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# Accentuation and deaccentuation in Russian – a functional account

Anastasia Mukhanova Karlsson

## *Abstract*

The present article is a functional analysis of intonation in Russian declarative utterances. Pragmatically relevant tonal patterns and their functions are identified and described. Utterances are analysed in terms of theme and rheme. Theme is signalled by a tonal rise and rheme by a falling tonal gesture. Beside thematic and rhematic tonal gestures, other rising accents in the utterance are identified. My claim is that they are important in maintaining balance in prominence in neutral utterances and that they are obligatory parts of a narrative speech style. They are named rhythmical accents. A distinction between three pitch intervals is useful in generating pitch accents with different functions. Deaccentuation is a marked feature of non-neutral utterances with focus. Three types of hat patterns with connective function are recognised.

## 1 Introduction

### *1.1 Descriptions of Russian intonation*

Russian intonation is a rather complicated matter. Thus, the same lexical structure can get different modal and pragmatic meanings depending on which tonal pattern it is realised with. For instance, Bryzgunova's (1969) description of Russian intonation, includes seven tonal patterns ('intonational constructions' in Bryzgunova's terms), identified on phonological grounds. Three of the patterns are described as pragmatically non-neutral since they express a high degree of emotional state or an attitude. For instance, the sentence *Какая сегодня погода kakája sevódnja pogóda*<sup>1</sup>, literally 'which today weather', can be pronounced as a neutral question meaning 'What's the weather like today?' by the use of a sharply falling tone (Bryzgunova's Pattern 2) on the question word *kakája*, or as a delighted exclamation meaning 'What lovely weather we're having today!' by the use of a 'hat' pattern (Bryzgunova's Pattern 5) with a rise on the first stressed syllable and a fall on the last stressed syllable of the utterance.

Spoken Russian has a relatively free word order compared to written Russian. In written Russian (of non-fictional style) the theme precedes the

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<sup>1</sup>For Russian examples, the orthographic form and a phonological transcription are given.

rheme and words within syntactic groups follow strict word order rules, for example that the adjective precedes the noun in a noun phrase. In spoken Russian, word order is often inverted and intonation gets the main role for signalling the division into theme and rheme (see section 1.2) as well as for signalling the focus of the utterance (while the focused constituent is signalled by lexical and syntactic means in written Russian).

Other well-known descriptions of Russian intonation were proposed by Nikolaeva 1982 and Svetozarova 1982. Like Bryzgunova, they concentrate on the pragmatic and semantic functions of intonation. Kodzasov 1996a carries out an acoustic investigation of  $f_0$  contours of Russian speech and presents a list of their tonal characteristics. Odé 1989 performs a perceptual analysis of Russian intonation within frames of the IPO model and emphasises that her study “is not concerned with the functional side of the problem” (Odé 1989:38). A description of Russian intonation which combines an acoustic study with a functional analysis is then needed.

### 1.2 Neutral and non-neutral utterances

A distinction is made between neutral and non-neutral utterances, and one important part of the present investigation is to find out if these two speech types operate with the same inventory of tonal features. Neutral utterances do not have any special constituent or part of the utterance that is focused. Theme is signalled by a thematic accent and rheme by a rhematic accent (Section 3.1). There are two kinds of non-neutral utterances in the investigation: utterances with focus (special prominence on a particular word or a part of an utterance) and utterances with additional attitudinal information.

In a written text, lexical and syntactic means are used to convey focus and attitudes. Focus is signalled by particles (и *i* ‘even, too’, даже *dáže* ‘even’, -то *to* ‘considering’, etc.) or by inverted constituent order. There are two kinds of inversion in Russian. The first is inversion of theme and rheme, placing the rheme before the theme. This is signalled by contextual means. This kind of inversion always triggers focus on the rheme. For example, the final sentence in ↑Петя [не сможет приехать]. ↑Он ↓[заболел]. *Pjé'tja nje smózet pr'ijéxatj. On zabolél.* ‘Petja cannot come. He is ill.’<sup>2</sup> can be changed so that the rheme precedes the theme and gets focus: ↓↓[Заболел] он. *Zabolél on.* ‘He is ill.’ (literary ‘ill he’).

<sup>2</sup>Rheme is marked by square brackets, falling and rising accents by ↓ and ↑ (focal accents by ↓↓ and ↑↑) placed before the accentuated word and the hat pattern by ^.

