

Abstract

The aim of this dissertation is to investigate experimentally Russian intonation and to propose a new phonological framework of Russian intonation.

In Chapter 1, "Introduction", we discuss what "intonational phonology" means. First, we give a definition of a term "phonological description" of intonation. Second, we show a sort of intonational research which can not be regarded as phonological. After these discussions, we briefly sketch the previous studies on Russian intonation, especially the description of E.A. Bryzgunova, which is the most influential in Russian linguistics, and the description of C. Odé. We show that these studies can not be taken as phonological and emphasize the importance of the development of a new phonological framework of Russian intonation.

In Chapter 2, "The autosegmental-metrical theory and intonational phonology", we first sketch the main assumptions of the "autosegmental-metrical theory" (AM theory), a standard theory in intonational phonology, by briefly reviewing the framework of English intonation proposed by J. Pierrehumbert. Second, we propose a preliminary framework for the description of basic intonation patterns in Russian. (This preliminary framework will be largely revised in Chapter 6).

The main assumptions in the AM theory would be summarized as follows. Intonational contour is regarded as a string of two types of level tones, Highs and Lows, which occur at a specific point in the utterance. These level tones indicate relative height and are not offered absolute values, which are given by the mapping rules. In this theory, movements or configurations such as rises and falls are regarded as merely a transition from one tone to another. The rise, for example, is represented as LH. The string of tones are structurally analyzed as 1) the pitch accent, the tone(s) occurring at the stressed syllable, 2) the phrase accent, the tone that occurs just after the last pitch accent and spreads until the end of the phrase, and 3) the boundary tone, the tone occurring at the end of the phrase. Six pitch accents are identified. Some of them are consisted of a single tone (represented as H* and L*) and others are of two tones (represented as H*+L, H+L*, L+H*, L*+H). The notation of star "*" here marks the tone which is associated with the stressed syllable. The tone without the star is not associated with the syllable but leads or trails the associated tone by a given time interval. Two phrase accents are identified and represented as H, L, respectively. The types of boundary tone are also two, and they are represented as H%, L%, respectively.

In the preliminary framework of Russian intonation proposed in this chapter, four types of pitch accents (H^*+L , $H+L^*$, $L+H^*$, L^*+H) are identified. They are all bi-tonal. Two phrase tones (in this dissertation “phrase accent” will be referred to as such) H and L are also identified, but the boundary tones are not introduced to this framework. (The mapping rules will be proposed in Chapter 6).

In Chapter 3, “The invariant features of the non-final rising pitch accent”, we explore invariant phonetic features that characterize intonational patterns. We investigate the rising pitch accent which constitutes a “neutral pattern”, the intonation pattern which occurs in the neutral reading of a short declarative sentence.

Exploration of the invariant features of intonation is relevant to the theoretical issue: namely, “the levels versus configurations debate”, a longstanding discussion that opposes those that analyze intonational contour as consisting of primitive level tones (“level view”) to those that see it as consisting of primitive pitch movements or configurations (“configuration view”). The view which underlies the AM description of intonation is, as already mentioned, the level view. If the temporal alignment of the F0 valley and peak, which can be regarded as phonetic realizations of tones (LH), constituting the rising pitch accent, is invariant, then the level view would be supported. If, on the other hand, temporal duration and/or slope of the rise are invariant, then the configuration view would be supported.

In the experiments, we measure the alignment, the rise duration and the slope of the F0 rise corresponding with the rising pitch accent under changes in segmental duration brought about by modifications of speech rate and under changes in pitch range brought about by modifications of loudness. The results revealed that in general the F0 valley and peak are consistently aligned with the onset and offset of the stressed syllable, respectively. This confirms the phenomenon of “segmental anchoring” in Russian, a phenomenon that the F0 valley and peak are consistently anchored with a specific segmental point, and that has been observed in other languages. The experimental results also showed that the rise duration is variable and it is correlated with the segmental duration. Slope of the rise, on the other hand, could not be regarded as the invariant feature, but the results implied that variations of the slope are limited within a given range. These results are all compatible with both the level view and the configuration view, and they thus do not show superiority of one view over another.

