

# DELIMITATION AND FOCUSING FUNCTIONS OF INTONATION IN BULGARIAN

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## ABSTRACT

The paper deals with the results from an experimental study of the phonetic segmentation of Bulgarian speech. On the basis of experimental data an attempt is made to reduce the variety of the observed melodic configurations of segmentation units (syntagmas) describing them in terms of two kinds of accents, conditioned by the phonetic manifestation of the delimitation and focussing functions of intonation, and their possible combinations. The proposed classification may be used for comparative intonological analysis of languages with different phonetic structures.

## INTRODUCTION

Theoretical ground of the present experimental study is the generally acknowledged significance of intonation within the framework of language communications as a phonetic source of information transferred from speaker to hearer. The different approaches to the versatility of intonational phenomena and their interaction with extralinguistic and linguistic factors from different levels result in a great variety of lists describing the functions of intonation. Regardless of their different number, definitions and terminology, almost all of the proposed classifications include the delimitation and focussing functions under one or other label (1,2,3,4,5,6 and many others). Here the term "delimitation function" is used for describing the structural role of intonation - the segmentation of the speech flow into phonetic units, the so called syntagmas, and the organizing role of intonation in their formation. The syntagma is defined in the sense of the Leningrad Phonetic School as a semantic-syntactic entity consisting of one or more words organized by intonation into phonetic integrity. The main phonetic condition for a string of words to be grouped into a syntagma is the absence

of perceived pauses between them, the pauses being of two kinds: real (a sound gap) or psychological (due to interruptions of the continuity of the prosodic parameters of speech signal) (4). The focussing function of intonation is understood as the role of intonation in localizing the communicatively important elements in the utterance. The aim of the study is to determine the phonetic means used in Bulgarian for the realization of the delimitation and focussing functions of intonation and on this ground to specify the basic phonetic regularities in the suprasegmental organization of speech allowing adequate comparison with other languages.

## FOCUSING FUNCTION

The manifestation of the focussing function of intonation in Bulgarian follows the universal tendency to phonetic prominence by complex enhancing of the acoustic prosodic parameters ( $F_0$ , I, T) of the stressed vowel in the phonetic word containing important information. A result of a previous experimental study (7) of the  $F_0$ -patterns of short simple sentences uttered as one-syntagmatic statements is that their most typical melodic contour is of rise-fall configuration with its peak on the stressed syllable of the word bearing the phrase accent. The application of the "theme-rheme" conception to our experimental data determines the melodic contrast between the syllables in the word as a main acoustic feature of the rheme and the lack of it, i.e. the unidirectional course of  $F_0$ -contour as an acoustic characteristic of the theme the direction depending on its position in the phrase.

## DELIMITATION FUNCTION

The phonetic breaking up of the speech flow into shorter or longer stretches by means of pauses shows a great variety in the size and intonational shape of the divided units due to individual variations in speech. The intervention of the subjective factor however is not a reason to consider this process an accidental one without linguistic significance

since individual variations are possible only within certain limits conditioned by the particularities of intonation as a structural device in a given language and the universal restrictions in the speech production process. The phonetic manifestation of the delimitation function of intonation may be estimated by means of the statistical parameters of syntagmas representing the basic tendencies in the temporal organization of speech.

The statistical data given below concern the segmentation of speech in the particular case of text reading as the first stage of a larger experimental investigation of the suprasegmental organization of Bulgarian speech. The data are obtained by means of an auditory and acoustic analysis of three texts in journalistic style (40 simple and 21 compound and complex sentences, the total number of clauses being 91) read by 12 persons.

## Syntagma size

Fig.1 shows the occurrence frequencies of the syntagmas of different size the measure of the size being the number of phonetic words in a syntagma. The minimal size is 1 word or 1 syllable, the maximum size found in our corpus is 6 phonetic words or 28 syllables, the average size being 2.35 phonetic words or 8 syllables. The comparison of these values with the corresponding data for other languages (Russian (8), (9); English (10); Spanish (11)) shows a great similarity which makes it possible to assume that the main factors determining the size of these units are the universal restrictions in the speech production.

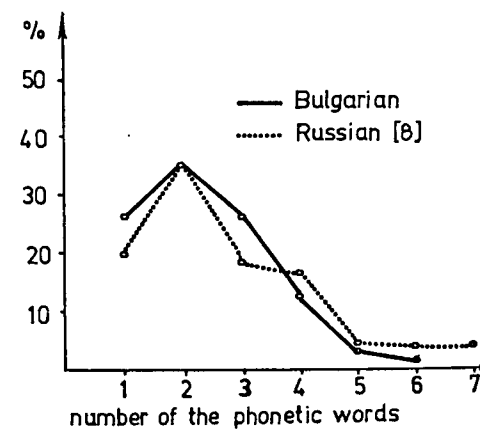


Fig.1. Occurrence frequencies of syntagmas (%) according to their size.

