

In Search of Meaning: Study on Relation of Language and Music in Works of Russian Scientists

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Abstract. The article explores the problem of meaning perception in music. It gives a short review of the main issues discussed in Russian studies on relation of language and music. The paper deals with the experimental data of a sample case study. The data of associative and semantic differential experiment shows that understanding of the meaning of music depends on how familiar listener is with the music. A well-known melody is a part of the world's image, having a specific place in the conceptual system, thus, the meaning of its cognitive frame [30] is used. On the other hand, if the musical fragment does not belong to a frame, its perception is limited to its emotional impact which is perceived as its meaning.

Keywords: Music · Language · Speech · Semantics · Semiotics · Emotions · Three orders of information

1 Introduction

All existing studies on expression of the musical meaning may be divided into two groups. Adepts of the first group believe that some elements of the musical text have an absolutely clear meaning which may migrate from one piece to another, forming kind of an intertext; it is possible to trace its development (etymology) from one piece to another, from one epoch to another [14]. The correlation between the musical phrase and the meaning is so tight, that it is possible to propose a dictionary where each melody will have a meaning or a set of meanings. Thus, we may suggest semiotics of the musical phrase, similar to the bilateral structure of language.

Adepts of another point of view, on the contrary, believe that in music we deal with a unilateral text which is not a sign system since in a new context tones and melodies have individual meanings, which cannot be derived from their previous use, thus preventing us from unifying all these elements into a dictionary (Bershadskaya, in this volume).

Another difference which is crucial for defining whether the musical text has a constant meaning or not, refers to an idea of universality of the musical language. It is widely known that to understand the meaning of the text in any language it is necessary

first to learn this language. Otherwise, the speech would be a senseless flow of inarticulate sounds¹.

Furthermore, it is clear that the musical text may be perceived without any special musical background. Any person, regardless of his/her hearing, musical background², origins and native language is able to hear (and listen to) the music. Of course, some people prefer classic music, jazz, while others love chanson songs, but regardless of their preferences they all listen to the musical texts and distinguish them from each other.

The paper reviews all existing theories of understanding of musical meaning in Russian musicology (Sect. 2), introduces the notion of *informativity* of music text and discusses the results of a sample case study of music understanding by naïve listeners (Sect. 3) and comes to the conclusion that understanding of the meaning of music depends on how familiar listener is with the music which proves the absence of any determined initial meaning of musical fragments (Sect. 4).

2 Studies of Meaning in Russian Musicology

Studies of the relation between language and music in Russia were started by Boris Asafiev, prominent Soviet scientist, who published its “Speech Intonation” in 1925. Boris Asafiev suggested that musical and speech intonations have common origin, and proposed a special system for developing hearing which is based on the idea of a single background of musical and speech intonation [1]. In “Musical Form as a Process”, Boris Asafiev expanded his idea about common origins of music and speech onto other properties of both speech and musical phrases ([2]; see more detailed discussion in [3]).

For a long period of time, ideas about the relation of music and language were developed by Russian scientists, however they were on the periphery of music and linguistic sciences. Interest in studying analogies between language and music resumed in the 2nd half of 20th century. Search of common properties of speech and musical phrases and applicability of the provisions developed and used by the language science to the theory of music were among the main research areas. First of all, they had common terminology (see Bershadskaya, in this volume), covering both general principles and separate fields of linguistics (such concepts as text, dialect, syntax, accent, context etc.).

Scientists got interested in studying the semantics of musical text in early 1970s. Maurice Bonfeld stressed the importance of drawing terminology parallels between the theory of music and linguistics and considered it necessary, first of all, to identify the dichotomy of language and speech in music [4]. In linguistics, the language is a tool comprising the dictionary of units and the rules of text generation to make up speech [5, 6]. Therefore, the language is a sustainable element, universal for all speakers, thus ensuring mutual understanding during communication. On the contrary, speech is

¹ Furthermore, studies of intonation structure of different languages show that perception of phrase intonation of the unknown language is different from that of native speakers [26].

² Hereinafter by musical background we mean not only attending special educational institutions or learning how to play a musical instrument, but a habit to listen to the music from the very childhood.

individual, changeable, flexible. Identification of these two substances in music presents special difficulty since there is no tool which would be universal for all speakers and would comprise a dictionary of units and the rules. If talking about the set of rules, we may refer to the laws of harmony, polyphony, form generation, stylistic principles of the musical text, however, the existence of the dictionary of units is quite dubious (see in detail further).

