

Prosodic Representations of Russian

Yoshiko FUJISAKI

(Department of Humanities, Faculty of Humanities & Economics)

Abstract: The purpose of this paper is to visualize the prosodic patterns of the Russian language. In Russian the vowel of the accented syllable is pronounced with higher intensity and longer duration, and all of the energy is concentrated on this accented syllable of the key word of the sentence, which is the word that conveys the most important new information. Declarative and interrogative sentences are distinguished not syntactically but by the relative energy of the accented word. The patterns of energy distribution needed for this differentiation were experimentally visualized and quantitatively examined.

0. Introduction

In both English and Russian, the quality of vowels depends upon the presence of accent or stress on the vowel. Accent or stress refers to the system of relative strength of syllables in a language. The two languages are both classified as stress-timed languages, but in English the stressed syllable is marked more by length than 'power energy' as in Russian. They also have different ways of distributing the speech energy over a word. English words of three or more syllables usually have three levels of stress: main stress, secondary stress, and unaccented syllables, while in Russian all of the stress energy is concentrated on one syllable of the word. Within a word in Russian, the energy builds up very rapidly just before the stressed syllable, and falls off even more rapidly after the stressed syllable. Within a sentence, one word is usually heavily stressed, and the other words are basically unstressed in the over-all sentence stress distribution, although they would be stressed if pronounced in isolation.

Intonation refers to the melody of a sentence, the meaningful rises and falls in voice pitch. In both languages a falling intonation contour is an indication of completeness of expression, and statements pronounced without any special emotional overtones are characterized by falling tone. There is, however, an important difference in the way this fall takes place between the two languages. While in English there is usually a rise above normal pitch level on the strongest syllable of the sentence, followed by a drop to a low pitch, the Russian neutral declarative sentence intonation contour consists of a more or less sharp fall in energy on the accented syllable of the key word of the sentence, which is the word that conveys the most important new information, and the fall is confined within that sole syllable.

1.0 Stress, accent and prominence

The three terms, 'stress'¹, 'accent'² and 'prominence' have often been used in different and confusing ways. The word 'stress' has sometimes been used simply to refer to syllables made prominent for linguistic purposes, either in words or in sentences, and also used to mean 'breath-force or loudness' the implication being that this is the principal means whereby syllables are made

prominent. The word 'accent' has also been used simply to refer to syllables made prominent for linguistic purposes, commonly implying that such prominence is principally associated with pitch. In some languages such as Finnish, Turkish and Polish³, each word has a fixed place for the point of maximum prominence, where 'accent' is synonymous with 'stress'. In languages like English and Russian, however, the accentual pattern of any given word is lexically fixed, and there is no single pattern used throughout the language. The phonetic features, pitch, length and loudness, are all used to make some syllables more prominent in words and in sentences. In English these features form a scale of importance in bringing syllables into prominence, pitch being the most efficacious, and loudness the least so. In Russian the vowel in the accented syllable is pronounced with greater intensity and longer duration.

2.0 Intonation Patterns

Although Russian is said to have 'free accent', there are words with accent kernel movement and words without⁴. In the former type of words, the location of the accent is lexically fixed depending on the number, case and tense⁵. Syllables in Russian are first classified into accented and unaccented ones, depending on the presence or absence of 'accent'. The accented syllable, in the word which is the most important in a phrase or a sentence, is pronounced with the greatest strength and duration, and is called the 'center' syllable. The syllable immediately before the 'center' has the second greatest strength and duration, and the one immediately after the 'center', along with the other syllables, has the least of the two features. These syllables are called the 'precentral' and 'postcentral' syllables respectively⁶. According to Брызгунова (1982), seven patterns (Type I-VII) are reported, each of which was given two to four specimen phrases. All of these quoted in her study were recorded as materials to be visualised in this experiment. The literal translations of each of them are given in English after each phrase or sentence.

2.1 Prosodic Pattern I

This pattern (Type I) conveys a complete thought in a declarative sentence. The center of Type I is the stressed syllable of the word containing the main item of the information conveyed by the statement. A distinctive feature of this type is a sharp drop in tone on the center of the contour, which continues on the postcentral part and is pronounced with a lower than mid tone, characteristic of the precentral part. The phrases recorded for this type are:

- | | |
|------------------------|-----------------------------|
| (1) Здесь. | 'Here.' |
| (2) Здесь остановка. | 'The stop is here.' |
| (3) Это пятый автобус. | 'It's the number five bus.' |
| (4) Вот университет. | 'There is a university.' |

2.2 Prosodic Pattern II

This pattern (Type II) is used mainly in questions containing an interrogative word. It is also used when addressing, demanding, ordering, commanding, wishing, exclaiming and shouting. The center is usually the interrogative word. The stress becomes stronger on the center of the contour. The tone drops in the postcentral part. The phrases recorded for this type are:

- | | |
|----------|--------|
| (1) Кто? | 'Who?' |
|----------|--------|

- (2) - (4) Кто там стоит? 'Who is standing there?'