The second type of inversion is reversal of words within word combinations. Under inversion, the accented word preserves its accentual gesture (see Section 3.1). This kind of inversion does not trigger pragmatic prominence. Instead it often serves stylistic purposes. For instance, placing the object before the verb (instead of the direct word order verb + object) is typical for casual speech.

Focal particles carry two kinds of information. They signal focus on a particular constituent, and at the same time add pragmatic information to it (Borisova 1999). For instance, the particle –то to conveys unexpectedness and surprise:

1. Иван-то женился!  
 Iván-to ženílsja  
 Ivan Nom Foc marry PAST PERF  
 ‘Ivan got married! (Who could imagine that this would happen?)’

The neutral version of (1) is Иван женился *Iván ženílsja*, without particle, meaning ‘Ivan got married’.

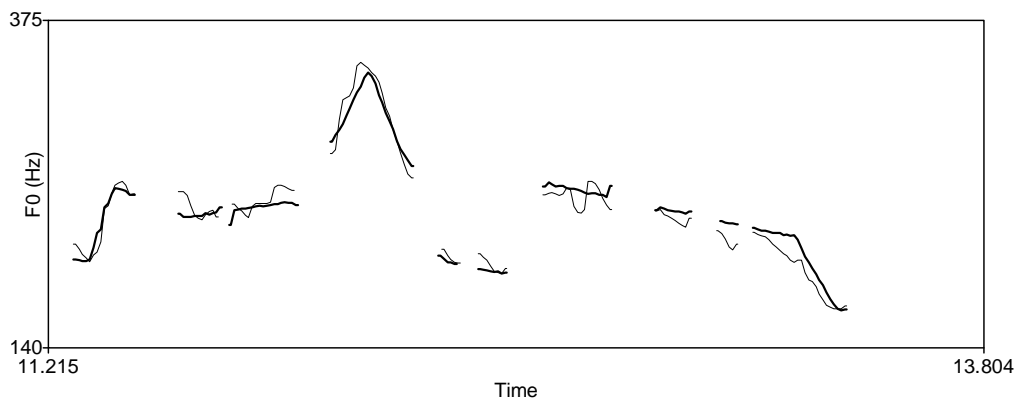
## 2 Method

The description proposed here is a summary and in some sense a reanalysis of the results of my B.A. paper and master’s thesis (Karlsson 1998, 1999). Separation of pragmatically relevant tonal properties from micro-prosodic influences and a functional analysis of the identified patterns are the primary aims of this study. The *Praat* program was used for acoustical analyses.

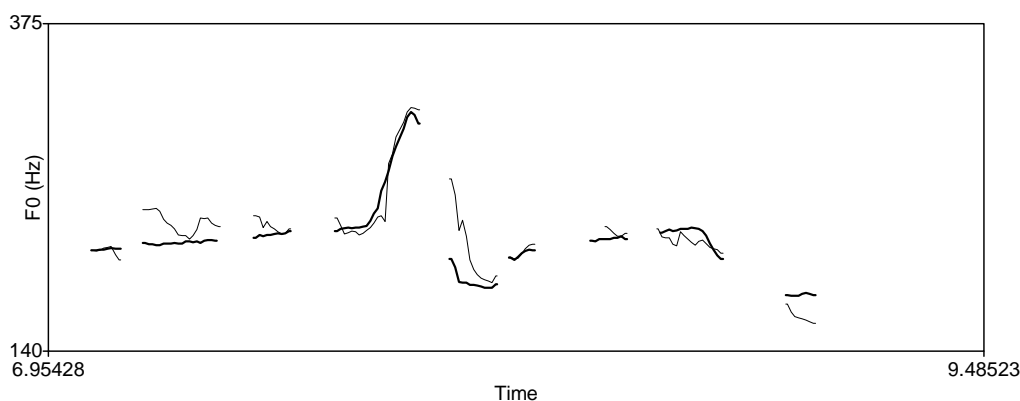
The investigation consists of three main stages. At the first stage, 22 declarative sentences with focus conveyed by lexical or syntactic means were chosen from a Russian novel. They have different syntactic structures (simple or complex). Neutral versions without focus of these sentences were constructed by syntactic inversion or by removal of focal particles (see the example in (1) for an illustration). Both versions of each sentence (i.e. totally 44 sentences) were read by a female speaker, 30 years old, speaking levelled Moscow dialect. The utterances were modified in *Praat* to get contours relatively free from micro-prosodic influence. I judged the sentences perceptually myself (I am a speaker of the Moscow dialect), and the tonal features needed to construct neutral utterances and non-neutral utterances with focus were identified and measured.