Therefore, identification of the meaning-bearing components in music is under question, in other words, it is under question whether the musical text and its components are bilateral signs with expression and content planes. M. Bonfeld mentioned non-discreteness of the musical text as the main reason of failure to identify any musical units with meaningful nuclear area, independent of the context [4]. Referencing the works of Yu. M. Lotman who stressed that the poetic text could not be divided into verbal units [7], Bonfeld made the same conclusion for music: “Any independent artistic (and thus, musical) piece is a single undividable sign” [4: 39].

Not all scientists share the described point of view. In particular, it was suggested that music is a “non-sign semiotic system” [8], that it has special signs with only connotative meaning without any denotatum [9]. There were studies of music as a functional multilevel system with both bilateral syntax and morphological structures and unilateral structures – tones [10, 11]. Following the theory of M. Aranovsky, I. Pyatnitskaya-Pozdnyakova identifies two levels of semantics in music — intramusical (meanings arising from the text interaction within the context) and extramusical (additional connotations to the intramusical semantics) [12].

Some scientists share opposite point of view, giving reasons for identification of various-size musical bilateral signs. For instance, V. Kholopova introduces a new structural and semantic unit – *musical lexeme*, which is an “expressive and meaningful unity which has non-verbal or oral expression and is related to musical experience and non-musical associations” [13: 58]. This approach has been further developed in the Laboratory of semantics of music in the Ufa State Conservatoire, where the theory of musical meaning is developed. This theory assumes that “the musical language has sustainable meaning structures of musical texts, i.e. intonation expressions with defined meanings — lexemes, semantic figures, altogether forming intonation vocabulary representing the inventory and art images” [14: 33]. Among them are so called migrating intonation formulas, which are migrating from one piece to another and may slightly change depending on the stylistic context, generating new meanings under influence of other formulas, thus helping to trace the developmental history of intonation formulas. The Laboratory is working on a dictionary of intonation formulas and studies their origins and functioning of the direct and metaphorical meanings³.

Discussion about the meaning of musical signs is closely related to the universality of music. Almost all scientists agree that unlike natural language, musical sign is universal, clear to everyone and does not need translation [16]. Nevertheless, transparency of the meaning of the musical text is under the question. Some scientists

³ First tries to create such dictionaries date back to XVII–XVIII, when rhetoric figures and affects expression dictionaries were created, for example: *Musurgia universalis* by A. Kircher (1650), *Musikalisches Lexikon* by I.G. Valter (1732) [15].

believe that consistent perception of musical text is impossible without special education [14] and the musical text cannot be generated without special skills and knowledge of appropriate laws [17]. However, many scientists believe that music is a universal communication tool since the main function of the musical text (unlike the verbal text) is communication of aesthetic information, emotional impact on the listener [18–21]. Music is a cultural product reflecting musical image of the world [22] which is unique for every culture.

Investigation of interaction of literature and musical texts gives interesting results for studies of the music semantics. N. Khruscheva is investigating structural interaction of musical and literature texts and is considering such properties of music and literature cross-influence, as particular structural properties (universal formulas, such as repetition, symmetry, etc.; structural analogies: retrograde — palindrome, double canon perpetuus – pantum) and conceptual parallels (methods and approaches for communication of aesthetic meaning) [16]. This cross-influence results in development of a complex system with non-linear relations, a multilevel musical-literature unity, with new means of expression, clear structural logic, multidimensionality — non-reducibility to a single paradigm [16]. The same effect can be traced in interaction of music and words in vocal pieces ([23, 24], articles by Martynenko, Konoshenko and Kuznetsova in this volume). Words and music enrich each other: verbal speech helps to identify the meaning of the musical speech, while musical text underlines emotional properties of the words [23].

3 In Search of Meaning

3.1 Objectives and Methodology

The musical background influences the capability to perceive the texts having various orders of informativity. The concept of the text informativity introduced in the linguistics of text may be applied for the theory of music as well. Beaugrande and Dressler introduced the main principles for defining the orders of informativity in the text (three orders of informativity) [25]. The texts of the first order of informativity fully comply with the communicated information, thus there are no multiple interpretations of such texts. To understand the texts of the second order it is important to identify the relations between the components of the situation. The texts of the third order are specific since the situation described in these texts does not correspond to knowledge of the perceivers, thus they need to realize why the information received does not meet the expectations. Therefore, the texts of the first order are close to the prototypic texts, and they form a basis for the texts of the second and third order, however it is more difficult to interpret such texts, since one may stay at the second order of informativity or may achieve the third order.