2.3 Prosodic Pattern III

This pattern (Type III) is used in questions without an interrogative word. It is also used in telling stories, simple questions, wills, story-telling phrase borders, complex sentences before a subordinate sentence to indicate incompleteness, emphatic sentences, disagreement, requests, exclamation, etc. The syntactic structure of this type coincides with that of declarative sentences. English statements and questions of this type may have a different syntactic structure: e.g. This is a student. Is this a student? The center of this type is the stressed syllable of the word which contains the question. The precentral part is pronounced with a mid tone. Then the tone rises sharply on the center of this contour. In the postcentral part the tone drops lower than the mid tone. The tone begins to fall within the center of the contour and continues falling on the postcentral part. The phrases recorded for this type have the same syntactic structures as in Type I:

- | | |
|------------------------|------------------------------------|
| (1) Здесь? | 'Here?' |
| (2) Здесь остановка? | 'Is the stop here?' |
| (3) Это пятый автобус? | 'Is it the number five bus?' |
| (4) Она поёт? | 'Does she sing? / Is she dancing?' |

2.4 Prosodic Pattern IV

This pattern (Type IV) is used in incomplete interrogative sentences, mainly with the conjunction 'а', which is the equivalent of contrastive 'and' in English. It is also used in questions connected with the previous sentence, indicating reluctance, official or formal statements, surprise and unpleasantness. The tone falls on the center of the contour and rises at the postcentral part. If the last syllable is the one accented, the tone begins to rise within the center. The phrases recorded for this type are:

- | | |
|----------------------|----------------------------|
| (1) Ваш? | 'Yours?' |
| (2) Ваш билет? | 'Your ticket?' |
| (3) А пятый автобус? | 'And the number five bus?' |
| (4) А универ ситет? | 'And a university?' |

2.5 Prosodic Pattern V

This pattern (Type V) is used mainly in exclamatory sentences. It is also used in stories, to express a high level of quality, being in a hurry or emotion, to indicate a wish, pity or preference. The phrases recorded for this type are:

- | | |
|--------------------------|------------------------------|
| (1) Как она танцует! | 'How (well) she is dancing!' |
| (2) Замечательный голос! | 'Wonderful voice!' |
| (3) Настоящая весна! | 'Really spring!' |

2.6 Prosodic Pattern VI

This pattern (Type VI) is used to show incompleteness of the information on important subjects on TV, the radio and in newspapers, poetry, church sermons, or important situations. Compared to Type III and V, it is used more often in every day life. With no pronoun and as a rhetorical

question, this is the only pattern used. It is also used when attracting attention from the person you want to talk to, like street sales people calling to passersby, or when repeating the same question twice. Used with an interrogative word such as who, what, where, the center will be on the last or on one of the last words. The phrases recorded for this type are:

- | | |
|------------------------|---------------------------|
| (1) Сок! | 'Juice!' |
| (2) Сок вкусный! | 'The juice is tasty!' |
| (3) Какой сок вкусный! | 'How tasty the juice is!' |
| (4) Какой вкусный сок! | 'What tasty juice!' |

2.7 Prosodic Pattern VII

This pattern (Type VII) is used in rhetorical questions with pronouns, to indicate impossibility or negative connotation. Used without pronouns, it indicates a forceful expression, negation or an antonym. The phrases recorded for this type are:

- | | |
|----------------------|--------------------|
| (1) Да. | 'Yes.' |
| (2) Грубый ты! | 'You are rude!' |
| (3) Когда это будет? | 'When will it be?' |
| (4) Хорошо! | 'Good!' |

3.0 Procedures

The speaker employed was a native speaker of Russian in her forties, who had no speech or hearing disorders. It is noted that she was a speaker of the St. Petersburg dialect, one of the two prevailing standard dialects in the Russian language. The speaker was not informed of the aim of the recording and was instructed to read the materials at a normal speaking rate, and as naturally as possible. The recording was conducted in a quiet room, using a Sony NT-1 Digital Micro Recorder and its stereo microphone. Care was taken to keep the distance between the microphone and the speaker's mouth constant, at approximately 25 cm. The recorded utterances were A/D converted with a sampling frequency of 10 kHz, analyzed using MacSpeechLabII (GW Instruments) and Onsei-Rokubunken Ver.4.01a (Datel). Waveform, pitch contour, formant (narrow band) and energy plot were extracted from the raw data, and the results are in Appendix I.

