

TRANSCRIPTION OF RUSSIAN INTONATION, TORI, AN INTERACTIVE RESEARCH TOOL AND LEARNING MODULE ON THE INTERNET

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1. Introduction

ToRI is an abbreviation for Transcription of Russian Intonation. ToRI is a new transcription system and available free of charge on www.fon.hum.uva.nl/tori/. It uses unambiguous symbols for the transcription of pitch accents, pitch movements connecting the pitch accents and utterance boundaries marked by pitch. The descriptions of all forms of these pitch phenomena expressed in ToRI symbols are based on the results of perception experiments with native speakers of Russian.

In the system, each symbol representing a pitch accent is described with rules for its realization, that is, with phonetic correlates and limits of perceptual tolerance. Each pitch accent is presented with pictures of the contours, with sound examples and with interactive audiovisual exercises training the recognition and production of Russian pitch phenomena. In the examples and exercises, main communicative functions for each accent are also given. The terminology used in the descriptions is defined in an online glossary.

The system is set up in such a way that it can be used as a learning module for advanced students and linguists. It can also be used as a research tool for the description of intonation in variants of Russian pronunciation and in Russian dialects, for example during linguistic fieldwork. ToRI can be used individually or, if used as a learning module, with a teacher in a classroom situation.

On top of the opening page, on the horizontal bar, the user can choose to open for reading or consultation the following documents: Acknowledgments, Introduction (what is ToRI?), Symbols (descriptions, conventions), Realization rules (phonetic correlates of pitch accents), Glossary (38 terms on intonation

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defined) and Literature (references used for the development of ToRI, and for further reading). Technical information on the use of ToRI is given on the vertical bar under Getting started. Furthermore on the vertical bar can be selected: Pitch accents, Boundaries, Non-accent lending pitch movements, Communicative functions of pitch phenomena, Interpretation of pitch phenomena, and Pitch accents in longer fragments.

In my article for the previous Thirteenth International Congress of Slavists in Ljubljana 2003, the set-up and background of ToRI has been described (Odé 2003b). In the meantime, the ToRI website has been developed.

In this article for the Fourteenth International Congress of Slavists in Ohrid 2007, I will discuss the most crucial terms for ToRI in the glossary, and the full set of symbols as they appear under the buttons Glossary and Symbols on the horizontal bar of the website, respectively. Reasons to describe only these two parts of ToRI are that the glossary is considered essential for my approach to intonation, and the symbols are based on my own experimental work that has been carried out for earlier descriptions of Russian intonation (e.g. Odé 1989, 1992) and for the present website (e.g. Odé 2003a, 2005 and in press). A full description of all ToRI webpages would exceed the limits of an article for the present volume.

2. Glossary

In the glossary, 38 terms on pitch phenomena and related issues are explained for the ToRI user. A definition of terms was considered relevant for ToRI users in order to inform them about the approach to intonation of the author. Another reason for including a glossary of such terms on the website is the existence of the many different, sometimes conflicting, definitions for a same term as they appear in manuals, in linguistic and phonetic dictionaries, and in the literature on intonation. Those definitions highly depend on the linguistic approach applied by the various authors that will not be discussed in the present article.

Most definitions in the glossary are inspired by and mainly based on the work of, in alphabetical order, Bolinger (e.g. 1958, 1986, 1989), 't Hart et al. (1990) and Keijsper (e.g. 1983, 1987, 1992), and based on experimental evidence published in my own works on Russian intonation (Odé 1989, 1992, 2003a, 2003b, 2005, in press). As said in the Introduction, in this section I will present only a few terms that are fundamental for the approach on which my new transcription of Russian intonation is based. These terms are: pitch accent and accent-lending pitch movements, perceptual equivalence, connecting pitch movements, and register. For the other terms the reader is referred to the webpages.

In the definitions discussed in the sections below, terms occur that are also explained in the glossary; these are indicated in italics.