In music, the first order of text informativity covers the genre of musical materials (so called primary genres: march, song, dance, etc.). Identification of the genre does not require any knowledge of musical theory. It is a prototypical concept which is a basis of

the musical piece and allows almost no diverse interpretations⁴. It is one of the first concepts the children learn in the course of their musical studies. The second order of the text informativity is the emotional meaning, mood expressed by music. No special musical education is needed for its perception; however, it is necessary to listen to the music attentively, define its emotional properties and nuances.

The third order of text informativity is the deepest level of the musical text structure and means perception of the author's (composer's) intention, understanding of the musical meaning, overall meaning of the musical text. To be able to achieve this level, the listener needs at least many years of experience of attentive listening to a large number of musical texts and being familiar with various musical pieces belonging to different cultural traditions.

To identify interaction of three orders of informativity in the musical texts and perception of the meaning of the musical texts by naïve (unprepared) listener, a sample case study was carried out. The initial hypothesis was that if the music is universal any person who does not have any special musical background may understand the meaning of the musical text without preliminary deep knowledge of this music. If the musical phrase has a clear, well-defined meaning, all listeners will understand this meaning without errors.

For the study, two methodologies were selected: free associative experiment and semantic differential.

The method of free associative experiment was selected to check understanding of the musical text meaning by listeners. To avoid influencing the perception of musical pieces, the instructions were as follows: "Please write down at least two associations (words, ideas, etc.) which first come to your mind while listening to the music". We intentionally did not include the direct questions ("What is this music about?" "How will you call this melody?", etc.), since associations may reveal subconscious deep understanding of texts. On the contrary, direct questions would, first of all, reveal objectives of the study and could somehow influence the received associations, and secondly would reduce the spontaneity of replies. The associations methodology may clarify both properties of perception of the first order information (genre properties of music) and of the third order information at deep subconscious level.

The method of semantic differential [27] was used to identify the second order information, and study perception of aesthetic meaning of musical pieces by listeners. The listeners were proposed to assess the pieces using three scales: *bad – good*, *weak – strong*, *cold – warm*, and seven grades — from -3 to +3, including neutral mark (0). These scales do not fully correspond to those proposed by Osgood and al., however the recent studies have shown that when using this method for analysis of perception of musical stimuli it is better to pay more attention to valence scales [28], thus, the potency scale (*passive – active*) was replaced by the valence scale (*cold – warm*). The instructions were as follows: "Listen to the melodies and evaluate them using the scales (from -3 to +3). For instance, using the valence scale: -3 — *very bad*; -2 — *bad*;

⁴ Cf. the concept *musical-communication archetypes*, which are "some basic forms of musical meaning related to protointonation form of music, which represent the initial level of musical meaning perception which is based on a range of non-special non-discrete musical means" [22: 123].

–1 — *rather bad, than good*; 0 — *neutral*; +1 — *rather good than bad*; +2 — *good*; +3 — *very good*". It was assumed that while identifying perception of the second order information, among other properties (rhythm, beat, colour etc.) there will be tonality structure of the musical piece (major, minor and complex tonality systems).

The following results were expected. If the initial theory is correct, than the number of associations belonging to the nuclear of the association field, will exceed 50 % of total associations and these associations will correspond to the meaning of the musical piece commonly accepted in the history of music. Besides, everyone will identify the first order information, and grades of three scales will coincide as well, correlating with the tonality structure of the musical piece.

If the initial hypothesis is not correct, and the meaning of the musical piece is not subject to accurate identification and is not universally perceived, then the associations received will show a significant diversity, being mostly single and individual reactions. The grades of three scales will show this diversity of perception, however, there will be certain correlation with the initial musical tonality.

An additional result to be received is a correlation between the information perceived with different orders of the text informativity. Even if the initial theory is not correct, the nuclear of each association field shall have associations of the first order of informativity along with large diversity of associations referred to the third order of informativity. Correlation between received grades and tonality structure of the musical piece will show the perception rate of the second order of informativity by naïve listeners.

