

RHYTHMICAL MODEL OF A PHONETICAL WORD
OF PRESENT-DAY LITHUANIAN UTTERANCES

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ABSTRACT

The aim of this investigation was to study duration as a prosodic component of the rhythmical structure of phonetical words of different accent type in utterances typical of Standard Lithuanian and to discover the temporal characteristics of a rhythmical model of a phonetical word, taking into account the inherent prosody of vocalic and diphthongal syllabic nuclei. The obtained model has revealed the main regularities in the distribution of duration of stressed and unstressed syllabic nuclei

1. INTRODUCTION

In a previous study /1/, an attempt was made to investigate durational characteristics of acute and circumflex vowels and vocalic diphthongs in extended speech contexts. The distinguishing feature of Lithuanian stress is that homogeneous long monophthongs and vocalic or mixed diphthongs may have acute or circumflex accent. Having experimentally proved that there is no significant difference in duration neither between acute and circumflex vowels nor diphthongs in extended speech, we analysed vocalic and

diphthongal syllabic nuclei irrespective of the accent type.

The experiment reported below is an extension of the previous investigation this time involving durational ratio of stressed and unstressed syllabic nuclei of all types.

2. THE EXPERIMENT

The experiment corpus consisted of 128 utterances, recorded by 3 male and 2 female subjects. Measurements were obtained from intonograms.

In the experimental material the vowels and diphthongs under investigation were presented in different phonetical environments and in various positions in the phrase. So as to compensate for the influence of word position in the utterance, they were constructed so that the vowel was found an equal number of times in each position. In order to compensate for differences in absolute duration in different positions, computations were based on relative differences in duration. The data for each subject were individually analysed, but since the same corpus was used for each subject we also contrasted the data on vowel and diphthong du-

ration for all the subjects as a group.

Since two- and three-syllable words make up the most recurrent accentual pattern in the Lithuanian language, the temporal characteristics of rhythmical structure of such phonetical words have been investigated.

3. RESULTS

Certain durational distribution of stressed and unstressed syllabic nuclei makes up the main feature of the Lithuanian rhythm.

The analysis of durational ratio of stressed and unstressed short vowels of the same height revealed that:

- a) there is almost no difference in the length reduction of the 1st pretonic low vowels /a/ and /e/ (0.77:1 and 0.79:1 respectively);
- b) there is a great difference in the length reduction of the 1st pretonic high vowels /u/ and /i/ (0.67:1 and 0.87:1 respectively);
- c) the length reduction of the 2nd pretonic vowels is greater than that of the 1st pretonic vowels, /u/ being subjected to the highest degree of reduction (/a/, /e/, /u/, /i/ → 0.74:1, 0.76:1, 0.70:1, 0.81:1 respectively);
- d) the length reduction of the 1st posttonic vowels is weaker than that of the 1st pretonic vowels (/a/, /e/, /u/, /i/ → 0.74:1:0.86, 0.76:1:0.80, 0.70:1:0.83, 0.81:1:0.98 respectively);
- e) the length reduction of the 2nd posttonic vowels is rather small, with /i/ being even longer in duration than the stressed one (/a/, /e/, /u/, /i/ → 1:0.94, 1:0.85, 1:0.92, 1:1.1 res-

pectively).

The analysis of durational ratio of stressed and unstressed long vowels of the same height revealed that:

- a) the length reduction of the 1st pretonic long vowels is very similar to that of short vowels, with /ū/ being subjected to the highest degree of reduction. Long vowels /ā/ and /ē/ were not included into the experimental material as they are very rare in the pretonic position in the Lithuanian language. (/ā/, /ē/, /ū/, /ī/ → 0.82:1, 0.70:1, 0.58:1, 0.70:1 respectively);
- b) the 2nd pretonic long vowels like the short vowels have a tendency to a greater length reduction;
- c) the 2nd posttonic long vowels have a tendency to a greater length reduction than the short vowels. In a previous study /1/ it was revealed that there is essentially no difference in duration between the circumflex and acute diphthongs /ei/, /ie/ and /uo/, while there is statistically significant difference in duration between diphthongs /ai/ and /au/ pronounced with different accent type. The analysis of durational ratio of stressed and unstressed diphthongs irrespective of the accent type revealed that:
 - a) the diphthong /ei/ has a greater length reduction in the 1st pretonic syllable than in the 1st posttonic syllable as in short and long vowels (0.71:1:0.74);
 - b) the diphthong /ie/ contrary to the diphthong /ei/ has a greater length reduction in the 1st posttonic syllable than in the

1st pretonic syllable
(0.72:1:0.66).

The analysis of the diphthongs /ai/ and /au/ pronounced with different accent type revealed that:

a) the acute and circumflex diphthong /au/ has greater length reduction in the 1st posttonic syllable than in the 1st pretonic syllable (/áu/, /aũ/ → 0.68:1:0.66, 0.80:1:0.78 respectively);

b) contrary to the diphthong /au/ the acute and circumflex diphthong /ai/ has a greater length reduction in the 1st pretonic syllable than in the 1st posttonic syllable (/ái/, /aí/ → 0.62:1:0.64, 0.77:1:0.80 respectively).

The analysis of durational ratio of stressed and unstressed vocalic and diphthongal syllabic nuclei revealed the temporal characteristics of a rhythmical model of a phonetical word. According to this model, the following regularities in the distribution of stressed and unstressed syllabic nuclei may be distinguished:

1. The length of unstressed syllables is dependent on the distance from the stressed syllable, with syllables closer to the stress being longer.
2. The pretonic syllables show greater reduction in duration than the posttonic syllables.
3. The 1st pretonic syllable is approximately equal in length to the 2nd posttonic syllable.
4. The 2nd posttonic syllable is approximately equal in length to the 1st posttonic syllable.

It is assumed /2, 3/, that posttonic syllables word or

phrase finally are longer than pretonic syllables. It is conditioned by syllable to the stress position as well as by intonation. It remains to be proved, however, whether the above described temporal structure is language specific or language universal.

4. REFERENCES

/1/ ANUSIENE, L. (1987), "Duration of long stressed vowels in present-day Lithuanian utterances", Proceedings of XIth ICPHS, 5, 99-102

/2/ O'CONNOR, D. (1977), "Better English pronunciation" Cambridge Univ. Press.

/3/ PAKERYS, A. (1982), "Lietuvių bendrinės kalbos prozodija", Vilnius: Mokslo.