2.1 Pitch accent and accent-lending pitch movements, perceptual equivalence and connecting pitch movements defined

A pitch accent is defined as follows: “In the context of *intonation* languages with word stress, a pitch accent is a *pitch movement* or configuration of pitch movements lending perceptual *prominence* to a syllable in a word that thus receives an accent.” An accent-lending pitch movement is defined as “A pitch movement realized in such a way that a hearer perceives *prominence* on the syllable in which it occurs and thus perceives a *pitch accent* on that syllable. *Accent-lending pitch movements* are realized with various gradations, with varying salience, and usually occur in syllables carrying word stress. The position of word stress can be found in a dictionary, but the location and type of pitch accent depends on the intention of the speaker and thus cannot be found in dictionaries. Not all realizations of a given type of *pitch accent* are equally salient, but within one type all realizations are always *perceptually equivalent*.” The term *perceptual equivalence* is crucial in defining types of pitch accent, as follows from its definition: “In the context of *intonation*, all realizations of one type of *pitch accent*, of one type of *pitch boundary* or of types of configuration of pitch movements, are within that type perceptually equivalent. That is, according to native speakers, realizations of one type of pitch accent, pitch boundary or configuration of pitch movements are successful imitations of one another. The perceptual equivalence of realizations of a given type can be established by verifying realizations in listening experiments with native speakers.”

First experiments on perceptual equivalence were carried out for Odé (1989) in the late eighties. A recent example of an experiment on the perceptual equivalence of pitch accents is Odé (2005). The latter paper presents the results of a perception experiment that was carried out to verify the hypothesis that in Russian the contrast between pitch accents H*L and H*H² on utterance-final syllables is neutralized. Recordings for the experiment were ten sets of three short utterances with word stress in the ultimate, penultimate and antepenultimate syllable of the utterance-final word. These utterances were read aloud by four female and four male native speakers. They were asked to realize accents H*L and H*H in the utterance-final word. After instructions and rehearsing, recordings were made separately for each of the two types. In the perception experiment, 30 native subjects listened to short utterances selected from the re-

² Note that in the article pitch accents H*L and H*H are named LH*L and LH*. These latter names have later been changed into H*L and H*H, that are considered to more adequately represent the forms of the types of pitch accent.

cordings and presented in 180 pairs: 120 pairs with ultimate stress and, in order to test whether listeners can hear the difference at all, 60 pairs with penultimate and antepenultimate word stress in utterance-final position. The 180 stimuli pairs consisted of short utterances with realizations of H*L and H*H on the final word, each pair containing two same or two different types of pitch accent. The task was to compare two stimuli in a pair and to indicate on a score form whether two realizations in a stimulus pair count as passable imitations of each other and thus belong to the same type of pitch accent. The same/different judgments indicate that listeners successfully distinguished between the two pitch accents in the antepenultimate and penultimate conditions, but much less so in the ultimate condition. This suggests that the two accents are truncated in final position, but not neutralized. The results of the above described experiment are reflected in the new set of symbols in section 3.

Between pitch accents so-called connecting pitch movements occur. These are defined as “Pitch movements between *pitch accents* or between *pitch accents* and *boundaries*. *Pitch* does not move in a straight line from accent to accent or from accent to boundary. In sequences of connecting pitch movements, *turning points* occur, thus separating movements belonging to the last accent from those belonging to the next accent or boundary.”

For a recent discussion on the definition of pitch accent the reader is referred to Odé (2007).

2.2 Register defined

A register is defined as “The range of a given speaker between his highest and lowest pitch level. The register is subdivided into a high register and a low register, but there is no exact borderline between the two. Roughly speaking, on a logarithmic scale the low register covers a range from 0-10 semitones (ST) and the high register from 10 ST to the highest pitch level reached by a given speaker. For Russian this high level can be 25 ST above the lowest pitch level (0 ST) of a speaker. *Full pitch accents* H*L, H*H and H*M reach their highest point in the high register, *reduced pitch accents* H*L, H*H and H*M reach their highest point in the low register.” An interval of 25 ST is more than two octaves if expressed in musical terms. Russian full pitch accents H*L, H*H and H*M will be discussed in section 3.

The highest and lowest pitch level of a speaker are important for establishing the phonetic specification of intervals: the excursion size. On the basis of perception experiments it was found that a given pitch level reached by a speaker is perceived by the hearer as relative to the speaker’s lowest level (Odé 1989: 89ff.; in press). That is, an interval that starts and ends within the high register is, even if the size of the interval itself is small, perceived as if it were realized starting from the low level. So it is the pitch target relative to the lowest level of a

speaker that is responsible for pitch perception, and not the actual size of the interval.