4.0 Discussion

The maximum and minimum values of frequency were measured⁷ for each phrase in order to plot graphs of the Pitch Range (Graph I), which shows that Type III and VII are produced in the widest pitch range of the seven types. The averaged values of the centers of Type I, II and III were also obtained⁸ in frequency (Graph II) and intensity (Graph III). It was found that for all the three types frequency increased within the center while intensity decreased. In declarative sentences (Type I), the center has increased frequency and little transition in intensity. In questions with interrogative words (Type II), the center shows little transition in pitch but great intensity transition. Type III, questions without interrogative words, is among the most intriguing in the behavior of these two prosodic features. In this type, which has the same syntactic structure as Type I, the frequency of the center increases, while the intensity decreases. In English, pitch and intensity are produced in proportion for a syllable that takes the main stress, along with increased duration, but

in Russian this reversed transition between these two features is characteristic of the natural Russian prosodic patterns. Graphs I, II and III are in Appendix II.

5.0 Concluding Remarks

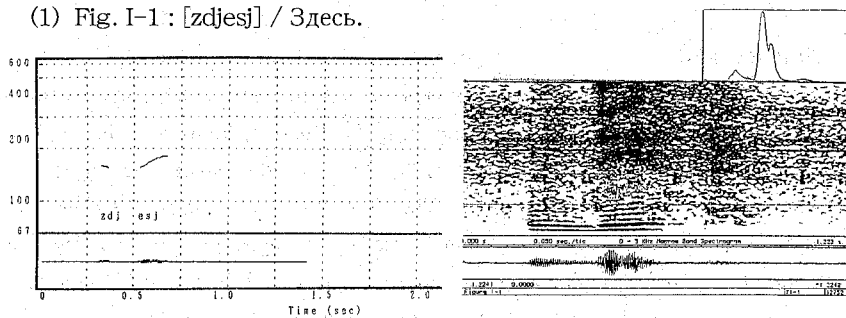
Yes/no interrogatives may be grammatically marked by the use of a particle as in Japanese or by the use of a special word order as in English. In Russian, however, the way of formally differentiating yes/no questions from statements is by prosody, since the syntax is basically unchanged from the form of the declarative. The intonation of yes/no questions is, with few exceptions, reported as having either a terminal rise or a higher pitch than the corresponding statement patterns. In a study of thirty-six non-tone languages, Bolinger (1978) reported all except four as having a rise or a higher pitch. Even in tone languages a terminal rise is usual in yes/no questions. Although a few languages are reported as not having a fall at the end of a sentence but a fall at the end of a discourse, and Chitimacha is reported to use a rising intonation for statement and a falling one for interrogation⁹, it is a linguistic universal with very few exceptions that unmarked declaratives have a final falling pitch.

Russian employs different ways of distributing the speech energy over words and sentences, compared with the English language. Unlike English, whose stressed syllables are marked more by greater pitch and duration, the stress energy in Russian has greater intensity and pitch and is concentrated in each sentence on one syllable of the word which conveys the most important new information, and then falls off rapidly after the stressed syllable. It is crucial to natural Russian pronunciation to make this rise and fall of intensity abrupt enough within the center syllable and to have the transition of intensity and pitch in reverse directions. It is left for further research to increase the number of subjects, and to vary the rate of the change in pitch and intensity, to clarify the prosodic behavior which results in the utterance being perceived as natural and unambiguous to native speakers of the Russian language.

