meanings. Thus, intonation often carries out a third function, that of emotional, in a wider meaning of this concept that reflects an emotional state – the mood of a speaker together with his attitude to the stated.

As an extreme manifestation of the situation under discussion (i.e. a mutual development of two functions), the logical aspect can be completely lost while accentuating the rheme part of a phrase, and the attitudinal meaning that is conveyed in a rheme becomes the content of the rheme. For example, in the sentence

Який був день.

a complete equivalence of these two functions of intonation needs to be noted.

It finds its expression in the fact that the means of intonation used in case of mutual execution of two functions coincide with those that are used for the independent realization of the emotional and attitudinal meanings included into this complex: various components of timbre, complex tones (rising-falling), tempo decrease (the growth of the stressed vowel duration), and so on that take part in the action.

The systemic description of mechanisms involved in the process of interaction between the attitudinal function of intonation and the function of the accentual prominence has been carried out in this section. This system correlates with the classification of sentence stress types presented in the scientific literature. The first of the situations considered here (an independent manifestation of the functions) corresponds to the case of the logical accent, while the second and the third (complex development) correspond to the case of an emphatic accentuation in a sense group.

The mechanism of interaction of the function that emphasizes the semantic relations between sense group elements and attitudinal function of intonation is typologically similar in the compared languages.

The difference between English and Ukrainian in this respect is caused, first of all, by the fact that within each language system there are grammatical arrangements and the lexical structures that predetermine sentence stress to a certain extent. The

discrepancy of these norms in the compared languages (at the level of word stress) is reflected in the initial position of the stressed syllable in the English language and in greater mobility of this position in the Ukrainian language.

9.5.5. INTERACTION OF THE COMMUNICATIVE AND EMOTIONAL-ATTITUDINAL FUNCTIONS

Let's consider simultaneously the peculiarities concerning the mechanism that executes the intonational structures interaction and realizes the communicative and the emotional and attitudinal functions.

As has already been noted (see 9.2.7.), at the level of prosodic organization practically all communicative types used in speech are conveyed via interaction with prosodic markers of subjective-modal meanings (attitudes) which correlate semantically with a given communicative type.

For example, the question-proper is mostly related to the attitudinal meanings of interest, doubt, and persistence:

That Vickie is not in the bar, is she? - , Vickie? , Who's 1 Vickie?

Imperatives are usually accompanied by the attitudinal meanings of persuasion, firmness, and being unshakable; they are usually present in cases where order is expressed:

' Give it to 1 me!

Uncertainty, shyness, and hesitation are heard when a request is pronounced:

' Why ' don't you ' buy me a, whisky in 1 stead? - ' Now, Julia, ' listen to, me.

An estimation or an authority are available when expressing advice:

' Read a, book.

A report, being a special kind of a statement, correlates with a wide spectrum of attitudinal meanings: confidence/uncertainty, authoritativeness/irresponsibility, etc.

Per, haps, he ' wanted to 1 marry you.

The influence of attitudinal and emotional connotations on intonation of utterances with different communicative orientation should be analysed.

As has already been mentioned, a falling tone is regarded as the norm in declarative sentences while non-final sense groups which express the uncompleted thought stick to a rising tone as a rule. Nevertheless, it should be remarked upon that a rise in the nucleus is not only the characteristic of non completed statements. The analogical contour is used (in the English language) when conveying greeting or parting in short answers of an agreement and contradiction, and when expressing attitudinal and emotional meanings of furious denial, distrust, encouragement and others. In Ukrainian, like English, many emotional and attitudinal meanings exploit the rising tone in declarative sentences, with the meanings of doubt, contradiction, unwilling agreement and others included here.

These types of declarative sentences, possessing some common features in contrast to the prosody of questions, have certain specificity of intonation that differentiates the

emotional and attitudinal types from one another. These are the acceleration or slowing down in speech tempo, the dynamic component variations, and a wide arsenal of the intonation timber alterations. The most characteristic in this respect are the following features of intonation: the “indented” melody curve, the reduced/full vowel in stressed syllables, the correlation of vowels/consonants duration, timber alterations, and others. These pointed differences are not caused by the communicative variability of these utterances, but by the character of attitudinal evaluative-proper and emotional-evaluative relations that specify the semantics of these communicative types of utterances.

Actually, only two kinds of questions out of six (the general question and repeated question) in the English language are most often shaped by various types of the ascending tone. It happens only under the condition of some emotional and attitudinal connotations which are not present in the interrogative utterance. These connotations lead to a significant change in the configuration of the nuclear tone (disinterest or hostility that are conveyed by a low descending tone in a general question; a slight surprise, marked a high descending tone). Special questions, as a rule, are characterized by descending tones, and only the combination of an interrogative seme with some attitudinal connotations results in the use of ascending types of tones in a special question’s intonation. For example, the expression of extreme disapproval, interest, and desire to come into contact with the interlocutor demand the low rising tone; when conveying an extreme degree of surprise, the desire to understand the core of the problem are marked by a high rising tone).