3. Symbols

On the horizontal bar of the ToRI website, under the button Symbols, a description of the symbols as used in and defined for ToRI is presented. These symbols are based on the experimentally verified classification into types of Russian pitch accents in Odé (1989). The names of pitch accents in this classification have not been maintained in the new transcription symbols. For the convenience of the reader familiar with the original names, an overview of the translation into new symbols is given below. Reasons for not using the original names in ToRI have been extensively discussed (e.g. in Odé 2003) and will only be summarized here. Considerations were that the new symbols as they are nowadays used worldwide by intonologists would enable a comparison with intonation systems in other languages using the same set of symbols to define pitch accents. However, symbols are to a high extent language specific. For example, a pitch accent defined with symbol H*L in Dutch will considerably differ from Russian H*L in its realizations. The symbols for pitch accent H*L express a high pitch target (H) in the accented syllable (*), indicated by H*, followed by a fall to the low pitch level (L), indicated by L. But the high pitch target in Russian is in general much higher than in Dutch, and the fall after the highest target reached is much steeper than in Dutch, to mention just two perceptually relevant differences for this accent between the two languages.

Unfortunately, it is an illusion to expect that a set of symbols as nowadays used to transcribe intonation may equal a set of symbols as used for the articulation of speech sounds developed by the International Phonetic Association, the so-called IPA-alphabet. This is not to say that no transcription symbols exist to adequately represent intonation. The symbols used differ for various reasons. For example, symbols may present a phonetic or a phonological transcription. Furthermore, the linguistic school to which an intonologist belongs may be reflected in the definition of symbols. Dramatic in this respect is the publication *Intonation Systems* (Hirst and Di Cristo (1999)) which, despite the request from the editors to authors to follow a general outline, presents a hybrid collection of twenty systems of intonation description that does not allow a comparison of those systems.

However, the phonological transcription of intonation in thirteen languages described in Sun-Ah Jun (ed. 2005) are all based on the same approach to the study of intonation, namely the Autosegmental-Metrical model of intonation phonology. As such the book is a coherent study of intonation by intonologists all using the same set of symbols developed for the transcription in ToBI, Tone and Break Indices (Beckman and Ayers (1997), Beckman et al. (2005)). Yet not

all intonologists use the symbols in the same way. Therefore, in her final chapter Sun-Ah Jun could not present all thirteen transcriptions in the summary because of the differences between the transcriptions (ed. 2005: 430ff.). For example, in his *Transcription of Dutch Intonation*, ToDI, Gussenhoven describes tones but does not include break indices and therefore calls his transcription a “ToBI-like system” (Gussenhoven 2005: 122). It is beyond the scope of this article to go into more details.

My set of transcription symbols resembles those used, for instance, in the autosegmental approach. My transcription is called ToRI which implies a reference to ToDI rather than to ToBI, but differs again from ToDI. Differences are not only language specific, such as distinguishing a perceptually relevant mid pitch level in Russian. In ToRI, phonetic correlates of pitch accents, realizations rules for pitch accents and main communicative functions of pitch accents are also presented in descriptions and exercises. Moreover, my approach to intonation is not in the tradition of the Autosegmental-Metrical model of intonation phonology.

The initial goal of ToRI was a description of Russian intonation in terms of pitch targets with conventions for the scaling and timing of the pitch targets that are relevant for Russian intonation. It is assumed that as a result of my new transcription symbols, Russian intonation is now easier to compare with the intonation of other languages described with a same set of symbols (e.g. the languages described in Sun-Ah Jun (2005)), provided that the language-specific features described in the phonetic specification of Russian pitch phenomena are taken into account.