Illustrations of the modification can be seen in Figures 1 and 2. The original  $f_0$  contours are shown with thin solid lines, and the  $f_0$  contours

resulting from simplifications (i.e. deletion of most micro-prosodic influence) are shown with fat lines that show relevant tonal changes.



**Figure 1.**  $f_0$  course of the utterance Детская ↑поликлиника – [за ↑↑следующим ↓поворотом]. *djétskaja poliklínika za slédujuščim povorótom*. ‘The children’s clinic is after the next curve’. Female speaker.



**Figure 2.**  $f_0$  course of the utterance За следующим ↑поворотом – [↑↑детская ↓поликлиника]. *za slédujuščim povorótom djétskaja poliklínika*. ‘After the next curve there is a children’s clinic’. Female speaker.

At the second stage the functions of the identified tonal gestures were analysed. This was done by flattening the  $f_0$  contours and by their successive modifications by adding, moving and combining differently the extracted gestures as long as micro-prosody allows this (an illustration is given in Figure 3, bottom panel). A tonal gesture is supposed to have functional relevance when its movement or deletion leads to pragmatic changes. An inventory of tonal features for generating neutral and non-neutral utterances was

established. Their functions, conditions for use and distribution were described.

At the last stage, the veracity of the proposed inventory was proved in a new material that consists of 77 recorded utterances from different sources. The test was performed by the same  $f_0$  modification method as in Stage 2. This is needed in order to verify the proposed tonal inventory by applying it to other speakers' voices.

### 3 Tonal gestures and patterns

#### 3.1 Pitch accents

Pitch accent in Russian is of two kinds, tonal rise and fall. They have the important function of signalling the theme (rise) or rheme (fall) of the utterance. If theme and rheme comprise several words, the pitch accents (here denoted by ' before the accented word) are placed by the rules for accentuation of binary word groups described by Kovtunova 1976:

2.	VP: Aux + 'V	буду búdu be FUT 1PERS SING 'will read'	'читать ʃítátʃ read INF IMPERF
	VP: V + 'N	читать ʃítátʃ read INF IMPERF 'read a book'	'книгу knígu book SING ACC
	NP: Adj + 'N	интересную intʲerʲésnuju interesting SING FEM ACC 'an interesting book'	'книгу knígu book SING ACC

Accentuation is the same whether the word group belongs to the theme or the rheme.

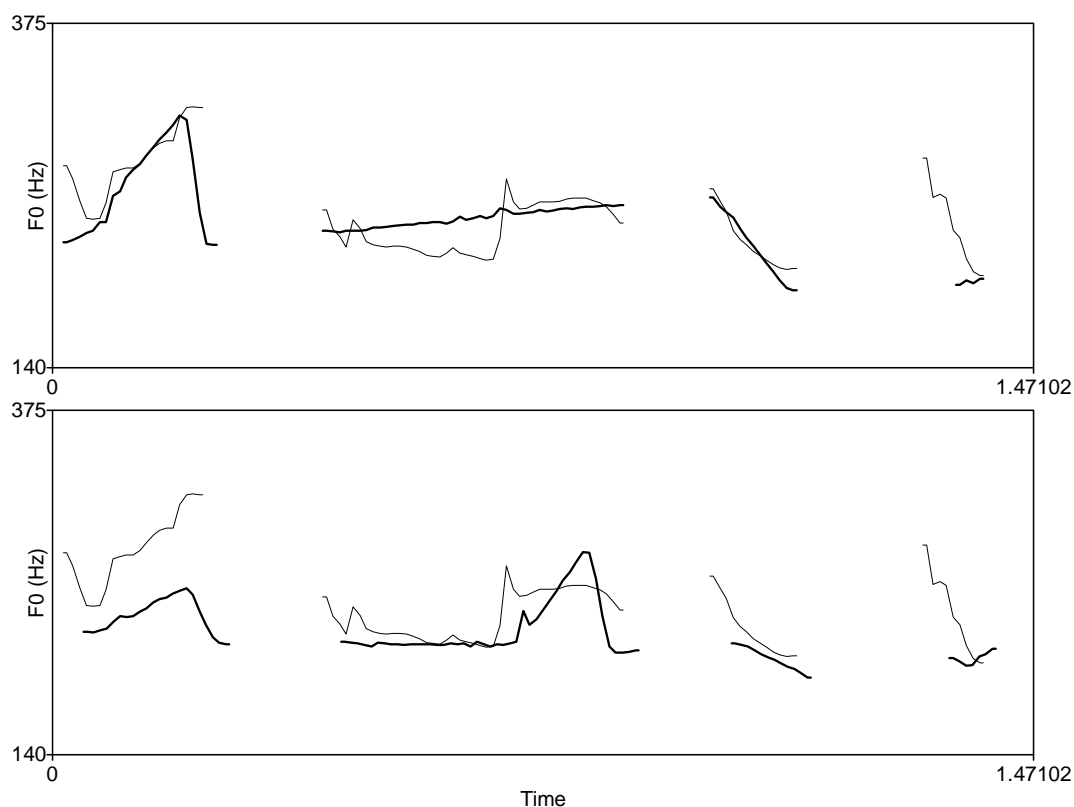
The interesting fact is that the accent remains on the same word when word order is inverted: Я [буду 'читать]. *Ja búdu ʃítátʃ.* (Aux + 'V) 'I will read' comparing to Я ['читать буду]. *Ja ʃítátʃ búdu.* ('V + Aux) 'I will read'. The second construction, with inverted word order and V before Aux is typical and unmarked for casual speech. Thus, the accentuation is motivated by the syntactic role of the words (Kodzasov 1996b), while the place of focal accent is decided by pragmatics. The distinction between accent and focal accent is then relevant.