Let us consider two situations that manifest the peculiar features of disjunctive question intonation: that under the condition of neutral inquiry of some information, and that in cases of the attitude of being sure that the speaker’s positive answer is expressed. In the first case, the final part of the disjunctive question in the English language is pronounced with a rising tone:

*He’s coming to night, , **isn’t he?***

And in the second one, with the falling tone:

*The weather is beautiful, **isn’t it?***

Another example is the alternative question in the English language. While pronouncing the terminal element with the falling tone

*Would you like, coffee or **tea?***

the speaker implies that the enumeration list is completed and in cases where the terminal element is uttered with a rising tone

Would you like, coffee or, tea?

the attitudinal meaning of incompleteness, and continuity is meant.

Intonation can transform a special or a general question into a rhetorical one that expresses bewilderment; for example:

Чому ви прийшли? And Чому ви прийшли?

*Why have you **come?** And **Why** have you come?*

Intonation can contrast a question with an attitudinal meaning of interest to a question with the attitudinal meaning of indifference, for example,

Ви його вже, бачили? From $\bar{\text{—}}$ *Ви його вже бачили?*
Have you, seen him? From $\bar{\text{—}}$ *Have you seen him?*

and can provide a set of other sense altering transformations resulting from the simultaneous realization of the communicative and the attitudinal functions.

In the Ukrainian language, the same laws are preserved in the tonal configuration of the nuclear syllable in the general questions. In special questions, a controversial picture is observed – if in most cases special questions in the Ukrainian language are pronounced with a rising tone, certain attitudinal and emotional meanings (for example, persistence, irritation, and mistrust) demand a falling terminal tone.

The intonation of imperatives, just like interrogative and declarative utterances, depends on the extra linguistic conditions of communication and the speaker's intention to convey certain attitude to the reported. There is no strict dependence of intonation of the utterance on its communicative type.

As has already been remarked, the peculiarity of semantic fields of the imperative sphere consists of its components multifaced nature. It is reasoned by the pragmatic character of this sphere of attitudes on the one hand [Петров, 1982]; here the aim modification changes the communicative type of the utterance. On the other hand, interpersonal relations also greatly influence the semantics of this sphere of meanings.

The interaction of the above-mentioned aspects leads to the development of a set semantic complexes that should be regarded as the product of the communicative and attitudinal units interaction.

This distinct prosody contrast disappears in cases where the periphery components of the attitudinal semantic fields of the three compared groups are analyzed. Thus, an official request that is a component of the appellative zone of the imperative-evaluative attitudes can be perceived by the listeners as (out of the context) one of the directive meanings like instruction or requirement.

The diagrams below illustrate the melody of commands and requests in English and Ukrainian.

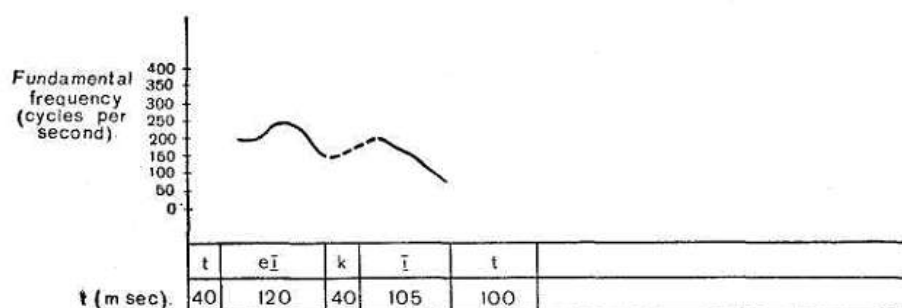


Fig. 9.2.
 Take it. (Command.) [teik it ||]

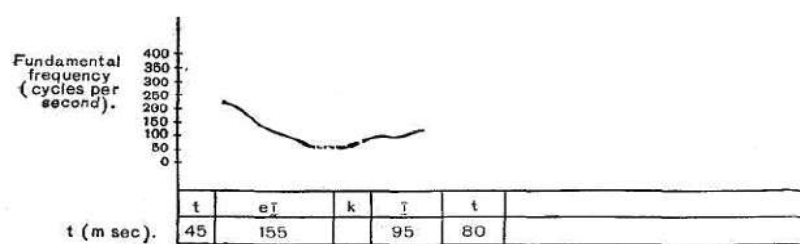


Fig. 9.3.
Take it (request.) [,teik it ||]