3.1 Overview of the new ToRI transcription symbols

H*, L*	pitch accent with high or low pitch target reached in the accented syllable
H, M, L	non-accent-lending pitch movements to the high, mid or low level
%H, %M, %L	initial high, mid or low pitch
L%	final low pitch boundary (final high pitch boundaries do not occur in Russian)
%	boundary not marked by pitch
^	raised peak: a small high rise, optional
>>>	sawtooth pattern with sequences of reduced rising or falling pitch accents
\/\	single harmonica pattern
\/\ ⁿ	repeated harmonica pattern

3.2 General conventions

Depending on the type, symbols for pitch phenomena occur as singletons or as combinations of symbols without interspacing. For example, singleton H indicates a non-accent lending pitch movement to the high level. The combination of symbols L*H indicates a type of pitch accent with a low pitch target reached in the accented syllable, immediately followed by a high pitch target; both targets L and H belong to this given pitch accent. Subsequent pitch phenomena are separated from one another by spaces. For example, H*L L% for pitch accent H*L followed by low pitch boundary L%. If no new pitch symbol appears, pitch is sustained on the last indicated level. Symbols are always indicated above the text of an utterance, exactly at the syllable on which a given pitch phenomenon is realized:

%L H*L L%
она приедет на каникулы

3.3 Symbols for pitch accents

Pitch accents are marked with an asterisk (*) immediately after the pitch target that is reached in the pitch-accented syllable: H* (high) or L* (low). A pitch accent may also consist of a configuration of accent-lending pitch movements to and/or from the pitch target reached in the accented syllable, for example H*L. A symbol or combination of symbols indicating a type of pitch accent represents all realizations of that given type (see Perceptual Equivalence in section 2.1). In accent HL*, H indicates that pitch is high in the pretonic syllable or syllables.

3.4 Symbols for non-accent-lending pitch movements

The melodic context of pitch accents is further specified by indicating perceptually relevant non-accent-lending pitch movements. These movements connect pitch accents, and pitch accents and boundaries. The non-accent-lending movements preceding and following the pitch accent are indicated with the following symbols: H for rising pitch reaching a high target, L for falling pitch reaching a low target, and M for rising or falling pitch reaching a mid pitch target. Symbols are always indicated above the text of the utterance exactly at the syllable in the connecting movements where a turning point is located, that is, the point where pitch switches into another direction:

%L H*M H HL* L%
она приедет на каникулы вместе с братом

3.5 Symbols for boundaries

Boundaries are indicated as follows: initial high, mid and low pitch with %H, %M and %L, and low pitch at boundaries with L%. Pitch boundary H%, a pitch movement at boundaries that rises to the high pitch target after the last pitch target reached, does not occur in Russian. Note that initial %L does not necessarily indicate the lowest level of a speaker: utterances frequently start above the lowest level of a speaker. Complex initial pitch is expressed with a combination of symbols. For example, an initial non-accent-lending high fall is marked with symbols %HL. Single symbol % without pitch target indicates that there is a boundary, but that it is not marked by pitch. Initial pitch and final pitch at boundaries are indicated above the text on the utterance-initial and utterance-final syllable, respectively:

%L	H*H %	%L	H*M	HL* L%
она	приедет на каникулы	чтобы	повидаться с братом	

3.6 Overview of symbols for pitch accents with stylized contours

In the stylized contours below, vertical dashed lines indicate approximate boundaries of the pitch-accented syllable. The contours are stylizations and do not reflect real pitch heights. The linear distance between two boundary lines also does not refer to the actual timing of the accented syllable.

It depends on the type of pitch accent where a given pitch target is reached: early or late in the accented syllable (timing), high or low in a speaker's register (excursion size), steep or gradual (rate of change). These and other relevant features for the respective accents are not represented in the stylizations below, but can be found on the horizontal bar under the button Realization rules.

symbol	contour	symbol	contour
H*L		L*	
H*H		HL*	
H*M		L*H	

On utterance-final syllables, H*H and H*L are truncated:



In utterance-final position, no syllables follow the highest point reached in the final accented syllable H*, so there is no high or low posttonic pitch target.

3.7 New and old symbols

In the overview below the translation of the Odé (1989) symbols for full pitch accents into new ToRI labels is presented. Note that there are no changes as compared to the original 1989 classification: the same full pitch accents appear under a different name.

The classification of pitch accents according to Odé (1989) has been evaluated in new perception experiments described in detail in Odé (2003a). In short, the question was whether the pitch accents would be directly usable for ToRI. Two listening experiments were conducted in order to verify the perceptual equivalence between types of pitch accent selected from the 1989 corpus and types of pitch accent selected from other corpora. The results of these experiments, in which pitch accents from the 1989 corpus were tested in paired comparison tests with pitch accents from the new recordings, showed that the original classification did not need to be adjusted.