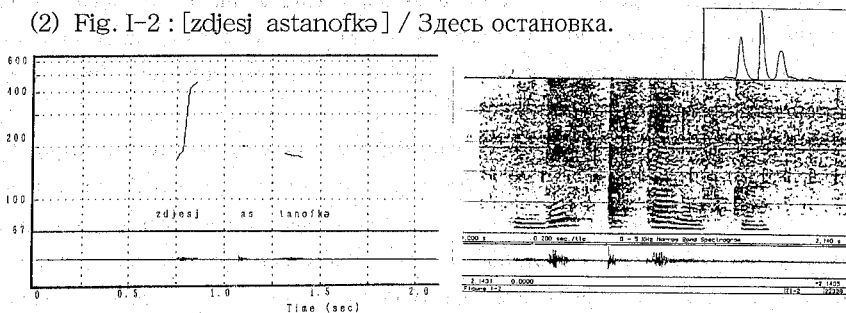
Appendix I

Type I

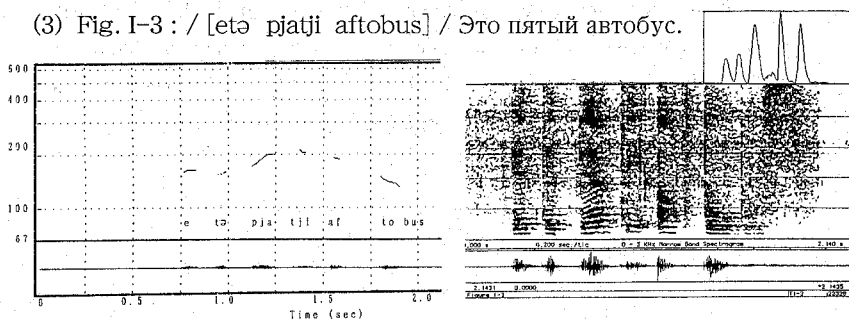
(1) Fig. I-1 : [zdjesj] / Здесь.



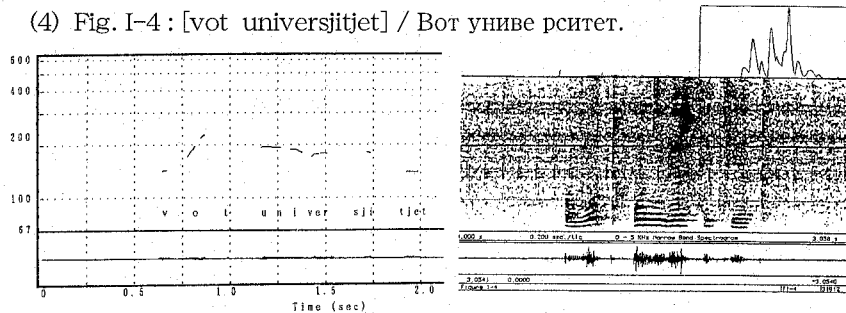
(2) Fig. I-2 : [zdjesj astanofkə] / Здесь остановка.



(3) Fig. I-3 : / [etə pjatʲi aftobus] / Это пятый автобус.

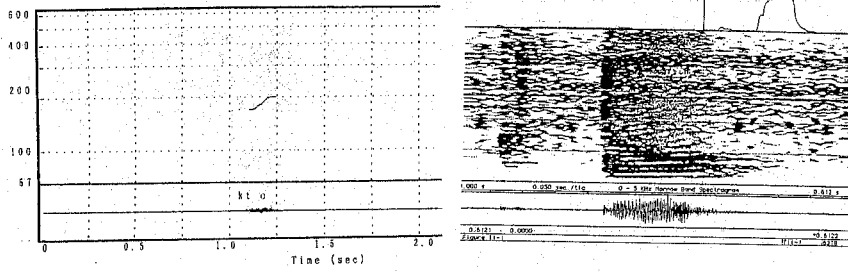


(4) Fig. I-4 : [vot universitjet] / Вот университет.

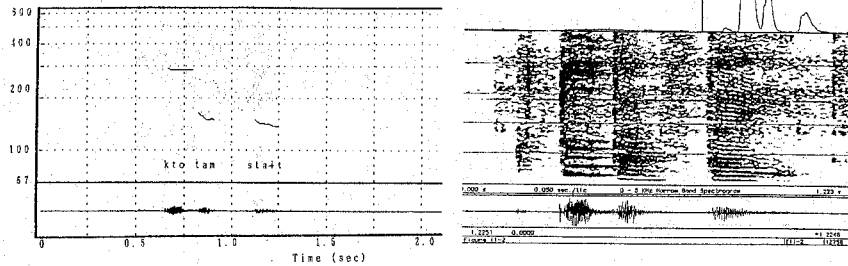


Type II

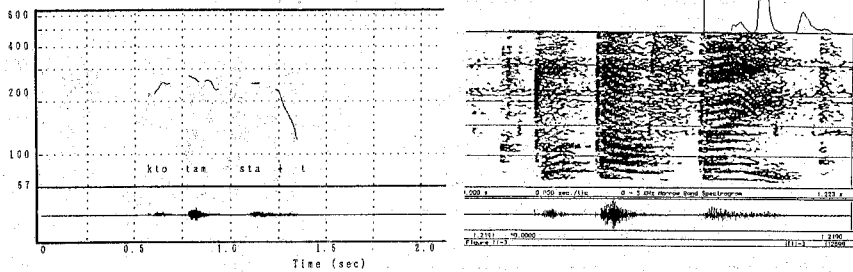
(1) Fig. II-1 : / [kto] / Кто?