The statistic treatment of the syntagmas with respect to their size and position in the sentence show that the

short syntagmas (1-2 phonetic words) prefer the initial position, the longest ones (5-6 phonetic words) usually occupy the middle of the sentence and for syntagmas of the middle size (3 phonetic words) the final position is typical.

## Pauses

Under the experimental conditions, i.e. reading of grammatically well formed units, it has been found that real pauses are much more frequently used (87%) than psychological ones (13%).

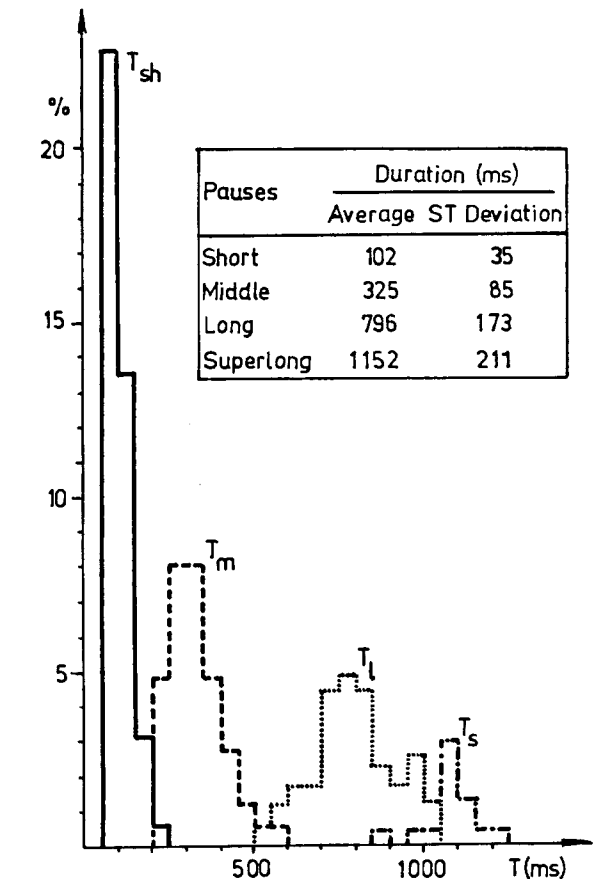


Fig.2. Occurrence frequencies of pauses according to their duration.

Fig.2 represents the occurrence frequencies of real pauses according to their duration. The configuration of the curve (4 peaks) and the dependence of the pause durations on the syntactic relations between the adjacent syntagmas give ground to distinguish 4 kinds of pauses: short, middle, long and superlong. The short pauses usually separate groups of words in the simple sentence, the middle ones - clauses in the compound and complex sentences, the long ones occur between the separate sentences and the superlong ones mark the end of the phono-paragraph. It must be

pointed out that although closely related the phonetic and syntactic units do not necessarily coincide. For example the syntactic entity of the noun group may be phonetically divided by a short pause between the attribute agreed with the noun and the noun itself only because of the larger number of syllables in the two words.

#### Number of accents in a syntagma

The number of accents in the syntagmas in our material is defined by auditory tests the instruction being to underline phonetically prominent words without any restriction in their number. The results show that in Bulgarian speech a syntagma may have more than one accent with an equally perceived weight. The maximum number of accents found in our recordings is 3 (in 3% of all units). Most of the syntagmas have one accent (72%) and 25% of all cases - 2 accents. The possibility of a syntagma to have more than one accent has been noted in other languages as well (e.g. Russian (5), (12)).

#### Types of accents

The auditory and acoustic analysis of our recordings show that the accentuation in a syntagma may be realized in two different ways perceived as phonetic prominences of equal strength but differing in their quality. This suggests that in Bulgarian there are also two kinds of accents as described in (12) which differ in their functions, i.e. in the nature of the information intended by the speaker. The first one - the logic accent - is a result from the phonetic manifestation of the focussing function of intonation and its acoustic correlate is the melodic contrast between the syllables of the prominent word (rise-fall  $F_0$ -configuration). The second type, called structural, is connected with the whole intended structure of the utterance and signals the continuation or the finality of speech, i.e. it is a result of the delimitation function of intonation. The basic acoustic parameter used in this case is the segmental duration, the course of  $F_0$  is unidirectional - rising with maximum steepness on the last syllable irrespective of the word stress for a continuation accent and lightly falling without melodic contrasts for a final accent.