According to Kodzasov 1996b, “the rheme has no accentual specification which distinguishes it from the theme” (p. 185; my translation). However, the present study shows systematic acoustic differences between theme and rheme. Thus, though the placement of the pitch accents follows syntactic rules independently of theme or rheme, as was shown by Kovtunova 1976 (2), these accents are different, the theme getting rising accent and the rheme getting falling accent. This is also supported by among others Janko 1999. Figure 1 shows the tonal course of the utterance Детская ↑ поликлиника – [за ↑ следующим ↓ поворотом]. *djétskaja poliklínika za slédujuščim povorótom*. ‘The children’s clinic is after the next curve’ with ‘after the next curve’ as rheme (shown with square brackets). Figure 2 shows the tonal course of the utterance За следующим ↑ поворотом – [↑ детская ↓ поликлиника]. *za slédujuščim povorótom djétskaja poliklínika*. ‘After the next curve there is a children’s clinic’, now with ‘children’s clinic’ as rheme. It can be observed that the partition into theme and rheme is signalled by the same tonal gestures in the both cases, a tonal rise on the last word of the theme and tonal fall (preceded by a hat pattern) on the last word of the rheme.

The rising pitch accent on the theme is often ascribed to semantically unfinished prosodic groups. However, manipulation of  $f_0$  shows that its primary role is to signal the theme. Figure 3 illustrates modifications of the utterance Девочка разбила чашку. *djévoščka razbílila tšásku* ‘The girl has broken a cup.’ by preserving the rising  $f_0$  gesture on the first word (top panel) and by placing it on the second word (bottom panel). The original unmodified  $f_0$  is the same for the two versions and can also be seen in both pictures. Moving the rising accent changes the partition into theme and rheme. In the first case (top) the theme is the first accented word ‘girl’ and the utterance informs about what the girl has done. In the second case (bottom) the high rising accent is on the second word ‘broke’. This word now belongs to the theme and the utterance informs about what the girl has broken.

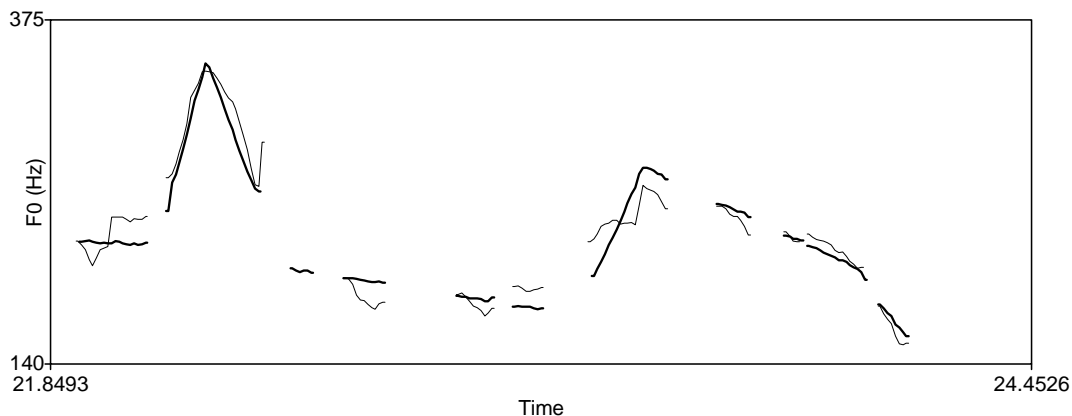
The thematic accents should not be confused with rising boundary tones. Rising boundary tones seem to be realised on the very last syllable of a prosodic phrase, even when this syllable is unstressed. This is, however, beyond the scope of the present study. Our argument for this is the change of word order within the theme: being a continuation rise/boundary tone, the rising pitch accent would preserve the phrase-final position, which is not the case. In the previously illustrated sentence ‘The children’s clinic is after the