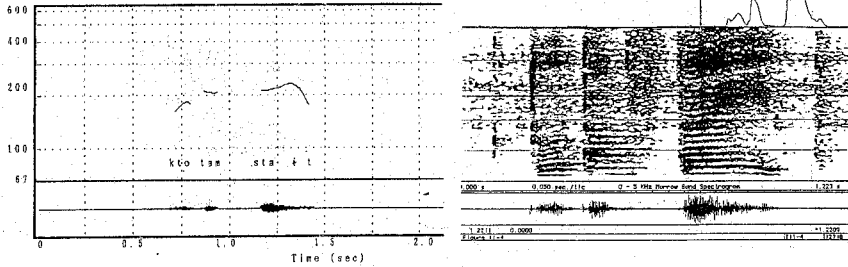
(2) Fig. II-2 : [kto tam sta+t] / Кто там стоит?



(3) Fig. II-3 : [kto tam sta+t] / Кто там стоит?

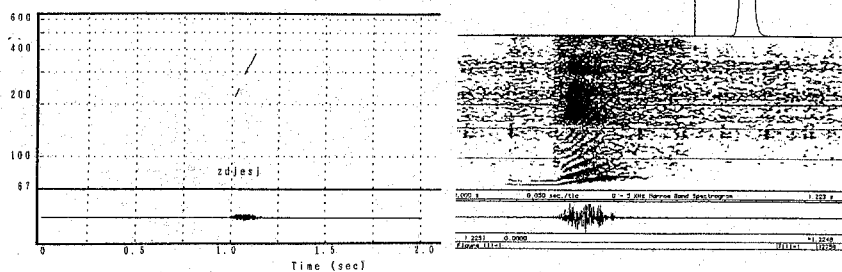


(4) Fig. II-4 : [kto tam sta+t] / Кто там стоит?

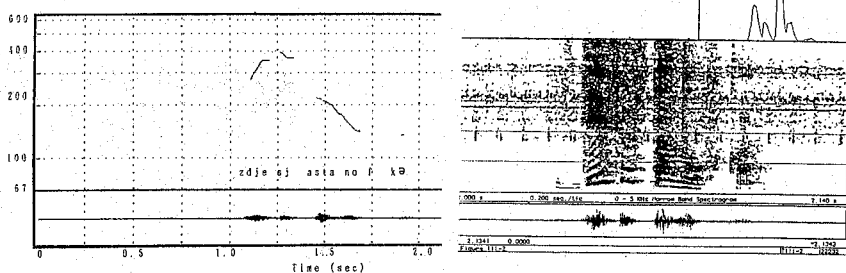


Type III

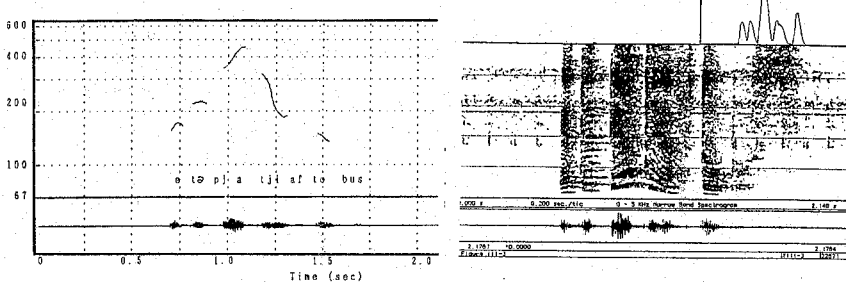
(1) Fig. III-1 : [zdjesj] / Здесь?



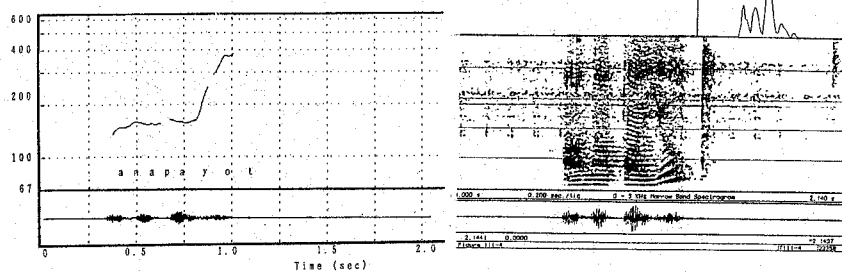
(2) Fig. III-2 : [zdjesj astanofkə] / Здесь остановка?



(3) Fig. III-3 : [etə pjatji aftobus] / Это пятый автобус?

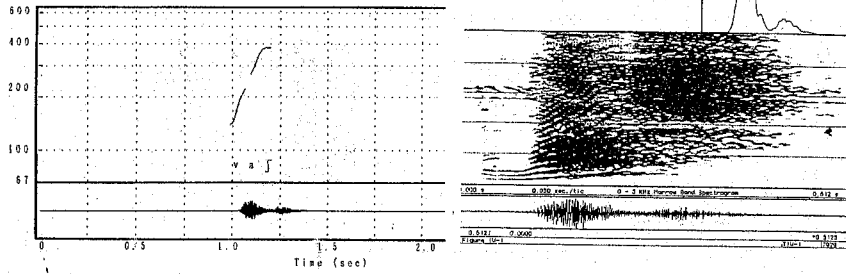


(4) Fig. III-4 : [ana rayot] / Она поёт?