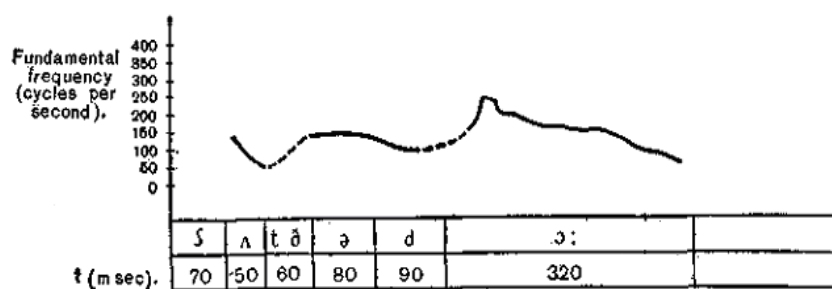


Fig. 9.4.
Shut the door! (command).
['ʃʌt ðə .dɔ: ||]

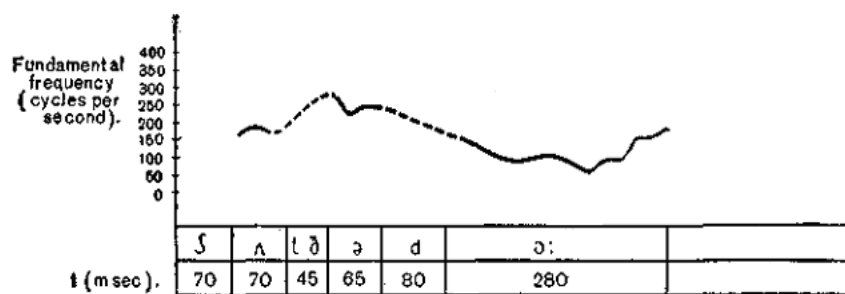


Fig. 9.5.
Shut the door. (request)

['ʃʌt ɔə ,dɔ: ||]

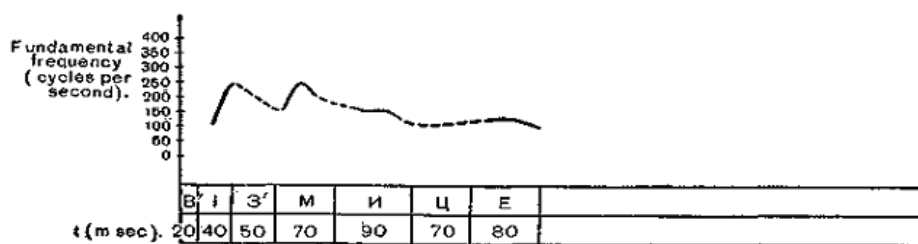


Fig. 9.6.
Візьми це! (command).
[В'ІЗ'МИ ЦЕ ||]

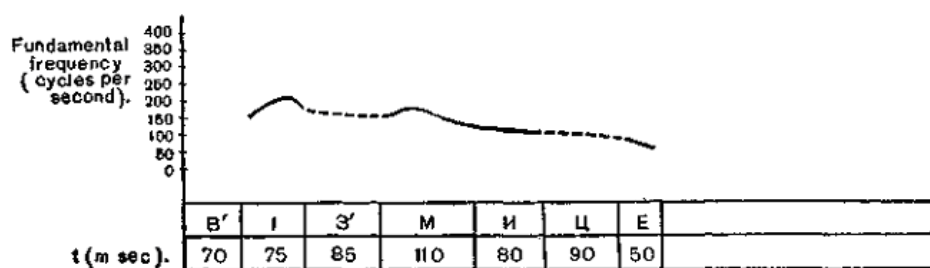


Fig. 9.7.
Візьми це! (request).
[В'ІЗ'МИ ЦЕ ||]

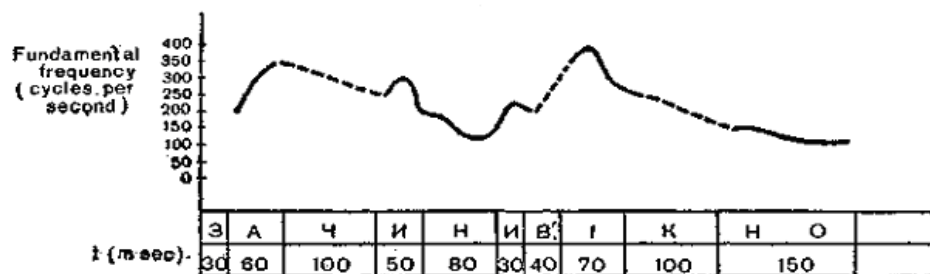


Fig. 9.8.
Зачини вікно! (command).
[ЗАЧИНИ В'ІКНО ||]