3.2 Data

Twelve popular classic pieces by both Russian and European composers of XVIII–XX centuries were selected. Eleven pieces were instrumental (orchestra, piano, and violin) and one piece was presented by chorus with an orchestra:

1. P.I. Tchaikovsky "Neapolitan Dance" from "Album pour enfants", Op. 39
2. J.S. Bach "Toccata and fugue in d minor", BWV 565
3. L. van Beethoven "Symphony 5", op. 67, part 1
4. I.F. Stravinsky "Sacrificial Dance" (the Chosen One) from "The Rite of Spring"
5. V.A. Mozart "Symphony No. 40", K 550, Part 1
6. M.I. Glinka "Patriotic Song"
7. N. Paganini "Caprice No. 24 in a minor" from the cycle of 24 caprices for violin, op. 1
8. L. van Beethoven "Symphony 9", op. 125, Part 4 (theme to the text of Schiller's Ode to Joy)
9. G. Gershwin "Summertime" lullaby from "Porgy and Bess"
10. R. Wagner "Ride of the Valkyries" from "Die Walküre"
11. F. Chopin "Waltz", op. 64 No. 1, A flat major
12. P.I. Tchaikovsky "Waltz of the flowers" from "The Nutcracker"

Five of these musical pieces have major tonality (No. 1, 6, 8, 11, 12), and six pieces have minor tonality (2, 3, 5, 7, 9, 10), the piece No. 4 is a sample of complex tonality structure. Well-structured, finished thematic abstracts were selected for the study.

The listeners received a questionnaire with instructions (see above) and 12 questions as follows:

Associations:		
Scale:		
Bad	-3 -2 -1 0 +1 +2 +3	Good
Weak	-3 -2 -1 0 +1 +2 +3	Strong
Cold	-3 -2 -1 0 +1 +2 +3	Warm

for each musical piece.

The length of each musical piece did not exceed one minute with a 10-second pause between pieces to complete analysis of the musical piece and get prepared to the next one. Every musical piece is presented only once, and it is not possible to return to the previous music after its completion.

30 Russian-speaking adults aged from 18 to 53 took part in the study ($M_{age} = 33.2$, $SD = 8.56$), including 18 women and 12 men. All of them did not have special musical background (two women used to attend the musical classes however it was 10–12 years before the study took place).

3.3 Results and Discussion

All associations received were divided into two groups – *semantic* (meaning-bearing) associations and *general musical* associations not related to emotional or meaning properties of the music (names of instrument, genre, etc.). The later associations also included associations related to *recognition* of the presented music, such as the composer's name or title of the melody. Semantic associations were also divided into two groups – *individual* and *thematic* associations, depending on their frequency and coincidence with the traditional common understanding of the melody used in the history of music.

Frequencies of associations were used to generate the associative-semantic field of each musical piece by dividing the received associations into nuclear and peripheral ones (nuclear associations accounted for at least 10 % of cases).

The predominance of nuclear general musical and peripheral original associations was considered as an absence of any clear and easy-perceivable meanings identified by the naïve listeners. On the other hand, the predominance of nuclear thematic associations means the possibility to identify the universal meaning of the melody, and, thus, presence of the meaning available for identification and verbalization by the naïve listener.

During the experiment 640 associations and 12 rejections were received. The largest number of associations was for the melodies from Tchaikovsky's *Nutcracker's*

ballet and Glinka's Patriotic Song (66 and 63 associations correspondingly). Large number of associations for these melodies may be explained by the fact that these pieces are well-known to the listeners: in 1990–2000 "Patriotic song" was an official hymn of Russia, and the music from the Nutcracker's ballet is broadcast on radio and TV during New Year's holidays every year. The smallest number of associations was received to Wagner's opera "Die Walküre" — only 37 associations. Average number of associations received amounted to 53.

In all responses to 12 stimuli, semantic associations prevailed. Maximum number of general musical associations was received to melodies from Paganini's Caprice No. 24 and Chopin's Waltz (46 % and 43 % of associations correspondingly). These are mono-instrument pieces. Semantic associations to these pieces have shown large variety of associations with mostly original and peripheral associations prevailing. The smallest number of general musical associations was for the melodies with semantic associations coinciding with traditional understanding of these melodies. These were, first of all, melodies No. 6, 3, 10, 4, and 2 (14 %, 15 %, 16 %, 17 %, and 19 % correspondingly).

These results suggest that the number of general musical associations depends on the listener's understanding of meaning of the melody. If the meaning is unclear, the perception will be superficial, and the listener will be limited to the first order information as the associations show. If the meaning of the melody is clear, the associations mostly include the semantic ones, and the listeners show absolute or thematic coincidence in their associations.