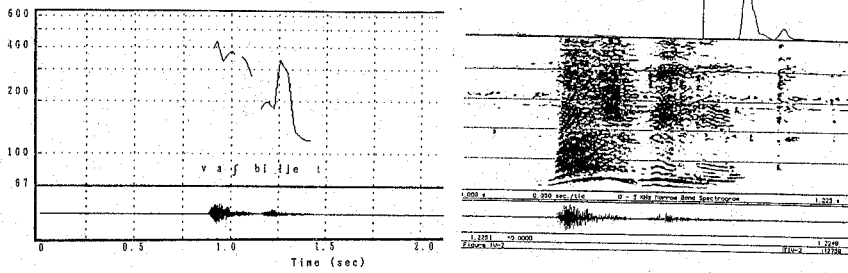


Type IV

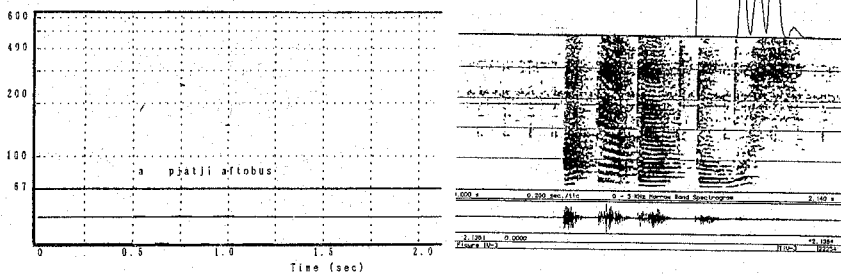
(1) Fig. IV-1 : [vaʃ] / Вам?



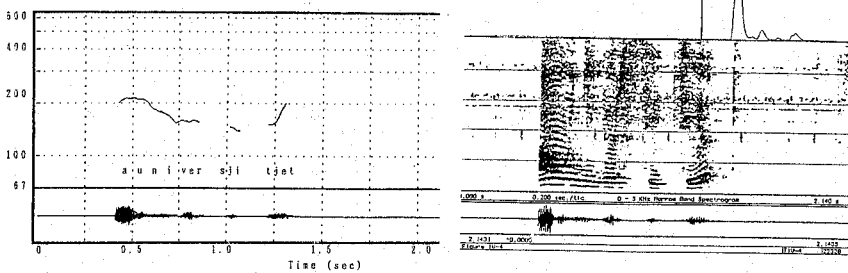
(2) Fig. IV-2 : [vaʃ biljet] / Ваш билет?



(3) Fig. IV-3 : [a pjatʃi aftobus] / А пятый автобус?

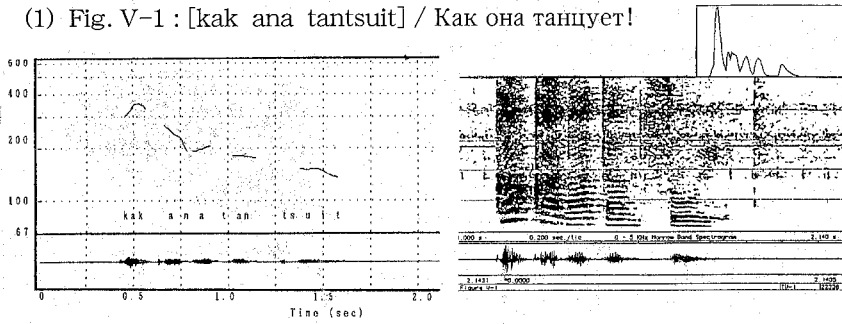


(4) Fig. IV-4 : [a universitjet] / А университет?