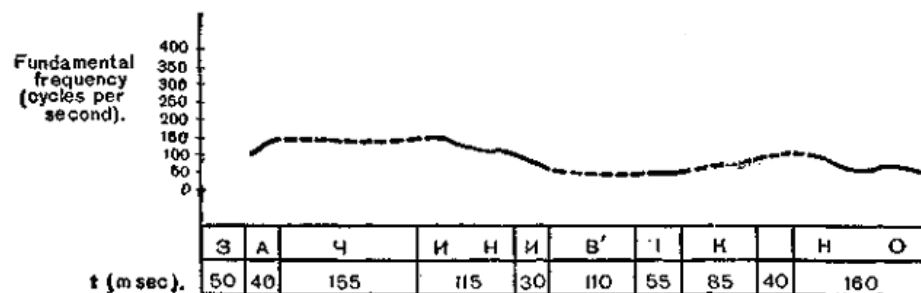


Fig. 9.9.
Зачини вікно. (request).
[ЗАЧИНИ В'ІКНО ||]

It can be stated in conclusion that as the result of comparisons between the volume and the degree of distinctive feature differences in the utterances of various communicative types, the following picture can clearly be seen. Different communicative types are not usually opposed to one another at the prosodic level at the expense of the intonational markers “of their own”, but at the expense of the attitudinal meanings of the evaluative-proper or emotional-evaluative types which are habitual to them (see table 9.5).

Table 9.5.
The correlation degree between various types of evaluative-proper attitudinal meanings and the communicative types of speech acts.

Communicative types		Evaluative proper attitudinal meanings				
		Confident	Doubtful	Elucidating	Understanding	Irresponsible
Imperative	Order	H	0	0	0	0
	Advice	L	H	0	L	L
	Request	0	H	H	0	L
Interrogative	Asking for information	0	H	H	0	L
	Getting into contact-	L	L	0	0	L
	Stating the fact	H	L	H	L	H
Declarative	Declaration	H	0	0	H	L
	Explanation	H	0	H	H	0

0 – correlation absence; L – a low degree of correlation, H – a high

This phenomenon has already drawn researchers' attention, primarily when studying the problem of emotional speech prosody. Thus, in the work by V.L.Taubkin which

analyzed the contrasts of prosodic means conveying different types of the communicative types of utterances, it has been underlined that they are not “commensurable with the emotionally conditioned ones. At the reader’s emotional ... tension the communicative features of an utterance are disappearing in correspondence with the degree of tension growth” [Речь, эмоции, личность, 1978, p.187].

The intonation in the function presenting the communicative type of an utterance practically always tightly interacts with the function conveying the attitudinal meaning. The attitudinal connotation that is at the fundamentals of a specific communicative type defines the choice of intonation used in this communicative type.

The interaction of communicative and attitudinal functions of intonation is characterized by certain typologically common features in the two compared languages. Specific language peculiarities are caused by differences in the prosody of the communicative types of sentences in English and Ukrainian.

9.5.6. TYPOLOGY OF MECHANISMS OF DIFFERENT INTONATIONAL FUNCTIONS INTERACTION

In spite of the availability of a number of specific language peculiarities in the intonation of utterances, where the intonation simultaneously fulfills several functions under the real conditions of communication, the character of the correlation mechanism “intonation-meaning” is completely identical in the compared languages. More than that, the most essential features of these mechanisms could be treated as language universals.

When an intonation contour is formed under the condition of two or more functions of intonation being realized in a speech act the result is not straightforward and depends on a variety of factors. Note the following:

- availability/absence of prosody models “of their own” or “indirect” ones in combined functions;
- the degree of stability in correlation between these models and semantics;
- the degree of semantic character intensity conveyed by the intonation model;
- the degree of similarity between the original intonational structures that are interacting and the degree of proximity in the language nature of the functions involved the interaction.

The analysis of the character of the functional and semantic factors influence on the degree of stability of intonational models demonstrates that different functions of intonation possess various possibilities of providing such an effect. The most stable are the prosodic models executing the attitudinal and emotional functions of intonation. The status of the other functions towards the attitudinal function of intonation changes from the subordinate one (as in the function of division into sense groups) up to the dominating one (as in the function reflecting the speaker’s emotional state). In correspondence with this status and the poly-functional character of intonation in an utterance, the resulting intonational contour mainly preserves the relevant prosodic features of the dominating function intonation.

Nearest to the attitudinal function of intonation (from a language point of view) is the emotional one, and to some extent some subtypes of the communicative function of intonation. This determines the isomorphism of mechanisms of these functions mutual development.

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