next curve' the word order adjective + noun in *детская поликлиника* *dětskaja poliklínika* 'the children's clinic' can be changed to noun + adjective: *поликлиника детская* *poliklínika dětskaja*. Figure 4 illustrates the preservation of the thematic rise on the noun *поликлиника* *poliklínika* despite the reversed word order.



**Figure 3.**  $f_0$  courses of the sentence *Девочка разбила чашку*. *děvoťka razb'ila ŧáťsku* 'The girl has broken a cup.' with different divisions into theme and rheme. Female speaker.





**Figure 4.**  $f_0$  course of the utterance ↑Поликлиника детская – [↑ за следующим ↓ поворотом]. *poliklínika díetskaja za slédujuščim povorótom*. ‘The children’s clinic is after the next curve’. Female speaker.

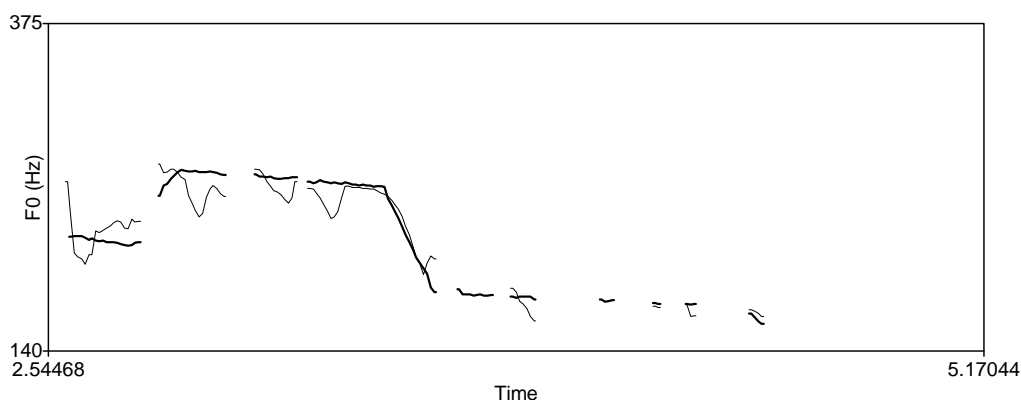
Theme and rheme accents are realised on lexically stressed syllables. The rising theme accent consists of two gestures, a rise on the stressed syllable and a fall on the immediately following syllable. If it is not placed on the utterance-initial word it is preceded by rhythmic accent/s (Section 3.6). The rhematic fall is preceded by an inclining or declining  $f_0$  contour more often than by rhythmic accents (see Figures 1, 2, 3 top and 4).

### 3.2 Focal accent

Focus is pragmatic prominence on a word or a part of an utterance. In written Russian, focus is primarily signalled by inversion of theme and rheme or by focal particles. In spoken Russian, focus can be signalled by tonal means alone. Focus can apply both to rheme and theme and focal accent is of two types. The first is tonal fall which can apply only to the rheme. Our investigation shows that the focal fall is preceded by a hat pattern and the part after the focal accent gets declining  $f_0$  contour. It is interesting that when the focal accent is placed closer to the left edge of the utterance, the utterance-final word gets a falling tonal gesture realised in the low pitch interval. This indicates that declarative utterances must have a right boundary tone. In neutral utterances, the rheme is placed at the right edge and its tonal fall signals utterance boundary as well. When focused, the utterance gets a focal accent instead of the rhematic accent, and when the focal accent is placed at the left edge of the utterance, an extra gesture appears, signalling the right edge. Other parts of the utterance are deaccented, and the thematic accent is not preserved. This is shown in Figure 5, which illustrates the tonal course of the utterance in Figure 2, now with focus on ‘after the next curve’:

[↑↑За следующим ↓↓поворотом] детская поликлиника. *za sl'édujuščim povorótom d'ětskaja poliklínika*. 'It is after the next curve that the children's clinic is.'