It is well known fact that almost any word in the syntagma can bear a logic accent and its placement depends on the context, both linguistic and situational. It must be pointed out that in Bulgarian the structural accent also depends on situation (the term including the relationship between speaker and hearer, speaker and social framework and the momentary mood of the speaker (2))

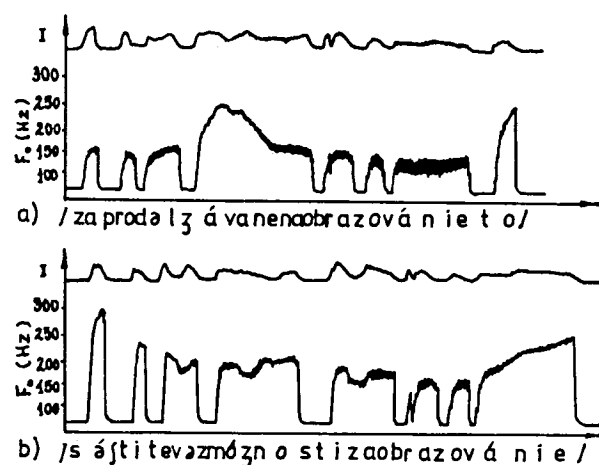


Fig.3.  $F_0$ -contours of syntagmas showing the acoustic difference between the logic and continuation accents and their combination on the last word: a) /za prodǎlzǎvane na obrazovǎnieto/ 'for the continuation of education', b) /sǎštite vǎzmǎznosti za obrazovǎnie/ 'the same possibilities for education'.

although its place is fixed on the last word(s), which means that the end of the syntagma is not necessarily marked by an accent.

When the logic accent is on the last word bearing at the same time a continuational accent the most typical  $F_0$ -contour is a rising convex curve with maximum steepness on the stressed vowel in contrast to concave configuration corresponding to a continuation accent alone. Figure 3 illustrates acoustic differences in  $F_0$ -configurations of syntagmas whose last words are marked a) by a continuation accent alone and b) by a combination of logic and continuation accents. The first word in both syntagmas are emphasized by a logic accent forming a melodic peak on their stressed syllables. The accents in the syntagma may also be differentiated in respect of the number of words they underline. In our experimental material we have found both types of accents defined in (10) - centralized (on a single word) and decentralized (on two words emphasized as one accent unit). On acoustic level the difference between the two cases is in the shape of the melodic peak - a sharp one on the stressed syllable of the individually accentuated word and a high relatively flat plateau situated between the stressed syllables of the two words (fig.4).

#### Place of accents

In one third of all examined syntagmas each phonetic word is accentuated by one

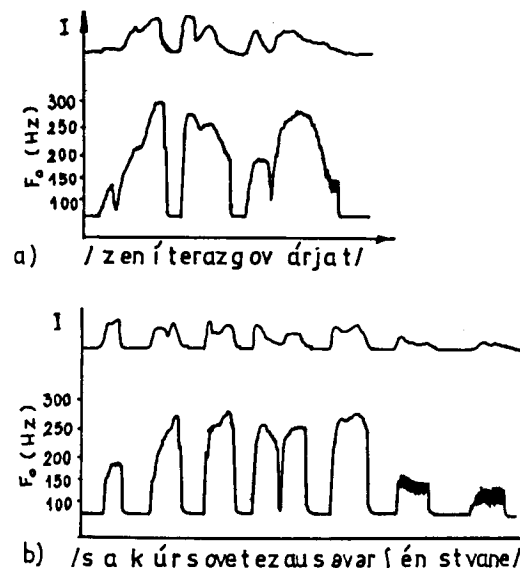


Fig.4.  $F_0$ -contours of two-words syntagmas in which both words bear a logic accent: a) of centralized type /zenite razgovǎrjat/ 'the women are talking'; b) of decentralized type /sa kǎrsoвете za usǎvǎrǎnstvane/ 'are the qualification courses'.

or another type of accent. In the rest of the units the number of accents is smaller than that of phonetic words. An estimation of the global tendencies in accent organization of syntagmas may be derived from the statistical distribution of the observed accent places which is as follows: on the initial phonetic word - 36%, on the final one - 38%, on the initial and final - 12%, on the medial word - 14%. The small number of syntagmas in which the medial word bears the accent shows that in Bulgarian syntagmatic accents prefer boundary positions. This means that on a syntagmatic level the accent function is rather a delimitative than a culminative one as it has been shown in (13) dealing with the word stress in Bulgarian and Russian. An essential particularity of the syntagmatic accent organization in Bulgarian distinguishing it e.g. from Russian is that the initial position attracts the accent in the same degree as the final one, i.e. the classical rule about the syntagmatic accent being always on the last word isn't valid in Bulgarian.

#### CONCLUSION

The experimental data obtained in this stage of our investigation show that the registered variety of  $F_0$ -configuration of syntagmas may be described by the number and nature of their accents which are directly connected with the

formal configurational features such as the number of peaks and the character of the terminal tone. Thus, all different  $F_0$ -patterns found in our corpus (14 types) may be represented by the number (from 0 to 3) and kind (centralized or decentralized) of logic accents, the presence or absence of a structural accent (continuational or final) and their possible combination. The statistical aspect of this representation makes it possible to evaluate in a more general way the activity of the delimitation and focussing functions of intonation in Bulgarian and to ascribe a higher weight to the latter one as the main factor determining the sound form of Bulgarian speech. In this way the experimental  $F_0$ -data may be used as a source of information for the purposes of an intonation typology of languages revealing in a more explicit manner the functional particularities of intonation.

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