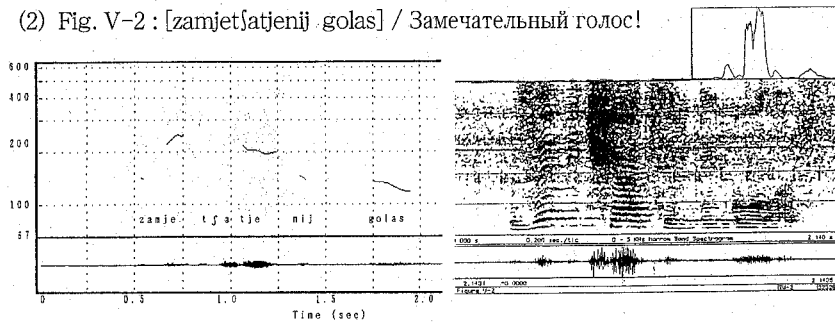


Type V

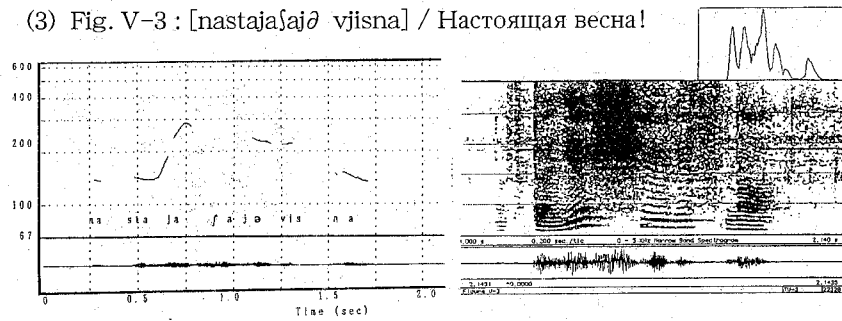
(1) Fig. V-1 : [kak ana tantsuit] / Как она танцует!



(2) Fig. V-2 : [zamjet[at]jenij golas] / Замечательный голос!

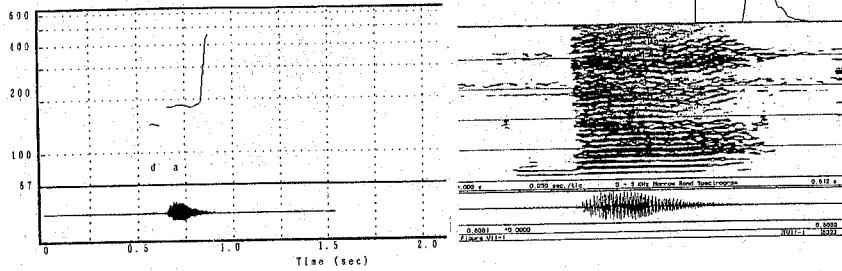


(3) Fig. V-3 : [nastaja[aj]d vjisna] / Настоящая весна!

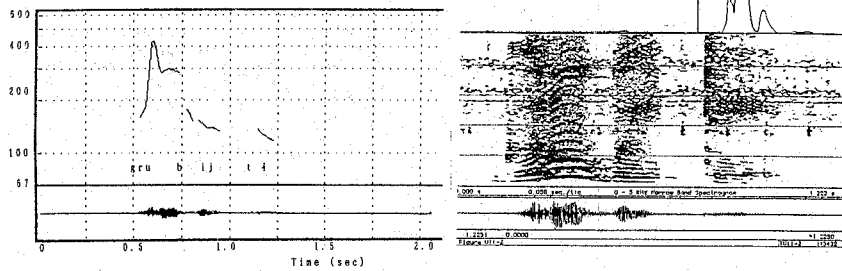


Type VII

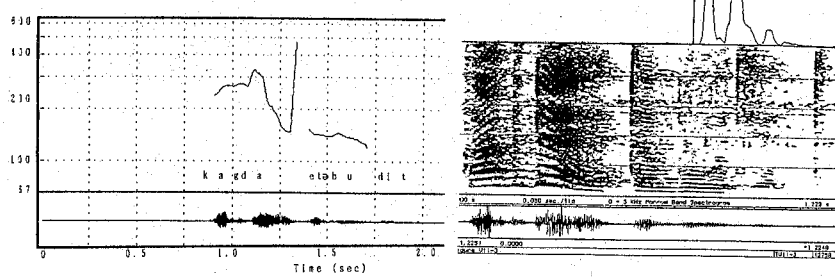
(1) Fig. VII-1 : [da] / Да.



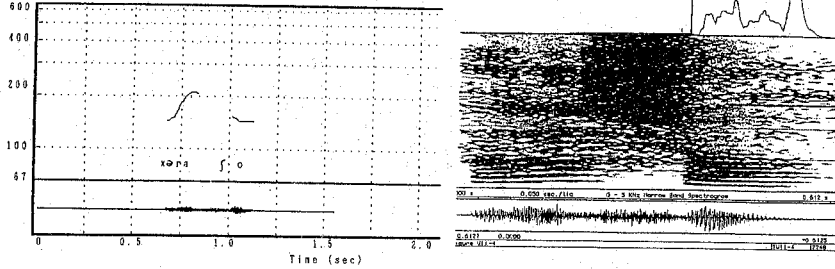
(2) Fig. VII 2 : [grubij tɨ] / Грубый ты!