The second type of focal accent is tonal rise which can be applied only within the theme. For instance, moving the thematic pitch accent from its default place generates contrastive focus. Thus, placing the rising pitch accent on the adjective *детская d'ětskaja* 'for children' in the neutral version of the 'clinic' example makes this word focussed with additional contrastive meaning, i.e. it implies that the *children's* clinic is after the next curve, but the *clinic for adults* (or some other category) is farther away. This is called 'contrastive theme' by Janko 1999. Our study shows that replacing this rising accent with falling pitch accent gives the word rhematic status with the additional meaning of refutation ('no, it is not the clinic for children but for adults').



**Figure 5.**  $f_0$  course of the utterance [↑↑За следующим ↓↓поворотом] детская поликлиника. *za sl'édujuščim povorótom d'ětskaja poliklínika*. 'It is after the next curve that the children's clinic is.' Female speaker.

Thus, placement or moving of the pitch accent (both thematic and rhematic) to a non-default place within an utterance conveys focus with some additional pragmatic meaning. Following Mukhanov 1999 we can say that the role of intonation in this case is twofold, i.e. it not only signals focus but also adds some implicit pragmatic meaning. This use of intonational means occurs frequently in casual speech. It is also interesting that the same tonal gesture signals different pragmatic functions depending on its alignment with the syntactic structure.

It can be concluded, that the distinction between theme and rheme is still preserved under focusing. Thus, the rising focal accent occurs only within the theme, while the falling focal accent applies only to the rheme with simultaneous deaccentuation of the theme.

### *3.3 General tonal courses*

The present description is inspired by the superposition model (Thorsen 1983) and considers local tonal gestures in relation to the tonal course of the whole utterance. Manipulation of  $f_0$  courses shows that in order to generate declarative utterances we have to operate with declination and inclination. Low and high  $f_0$  points at accented syllables were measured. Their courses constitute the baseline and the topline, respectively. Declination of the baseline occurs in all utterances.

Two domains for inclination need to be recognised: the whole utterance (general inclination) and a part of the utterance (partial declination). General inclination applies to the baseline. It was only found in dialogues, but they were not part of this investigation. Partial inclination applies to the topline and is of two kinds, pre-accentual and post-accentual, having different functions. The pre-accentual inclination is found for hat patterns (see Section 3.5) and can precede the fall of both rhematic and focal accents. It ends in the middle interval and is pragmatically distinguished from inclination that ends in the high pitch interval. The tonal fall initiated by inclination into the high interval becomes more prominent and functions as focal accent with the additive meaning ‘Didn’t you know about it?’, ‘Can you imagine?’, ‘No, you are wrong’. An inclining hat pattern on the rheme is shown in Figure 2 and an inclining hat pattern in high pitch interval with focal function in Figure 7.

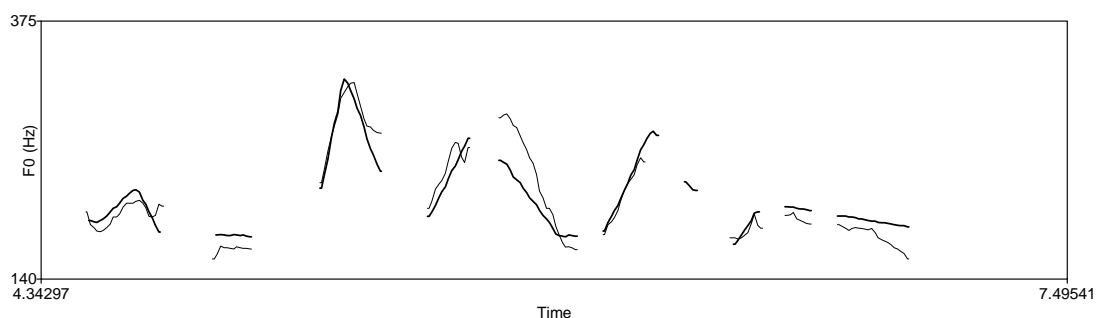
Post-accentual inclination is found after the last (rhematic) falling gesture. It is interesting that the following  $f_0$  does not decline. Change to declination by manipulating the  $f_0$  contour leads to strengthening of the rhematic accent and converts it to a focal accent. The part of the utterance which follows the rhematic accent can then be described as having post-accentual inclination (Karlsson 1999) or, following the notion of final lowering of Beckman & Pierrehumbert 1986, as final non-lowering.