In the Chapter 4, “Intonation patterns in wh question and yes-no question”, we investigate phonetic differences between two type of intonation pattern. The intonation patterns which we

examine are the one which occurs in wh question (WHQ) and the one which occurs in yes-no question (YNQ).

In the previous research on Russian intonation, it has been reported that in WHQ and YNQ two different types of intonation pattern are observed. The phonetic differences between two types of pattern seem to have been taken as too trivial to investigate. Visual inspection of the F0 contours of the two intonation patterns, however, reveals that both patterns have a rise-fall configuration and are quite similar. Little examination of differences between the two types of patterns, which show striking similarity, have been done in the previous studies.

In the experiments, we measure F0 contours of two types of patterns using short and long test sentences. Results revealed that the phonetic differences between two patterns lie in 1) the alignment of the F0 peak at the end of the rise, 2) the F0 value of the peak and 3) presence or absence of the F0 valley at the beginning of the rise around the onset of the stressed syllable. We could not find differences in the alignment and F0 value of the valley at the end of the fall, and in the F0 value at the end of the utterance. Most of these results should be regarded as new findings that have not been reported in the previous research.

In Chapter 5, “Two types of falling pattern”, we deal with the issues of the establishment of intonational categories. We investigate the falling pitch accent which constitutes the “neutral pattern”. This pitch accent was not investigated in Chapter 3, in which the same intonation pattern was examined. In the present chapter, we refer to the pattern as the “falling pattern” in order to emphasize that the subject of investigation is not the rising but the falling pitch accents.

The detailed examination of the F0 contour that can be seen as a realization of the falling pattern tells us that the alignment of F0 fall can show significant variations. The F0 contours with the earlier alignment and with the later alignment should be interrelated either as gradient variations of a single intonation pattern or as two categorically distinct falling patterns. The latter interpretation entails that in Russian the F0 alignment function as a categorical distinction. In some of the previous studies on Russian intonation, two types of falling pattern are identified, but there are few agreements about the phonetic features that differentiate two patterns. The view, that there are two falling patterns that differ in F0 alignment in Russian, can be found in the study of C. Odé.

In the experiment, we adopt the “imitation task” method, which can be summarized as follows: 1) a set of stimuli is constructed in which the location of the F0 peak varied in small steps, 2) subjects hear the stimuli in randomized order and imitate what they hear, 3) the

location of F0 peak relative to the onset of the stressed vowel is measured in each response and compared with the one in stimuli. If peak locations in responses to stimuli cluster into two discrete groups, then it would support the view that F0 alignment function as a categorical distinction and that in Russian there are two types of falling pattern which differ in the F0 alignment. The results in general showed that peak locations in responses cluster into two discrete groups and supported the view that there are two types of falling pitch accent in Russian. The results also confirmed the description of C. Odé using different methodology.

In Chapter 6, “A new phonological framework of Russian intonation”, we attempt to develop a new phonological framework of Russian intonation on the basis of the preceding discussions, especially the results of the experiments in Chapter 3, 4, 5. Basically, the new framework will be an extension of the preliminary framework proposed in Chapter 2, the framework developed within the standard AM theory. However, some of the results of the experiments conducted in the present study seem impossible to describe within the standard theory. In this chapter, we also extend the standard theory itself, in order to describe these results. The discussion in this chapter, therefore, should not merely taken as the description of Russian intonation within the AM theory, but also as the contribution to development of general theory of intonation.

When we develop a new framework, the special attention will be paid on the treatment of the “vertical dimension” and the “time dimension”. The vertical dimension means phonologically the dimension of the levels of tones and phonetically the dimension of the F0 value. The time dimension indicates phonologically the dimension of the association of the tones with the segmental units and phonetically the dimension of the alignment of the tonal targets (F0 valley and peak) with segmental string. If these dimensions are treated in the same way as in the standard AM theory, then it is impossible to appropriately describe some of the results of the experiment. For the adequate description the standard theory is revised. In addition, we propose a set of mapping rules which we have not proposed in Chapter 2. Finally, adopting a new AM theory the phonological representations of Russian intonation patterns, including the ones we experimentally investigated.

In Chapter 7, “Conclusion”, we summarize all the discussions and point out those issues of Russian intonation in general, which we could not deal with in this dissertation.