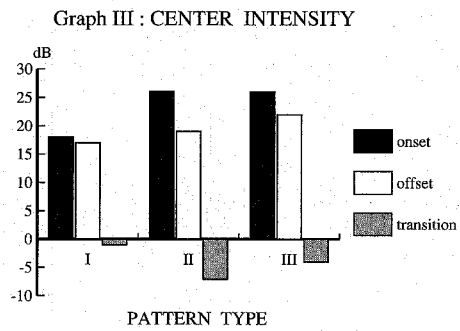
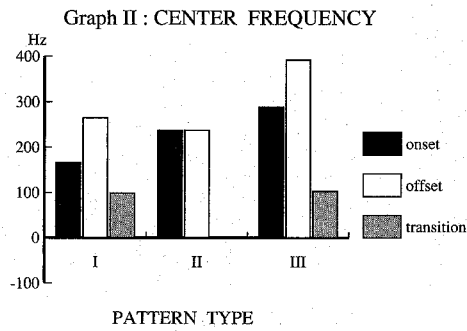
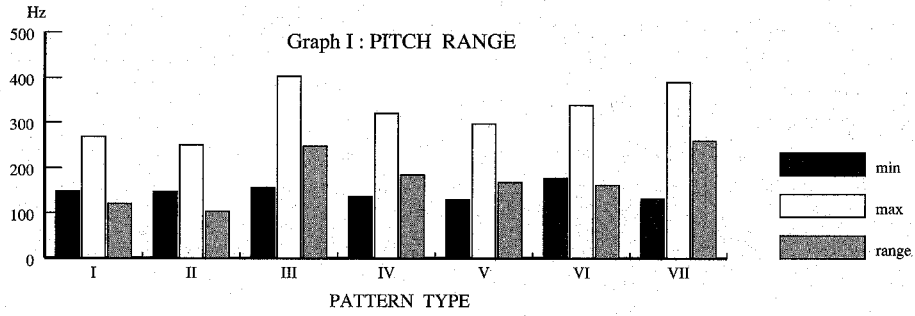
(3) Fig. VII-3 : [kagda etə budit] / Когда это будет?



(4) Fig. VII-4 : [xəɾəʃo] / Хорошо!



Appendix II



Notes

1. Handel (1989) defines it as 'any sound that is perceived as "prominent" or "marked"'.
2. Handel (1989) defines it as 'a note of chord that is emphasized or perceived as stronger'.
3. The main accent generally falls on the first syllable of a word in Finnish; on the last in Turkish; on the penultimate in Polish.
4. Shirota (1979) pp.112-113
5. The Russian neutral noun meaning 'window', for example, has its 'accent' on the second syllable for the singular nominative 'окно́', on the first for the plural nominative 'окна́' and on the second for the singular genitive 'окна́'. In a case of a verb meaning 'love' in present tense 'лю́бить', it falls on the second for the singular, first person 'лю́блю', and on the first for the rest, 'лю́бишь', 'лю́бит', 'лю́бим', 'лю́бите' and 'лю́бят'.
6. Shirota (1979) pp. 115-116
7.

Type	I	II	III	IV	V	VI	VII
min/Hz	148	147	156	136	129	177	131
max/Hz	268	250	403	320	296	338	390
range	120	103	247	184	167	161	259
8.

Intensity	I	II	III	Pitch	I	II	III
onset/dB	18	26.1	26	onset/Hz	166	237	289
offset/dB	17	19	22	offset/Hz	265	237	392
transition/dB	-1	-7.1	-4	transition/Hz	99	-0.5	103
9. Bolinger (1978) p.157-158

References

- Bolinger, D. L., (1978) 'Intonation Across Languages.' In J. P. Greenberg, et al., *Universals of human language* Vol. 2: *Phonology*, Stanford Univ. Press
- Cruttenden, Alan., 1986 *Intonation* Cambridge University Press
- Handel, Stephen., 1989 *Listening: an introduction to the perception of auditory events* A Bradford Book, The MIT Press
- Shirota, Shun., 1979 *Roshia-go no Onsei --- Onseigaku to Oninron ---*, Kazama Shobo
- Stepanova, E. M., Z. N. Ievleva, L. B. Trushina, and R. L. Baker., 1994 *Russian for Everybody*, 7th Edition, Rusky Yazyk Publishers Moscow
- Брызгунова, Е. А., 1982 "Интонация" *Русская грамматика*, том. I, pp. 96-122 Москва Наука
- Брызгунова, Е. А., 1983 *Эвуки и интонация русской, речц* 5-е и издание, Москва Мату
- севич, М. И., 1976 *Современный русский язык: Фонетика*, Москва Просвещение

Manuscript received: September 30, 1996

Published: December 25, 1996