### *3.4 Pitch intervals*

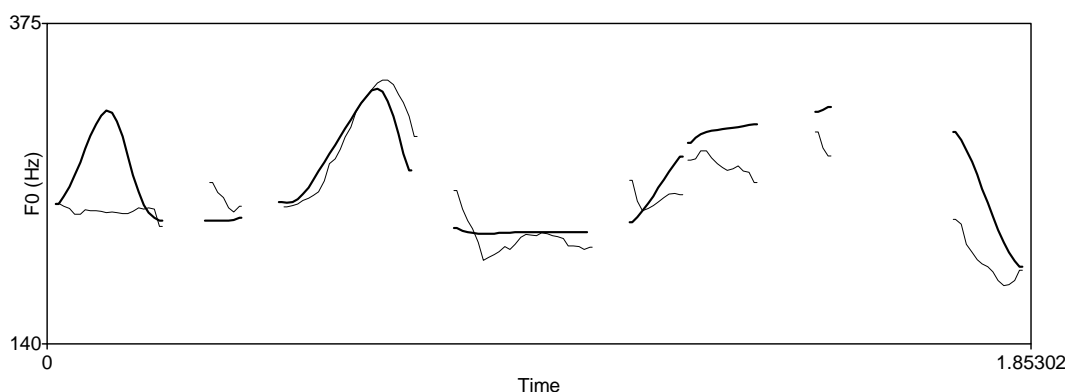
Pitch range is often mentioned in connection with emotions. Generally, high pitch range is used for expressing delight, while low range stands for anger

or sadness. One of the patterns described by Bryzgunova, a high hat pattern, expresses delight or strengthening of a described state.

One of the results, though preliminary because of the limited number of speakers, is interesting and worth to be mentioned. It emerged that the functionally different accents tend to be realised within different pitch intervals. Three pitch intervals were established for the female speaker, who read the source material. The speaker's average pitch is 200 Hz, the high interval for this speaker is between 270 and 360 Hz, the middle interval is between 222 and 270 Hz and the low interval under 189 Hz. The peaks of thematic pitch accents and of contrastive focal accents are realised in the high pitch interval and peaks of rhythmic accents (see Section 3.6) in the middle interval. See Figure 6. It was also found that hat patterns are pragmatically distinguished by being produced (wholly or partly) within different pitch intervals.



**Figure 6.**  $f_0$  course of the utterance ↑Лев ↑Толстой [↑очень ↑любил ↑играть на ↓балалайке.] *lev tolstoj ótŕenʲ lʊbʲil igrátʲ na balalájke* 'Lev Tolstoy liked a lot to play balalaika'. Female speaker.



**Figure 7.** Modified  $f_0$  course of the sentence  $\uparrow$ Он  $\uparrow$ не понимает  $\uparrow$ элементарных  $\downarrow\downarrow$ вещей. *on n'e ponimájet elementárnix v'esh'ej* 'He does not understand simple things.' Female speaker.

Although analysis of only one speaker's production data is not sufficient, the establishment and use of three distinct pitch intervals to generate accents with distinct pragmatic functions proved to be meaningful in manipulation of the others speakers' data (Stage 3) and can thus be useful for speech synthesis.

### 3.5 Hat patterns

One important finding in the present study is the hat pattern. Bryzgunova 1969 describes one type of hat pattern that occurs in non-neutral speech. The present investigation shows the occurrence of hat patterns with connective function without any additional pragmatic information. Thus, a hat pattern connects words within the rheme, with the hat's rising accent on the first word of the rheme, and the falling rhematic accent placed on the last word. (See Figures 1, 2 and 4 for illustration). A hat pattern also connects a one-word theme (consisting of a personal pronoun) with the rheme.

The maximal span of the hat is three lexical words. Three types of phonetic realisations of the hat pattern were found. The first is a declining hat pattern realised in the middle pitch interval. Most often it connects words within a rheme without a verb. The second type is an inclining hat pattern in the middle interval. It connects the theme with the verb of the rheme as well as words within a rheme that ends with a verb. The third type is an inclining hat pattern with the fall beginning in the high interval. This hat pattern is

typical for emotionally coloured speech and can connect more than three words.

### 3.6 *Accentuation and deaccentuation: rhythmic accents*

In addition to thematic, rhematic and focal accents, other rising tonal gestures are identified in most of the studied utterances. They are realised on stressed syllables of lexical words and their function is less clear, since they do not signal pragmatic meanings directly. Nonetheless they are directly prominence lending, since there are theme and rheme accents that mainly have this function. Manipulation of  $f_0$  contours shows that elimination of these rising gestures leads to changes of prominence relations within the utterance, for instance so that the rhematic accent becomes focal. My suggestion is to call them rhythmic accents, indicating that tone is considered as participating in building up speech rhythm. We can then stipulate that tonal rhythm is important in maintaining differences in application of focus. For instance, story-telling in Russian has a typical rhythm, formed by a frequent occurrence of rhythmic tonal accents.