In the 1989 symbols the feature timing, the position in the accented syllable where the beginning or terminal frequency of a pitch movement is reached, is indicated with - (early timing) and + (late timing). In the new symbols timing is not indicated. The user must learn the timing of the pitch accents by choosing the button Realization rules on the horizontal bar of the website, where timing is indicated. As can be derived from the old symbols presented below, accents H*L, H*H, L* and L*H have early timing, accent H*M has early and late timing, and accent HL* has late timing.

ToRI symbol: 1989 symbol:

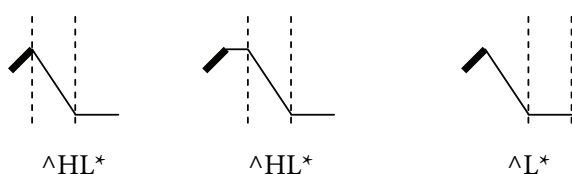
H*L	Rl-
H*H	Rh-
H*M	Rm-/+
L*	Fl-
HL*	Fl+
L*H	Fh-

3.8 Pauses and hesitations

Pauses and hesitations can occur anywhere in an utterance, that is, within an utterance or at boundaries. Speakers make pauses and hesitations if they need, for example, time to think about how to continue, to remember something, to correct an error. Pauses and hesitations can be silent or filled. If silent, there is an interruption in the speech signal: complete silence. Filled pauses and hesitations are not silent and can be of many different types, like *gm* 'eh'.

3.9 Symbol for the raised peak

The optional raised peak called *zanos* in Odé (1989: 12; 101) is indicated with symbol \wedge . For the convenience of the reader, in the stylized contours below the raised peak is drawn with a bold line. Pitch movements occurring before the raised peak are not drawn here.

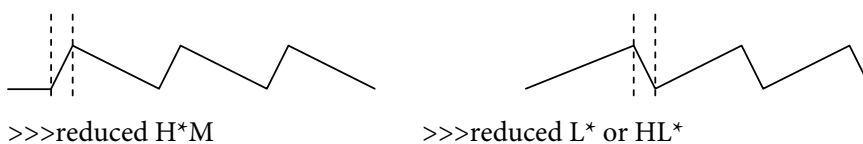


a raised peak before accents HL^* (without and with a high plateau) and L^*

3.10 Symbol for the sawtooth pattern

The sawtooth pattern consists of a sequence of reduced pitch accents H^*M or L^* or HL^* , and is indicated with symbol \ggg followed by the given type of pitch accent.

The reduced pitch accents have a much smaller excursion size than their full counterparts, that is, pitch in the accented syllable of reduced accents by no means reaches a target as high or as low as pitch in the accented syllable of full pitch accents (see also section 2.2).



sawtooth with reduced H^*M

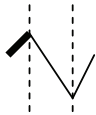
sawtooth with reduced L^* or HL^*

Note that reduced pitch accents occur not only in the sawtooth pattern, but also elsewhere in utterances before main pitch accents and after main accents, for example in an afterthought.

3.11 Symbol for the harmonica pattern

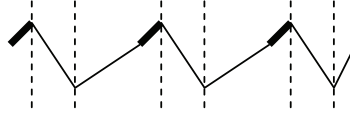
Like the sawtooth pattern, the harmonica pattern is named after its form. Coming from the high level, usually after a raised peak, pitch accent HL^* (the low target is reached late in the accented syllable) is realized, after which pitch immediately rises again. In a realization of a single harmonica, pitch accent HL^* is realized after which pitch reaches the mid target; in a realization of a repeated harmonica, pitch rises after accent HL^* till a level high enough to make a next raised peak (indicated in the stylization with a bold line) followed by another

realization of HL*, etc. For a single harmonica, the pattern is indicated with symbol \wedge , and for a repeated harmonica with symbols \wedge^n .



\wedge ^HL* %

single harmonica



\wedge^n ^HL* %

repeated harmonica

3.12 Names of symbols, labels, boundaries and communicative functions

In Table 1 below the names of symbols, labels, utterance boundaries, main communicative functions and other communicative functions are given. Note that the order in which functions in the column 'other functions' are presented does not reflect the frequency of their occurrence.