Among *semantic* associations, the *thematic* associations prevail. However, only once this predominance was really significant – in associations related to PATRIOTISM for the melody No.6 "Patriotic Song" by M.I. Glinka (89 % of the total number of semantic associations). In other cases, the number of thematic associations did not exceed 76 % from the total number of semantic associations. However, among the associations to the melody No. 7 (Caprice No. 24 by N. Paganini), the number of thematic associations was significantly lower than the number of individual associations (33 % and 67 % correspondingly). This might be explained by the form of this melody, which is a theme with variations (the melody presented during the study had the theme and 2 variations).

Interesting results were received during the analysis of associations for melodies No. 6, 3, 10, 4, and 2 that showed the largest numbers of semantic associations. All melodies, except for the discussed above melody No. 6, have shown thematic associations related to the following thematic groups: "WAR" — musical pieces No. 4 (Stravinsky) and 10 (Wagner), "SUPREME FORCES" — musical pieces No. 2 (Bach), 3 (Beethoven's Symphony 5), 4 (Stravinsky), "DEATH" — musical piece No. 2 (Bach), "QUICK MOVEMENT" — musical pieces No. 3 (Beethoven's Symphony 5), 4 (Stravinsky), 10 (Wagner)⁵. Furthermore, the melodies with mostly positive, cheerful properties and emotions did not reveal predominance of thematic associations over individual ones. It

⁵ The associations of thematic group PATRIOTISM for the melody No. 6 - *victory, parade*, etc. – are also connected with thematic group WAR, but they refer to the positive emotions, while the associations for the pieces No. 4 and 10 – *fight, attack*, etc. – are aggressive and negative.

might be explained by the fact that the negative emotions are much more vivid than positive ones (73 out of 116 emotions in Russian account for negative emotions; cf. also [29]).

In all musical pieces, nuclear themes can be identified (Table 1).

Table 1. Nuclear associations (in %)

Piece	Thematic group	% of total reactions
1	Light, joy	20
2	Death	34
3	Supreme forces	33
4	War	23
5	Joy	23
6	Festival	43
	Patriotism	34
7	Positive emotions	14
8	Religion	20
	Joy	18
9	Peace	35
10	Movement	30
	War	24
11	Grace, legerity	27
12	Ball	30

As it is shown, in many cases, the identified thematic groups coincide with the figurative meanings of the melodies used in the theory of music. However, do these results confirm bilateralism of musical sign and the presence of clear universal meaning of the melody perceivable by any listener? We believe, they do not. Though the associations related to traditional meaning of melodies under consideration, account for at least 20 %, these figures only confirm that the traditional meaning is present in these melodies along with all other possible meanings, which can be identified in the musical text by a naïve listener.

To illustrate this variety of perceived meanings, let us consider the associations received for the melody from Beethoven's Symphony No. 9 (theme of the Ode to Joy). Associations received may be classified as follows: RELIGION (20 %), JOY (18 %), DEATH (8 %). Therefore, the musical text has a meaning, a sense, but this meaning is not uniform and is not universally perceived by all naïve listeners. Listening to the melody in a specific situation continuously generates sustainable associations between the music and the situation, thus incorporating the melody into the world model (cf. associations to the melodies 6 (*hymn, parade, victory*) and 12 (*ball, magic, festival*). The listener perceives the meaning of the melody as an element of the concept which has no (or almost no) relation to the initial author's intention. This may also partly explain a large number of Symphony No. 9's associations related to RELIGION: in Beethoven's music the listeners were able to hear the chorus and the orchestra which resulted in associations with church and church service (general-music associations included: *theatre, opera, performance*).

Thus, the results show that the musical text is an element of declarative knowledge, i.e. a slot in a multi-modal cognitive structure – a frame which is generated by the individual and modified during his/her life [30]. The meaning of the frame, the musical text belongs to, is perceived by the listener as a meaning of this text (cf. study of music conceptualization in [31]). Furthermore, the unknown or insufficiently known musical texts may belong to different frames, mostly related to emotions or memories, which confirms the fact that aesthetic function is the main function of music (unlike the verbal text).

Perception of emotional music properties may be identified by analyzing the semantic differential allocations, shown below (Fig. 1).