In story-telling, almost every word in the position before the rhematic pitch accent gets rhythmic accent (tonal rise). This is especially typical for the first utterance. This is shown in Figure 6, in which the tonal course of the first utterance of a story is illustrated: ↑ Лев ↑ Толстой [↑ очень ↑ любил ↑ играть на ↓ балалайке.] *lev tolstoj ótŕeni ljubíl igrátʃ na balalájke* ‘Lev Tolstoy liked a lot to play the balalaika’. Almost every word gets a rising gesture. The first, third and fourth rising gestures are rhythmic accents, the second rise is the theme accent placed on ‘Tolstoy’ and the hat pattern connects the verb and object ‘play the balalaika’ within the rheme (the rhematic fall cannot be seen because of the devoicing of the last syllables). Rhythmic accents can also be seen on the first words in the utterances in Figures 1 and 3 (bottom).

Using the proposed distinction between pitch intervals we can distinguish between rising accents with different functions. Thus, the  $f_0$  peak of the thematic accent is realised in the high pitch interval, while the rhythmic accent is realised in the middle pitch interval.

Rhythmic accent has the prosodic phrase as its domain. Thus, while moving theme or rheme accents changes the pragmatic structure of the whole utterance, manipulations of rhythmic accents influence the prominence level of accents within the same prosodic phrase.

Rhythmic accents do not occur in sentences with focal accent. It is then important to emphasise that deaccentuation is a marked event in order to signal focal accent, while for neutral narrative speech rhythmic accentuation is an inherent feature.

Kodzasov 1996b mentions “purely phonetic, rhythmic accentuation” (p. 182, my translation) and excludes it from his description of phrase accentuation. Kodzasov’s example of such ‘phonetic accentuation’ illustrates what is analysed here as thematic accent, however, and cannot be regarded as purely phonetic accentuation. Bryzgunova 1969 mentions rising gestures besides main accents and calls their occurrence phonetic variation in realisations of the main tonal patterns. Thus, they make no systematic description of rhythmic accents.

### 3.7 *Non-neutral speech*

The most characteristic property of intonation of non-neutral speech is found to be high pitch interval and deaccentuation. Thus, to signal rhematic focus, all words within the utterance except for the focused one are deaccented (see Figure 5). Deaccentuation does not occur in neutral speech.

The tonal peaks of the rising accents are realised in the high interval. This occurs at rising focal accent (‘contrastive theme’ mentioned above) as well as at expression of surprise when nearly each word within an utterance gets rising focal accent. Figure 7 shows the tonal course of the utterance ↑Он ↑не понимает ↑<sup>Г</sup>элементарных ↓↓вещей. *on n’je ponimájet elementárnix věščej* ‘he does not understand simple things.’ The original  $f_0$  is shown by thin lines and its manipulation by fat lines. In the manipulated version, a high tonal rise is added at the first word ‘he’, and the last two words ‘simple things’ (adjective + noun) are connected by an inclining hat pattern in the high pitch interval.

The inclining hat pattern is very frequent. The whole hat pattern can be realised in the high pitch interval, as was described by Bryzgunova 1969. The hat pattern can also incline in the middle interval, with the fall beginning in the high interval. This hat type is found for rhematic focus.

The present description does not include all tonal patterns in non-neutral speech. The reason is that our generation of non-neutral patterns is based on tonal gestures identified for neutral speech. The only manipulations performed are changes of the  $f_0$  levels and movement or erasure of gestures. Thus, no changes in the timing of the tonal alignment were made. For instance, tonal patterns with a fall and rise within the stressed syllable of the

focused word, that are typical for non-neutral speech and have implicit meaning ‘you really should be conscious about this’, were not generated in the present study.

#### 4 Summary

Investigation of tonal patterns by moving or adding tonal gestures or by combining them differently is fruitful. This method gives a better insight into what is of communicative importance in the tonal contours. Tonal patterns have to be investigated and described with reference to the syntactic and lexical structure. Thus, the same tonal gesture can get different pragmatic functions depending on its alignment with the syntactic structure. For instance, as is shown for thematic accent, moving it to a non-default place within the word combination provides focus.

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