One pitch accent can be used to express more communicative functions and one communicative function can be expressed by more than one type of pitch accent. However, there will always be a difference in interpretation; such differences in interpretations can be very subtle. For example, the main function of pitch accents H*H and H*M is to express incompleteness, that is, a right context is required. In a continuation, accent H*H expresses a closed enumeration, whereas accent H*M expresses an open enumeration. Compare the utterance *она придет на Пасху и останется надолго* pronounced with H*H in the word *Пасху* to the utterance *она придет на каникулы, потом на Новый год и на день рождения* pronounced with H*M in the word *каникулы*. In the first utterance, accent H*H announces a final accent, but with accent H*M the utterance can continue endlessly before a final accent occurs. This difference is extensively described in Odé (in press).

name	label	utterance boundary	main communicative function	other communicative functions
H*L	rise-fall	L%	yes-no question	continuation; contrast; repeated wh-question, repeated question, alternative question; prominence (emphasis)
H*H	rise-high	%	incompleteness	continuation: closed enumeration; exclamation; positive qualification
H*M	rise-mid	%	incompleteness	continuation: open enumeration; meditation; puzzled reaction; vocative: calling from a distance
L*	low-level	L%	completeness	neutral finality, answer, confirmation
HL*	low-fall	L%	completeness with emphasis	emphatic answer, confirmation; wh-question with narrow focus; imperative, command; addressing
L*H	low-rise	%	non-first elliptic question	polemic answer; summons; enumeration; incompleteness; imperative question

Table 1: Overview of names of symbols, labels, boundaries and communicative functions.

4. Pitch accent H*M on the ToRI website

As a demonstration of how forms and functions of the six pitch accents are described on the ToRI website, pitch accent H*M is presented as it appears by pressing the button Pitch accents→accent H*M. By pressing the play button ► on the pages (not visible on the pages below), examples can be listened to as often as a user desires.

4.1 Form of pitch accent H*M

Pitch accent H*M is a high rise coming from low or mid. It tends to be less steep and less high than the rises of H*L and H*H. The high ending is reached at the end of the accented syllable. After the accented syllable, the pitch drops to mid, after which it may drop further to the end of the utterance. For a stylized representation of accent H*M see section 3.6.

Typically the mid-pitched post-tonic part is often stretched out over many syllables. H*M can also be followed by another H*M within the same utterance, so as to create the sawtooth pattern, or by some other pitch accent. In the examples, H*M occurs in words in a number of different positions of the utterance.

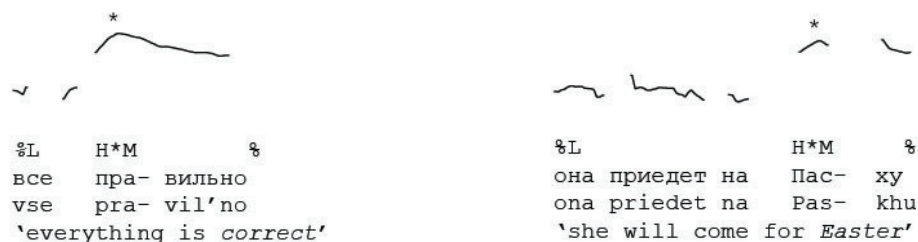
4.2 Functions of pitch accent H*M

The main communicative function of this accent is incompleteness. Other functions are: continuation in narratives, continuation in an open enumeration, vocatives (calling from a distance). It may also express a puzzled reaction, a meditation.

4.3 Examples of pitch accent H*M

The pictures below are made using *Praat* version 4.6.38 (Boersma and Weenink 2007). The star on the contour is aligned with the star of the symbol on the accented syllable above the text of the examples (see also section 3.2).

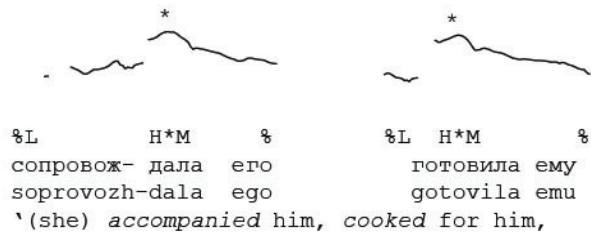
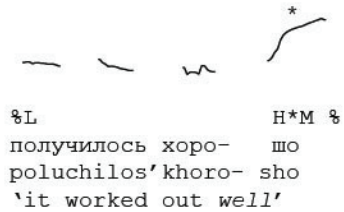
The first two examples presented in Figures 1 and 2 are neutral realizations of accent H*M with the communicative function of incompleteness: the speaker has not yet finished.