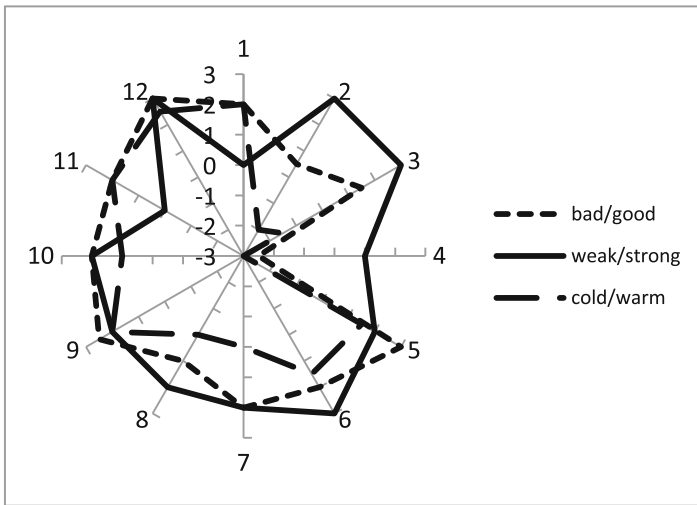


Fig. 1. Semantic differential results.

Surprisingly, no evident relation was identified between the grades and mode of music. Assessment of the major melodies (No. 1, 6, 8, 11, 12) using the scale *bad* — *good* and *cold* — *warm* does not show any significant difference with that of minor melodies (No. 2, 3, 5, 7, 9, 10). However, the major and the minor are clear in modes of grades allocation: the grades of pieces 1, 11, 12 show clear mode — +3, and only pieces 5 and 9 of the minor show the same mode and only for the scale *bad* — *good*.

Assessment of the fragment No. 4 from Stravinsky's ballet "The Rite of Spring" shall be mentioned, since this melody was characterized as the coldest one (median value — -3, mode — -3) and the worst one (median value — -2,5, with no clear mode). This negative assessment suggests that though no direct relation between the tonality and emotional perception of music was identified, nevertheless, the mode seems to be one of the main properties which influences perception of the musical text, while the complexity of the mode structure prevents understanding of the melody by a naïve listener.

Comparison of these results with those of the tonality perception study by Korsakova-Kreyn and Dowling shows that if individual cadences and modulations are presented to the listener, the listener defines major elements as positive and warm ones, and minor elements as negative and cold ones [28]. If whole melodies are presented, no relation is identified. These grades correlate well with the associations received (see *strength* grades of pieces 2, 3, and 4 with clear modes +3), therefore we may suggest that the musical text is actually perceived at some emotional meaning level which is not subject to division into two separate components. However, it is also possible that the listeners were subconsciously assessing not the music itself, but the associations, however this suggestion needs separate study using the said two methodologies.

4 Conclusion

This sample case study shows that the musical text, surely, has some meaning perceivable by naïve listeners. However, this meaning is not uniform and clear to everyone. Identification of the first order information in the melody – which is prototypical information about the genre of music – presented almost no difficulties, which was proved by quite a large number of general musical associations to the melodies with unclear semantics. It was further found that such melodies (No. 1, 7, and 11) are perceived only as a source of aesthetic information giving rise to some emotions. While perceiving the music without well-defined meaning, the listeners generally keep to the first and second order information. Furthermore, the analysis of semantic differential did not identify any dependency between grades and mode of music, but has shown the tendency of assessing not the melody as a whole, but its meaning.

Therefore, the results of the analysis suggest that naïve listeners perceive the musical text as follows:

- First of all, the listener identifies whether (s)he knows the melody or not. If the answer is positive, the melody is a part of a cognitive frame, and the listener assigns to this musical text the meaning of the whole frame. Furthermore, the listener does not have any problems with defining all three orders of text informativity;
- If the musical piece is unknown or insufficiently known, the listener is limited to the first and second order information, perceiving only the aesthetic value of the musical text. Such melody does not belong to any frame, however, its comparison with existing frames results in assigning some non-attributable, but possible properties (cf. assessment of the melody No. 8).

All in all, it should be noted that perception of the musical text is two-valued depending on the listener's familiarity with the music. The melody is a part of the world image, having a specific place in the conceptual system, thus, the meaning of its frame is used. Emotional perception of the melody depends on the emotional assessment of the frame, and not of the properties of the musical text. Or, if the musical text does not belong to a frame, its perception is limited to its emotional impact which is perceived as its meaning.

Finally, it is impossible to discuss these ideas without resort to the listener, because the meaning of any message, both general-purpose and artistic, verbal and musical – is

addressed to the recipient, and is aiming to modify his/her world image. Eliminating any element of the main communication triad *author – melody – recipient* will make the communication meaningless and will result in the communicative failure.

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