Figures 1 and 2. Realizations of accent H*M expressing incompleteness.

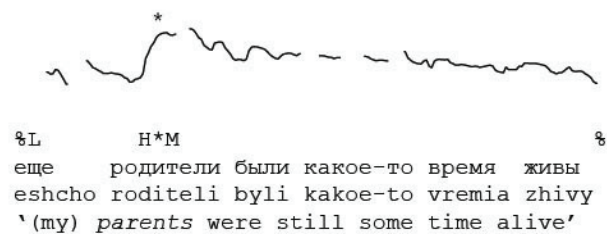
The next three utterances illustrated in Figures 3-5 are examples of accent H*M in a continuation in a narrative. Note that in Figure 3 accent H*M occurs in an utterance-final syllable so there is no mid-pitched post-tonic part. Yet the accent is perceived as accent H*M for its late timing: the high target H* is reached late in the accented syllable. For a discussion on post-tonic parts “cut off” after

pitch accents occurring in utterance-final syllables with high pitch target H* the reader is referred to Odé (2005).



Figures 3-5. Realizations of accent H*M expressing a continuation in a narrative.

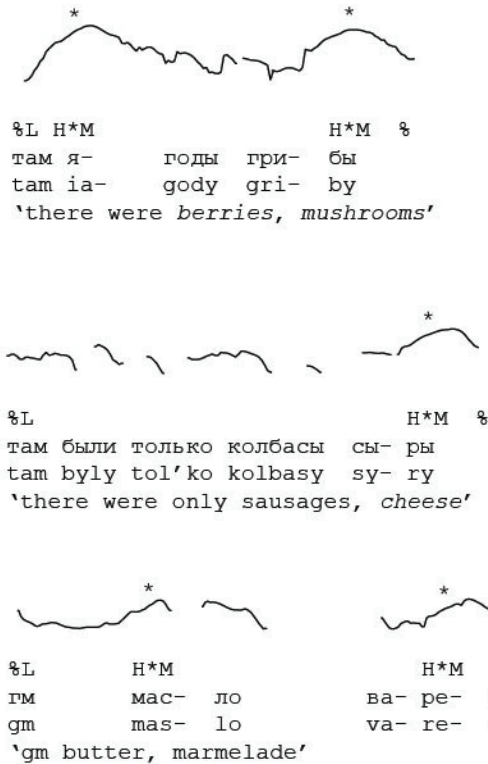
The next two utterances presented in Figures 6 and 7 are also examples of continuations in a narrative. The mid-pitched post-tonic part is stretched out over many syllables (see section 4.1).





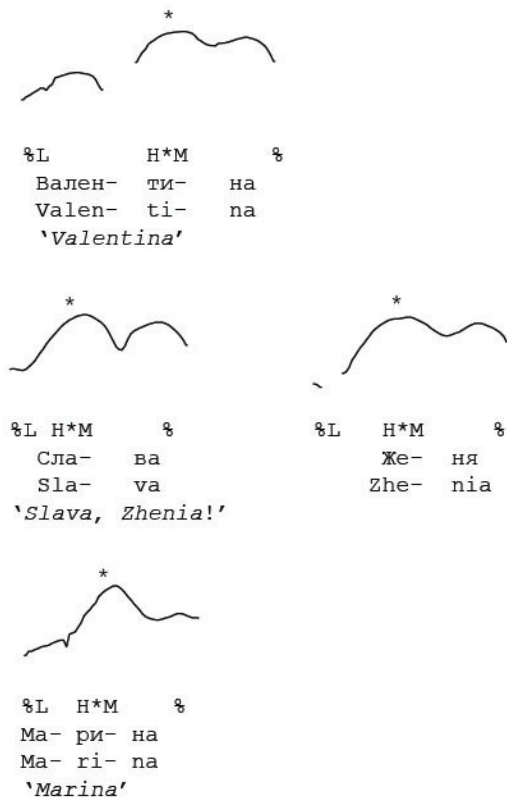
Figures 6 and 7. Realizations of accent H*M in a continuation where the mid-pitched post-tonic part is stretched out over many syllables.

The next utterances illustrated in Figures 8-10 are examples of continuations in an open enumeration. In contrast to closed enumerations, expressed by accent H*H (see section 3.12), an enumeration with realizations of accent H*M can continue endlessly till a final accent occurs.



Figures 8-10. Realizations of accent H*M in an open enumeration.

The following two utterances are examples of accent H*M expressing a vocative: calling someone from a distance. The examples are given in Figures 11-13.



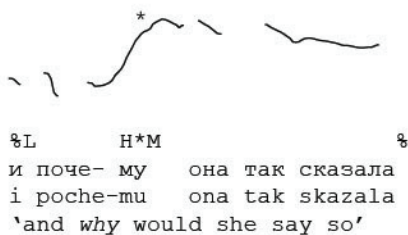
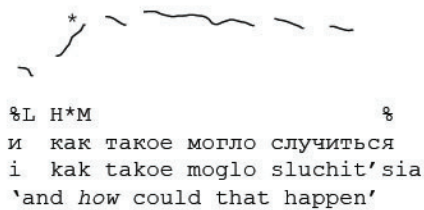
Figures 11-13. Realizations of accent H*M expressing vocatives: calling someone from a distance.

The following utterance is a fragment from a longer recording with many subsequent realizations of accent H*M. The selected fragment with one example of such realization of H*M is presented in Figure 14. It is pronounced by a woman who tenderly speaks to her cat.



Figure 14. Realization of accent H*M expressing a continuation.

The following two utterances in Figures 15 and 16 are examples of a meditation with the typical mid-pitched post-tonic part stretched out over many syllables.



Figures 15 and 16. Realizations of accent H*M expressing a meditation with the typical mid-pitched post-tonic part stretched out over many syllables.

The last example of accent H*M presented in Figure 17 is an utterance in which the unaccented words in the post-tonic part after the high target H* are realized on a level starting somewhat higher than the pitch target H* itself reached in the accented syllable *ба-* in *бабушка*, followed by the mid-pitched post-tonic part stretched out over many syllables. The utterance starts with a sawtooth pattern (see section 3.10) in the words *такие детали*.

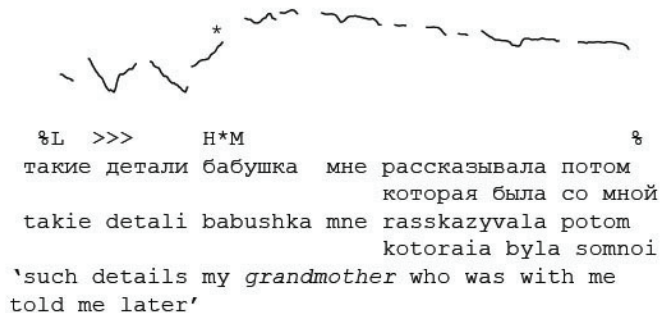


Figure 17. Initial sawtooth pattern followed by a realization of accent H*M with a post-tonic part starting high and then stretched out over many syllables in the mid-pitched post-tonic part.

4.4 Concluding remark

In the same way as accent H*M presented in sections 4.1-4.3 above, the other five accents H*L, H*H, L*, HL* and L*H are presented on the ToRI webpages with audiovisual examples. The demonstrations of the pitch accents are followed by interactive audiovisual exercises training the recognition and production of the pitch accents (see section 1).

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SUMMARY

This article discusses a new system for the Transcription of Russian Intonation, ToRI, on the Internet. Section 1 presents a general outline of the system. The terminology used in ToRI is defined in an online glossary, from which Section 2 gives the following examples: pitch accent and accent-lending pitch movements, perceptual equivalence, connecting pitch movements, and register. ToRI uses unambiguous symbols for the transcription of pitch accents, pitch movements connecting the pitch accents and utterance boundaries marked by pitch. Section 3 discusses these ToRI symbols in detail. In the system, each symbol representing a pitch accent is described with rules for its realization, that is, with phonetic correlates and limits of perceptual tolerance. Each pitch accent is presented with pictures of the contours, with sound examples and with interactive audiovisual exercises training the recognition and production of Russian pitch phenomena. In the examples, main communicative functions for each accent are also given. In Section 4, pitch accent H*M is presented as a demonstration of how the pitch accents are described and how they appear on the webpages of ToRI.