

CRITERIA AND INDICATORS OF THE DEVELOPMENT OF MUSICIAN'S TIMBRE HEARING

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Abstract. *Musical practice constantly lays down requirements to a musician's hearing. An important tendency of a contemporary musical thinking is the intensification of the timbral beginning, which now starts to come to the foreground as one of the most significant expressive and form-developing means.*

Timbre hearing is one type of harmonic hearing (Teplov, 1947) and one of the most essential components at teaching a contemporary musician's hearing, though in the teaching practice it has not been adequately reflected as yet. The development of the ability of hearing to perceive the expressive sense of a timbre sounding is a vital condition for achieving professionalism in a musician's musical-performing activity. The precondition for a successful development of musical hearing, including that of timbre, is the process of diagnosticating its actual developmental level, which will help a teacher to organize a student's musically-practical activity.

The paper offers criteria and indicators for identifying the developmental level of musician's timbre hearing.

Research Aim: to study the theoretical basis of timbre hearing and to develop criteria and indicators of its development.

Research methods: monitoring, modelling.

Keywords: *timbral hearing, criteria, indicators.*

Introduction

Musical practice constantly lays down new requirements to a musician's hearing. An important tendency of a contemporary musical thinking is the intensification of the timbral beginning, which now starts to come to the foreground as one of the most significant expressive and form-developing means.

Traditionally, the timbre hearing is interpreted as the ability to identify the timbral coloring of sounding voices or instruments, of single sounds and different sound combinations. According to B. Teplov, timbre hearing is one type of harmonic hearing (Teplov, 1947).

At present, researchers pay great attention to the characteristic features of pitch and timbre of sounds (Waters, 1994; Handel, 1995; Lyon & Shamma, 1996; Handel & Erickson, 2004; Levitin & Rogers, 2005), as well as to the issues of how timbre is perceived (Dinther & Patterson, 2006; Karaseva, 2009).

Dinther & Patterson (2006) have stressed that humans are good at recognizing timbre categories, to determine what instrument is playing a note, but also are very good within categories, as in comparing one violin to another. The development of the ability of hearing to perceive the expressive sense of a timbral sounding is a vital condition for achieving professionalism in musician's musical-performing activity.

This research is focused on such issues as:

- What exactly is a developed timbre hearing of a musician?
- Which criteria and indicators determine the developmental level of timbre hearing in a musical-performing activity?

The aim of the research is to study the theoretical basis of timbre hearing and to develop criteria and indicators of its development.

Methodology

Research methods used in this research are as follows:

- the analysis of methodological and theoretical literature, and the pedagogical experience on the issue under the research;
- modelling of criteria and indicators for the development of a musician's timbre hearing.

Theoretical Background

Due to the changes of the role of timbre and other sound qualities in music of the 20th -21st centuries (Teplov, 1947; Kirnarskaya, 2009; McLachlan, Marco & Wilson, 2013; McLachlan, 2016), researchers have started to focus their attention on issues related to the phenomenon of a sound color – timbre. Neil M. McLachlan (McLachlan, 2016), quoting *American National Standards Institute*, characterizes timbre as follows: *this is the attribute of an auditory sensation that allows it do be distinguished from other sounds at the same pitch and loudness* (American National Standards Institute, 1973).

Other authors define timbre as the time-varying pattern of spectral components by which a sound may be recognized (Handel, 1995; Handel & Erickson, 2004). Neil M. McLachlan emphasizes the fact that this definition aligns with common descriptions of the timbre of a sound according to its similarity with a remembered sound identity (McLachlan, 2016).

Sounds produced at the same pitch and loudness but performed on different instruments, by different voices or on one instrument but by different techniques of playing are distinguished one from the other by their timbres (McLachlan, Marco & Wilson, 2013).

Timbre is a unique individual sound color which belongs to a specific instrument. On the one hand, it is the timbre that makes sounding of a group of musical instruments (such as “wind-instruments” and “string-instruments”) sound the same, on the other hand, it is also the quality which within the frame of each “kindred” group of instruments allows distinguishing every specific instrument. (Starcheus, 2003; Kirnarskaya, 2009)

Timbre is a necessary component of musical-artistic information: music does not exist without a sound and, consequently, without timbre. Timbre as such is the most important means of performing expressiveness. Along with this, timbre together with other means of performing – nuancing, articulation, dynamics and tempo – forms the basis. In the contemporary music, timbre has assumed a special importance, since it often comes into forefront as one of the most essential means of expressiveness. As noted by D. Kirnarskaya (2009), in the phylogenesis and ontogenesis, timbre hearing is the earliest one, it is a part of the intoning hearing as an ability to perceive a sound as a unity of all its properties (pitch, timbre, loudness, articulation) (Kirnarskaya, 2009). Timbre hearing is one of the most significant components of the development of musician’s hearing. However, we have to mention the fact that in practice of teaching musical-theoretical disciplines (sol-fa course), the timbral component of musical hearing has not received full attention to, and its development remains passive as regards to melodic one. D. Kirnarskaya writes about the lack of attention to the development of timbre hearing, and notes that musical and pedagogical methods in the modern teaching system are analytical (Kirnarskaya, 2009).

In our country, in practice of teaching sol-fa at a secondary professional level (music school), the line of complicating pitch, mode and harmony difficulties is sufficiently well elaborated and methodologically well-constructed. Besides, we have to note that the amount of the study material has been reduced in respect to timbre. The potential of the diversity of a specific timbral incorporation into the music of the 20th -21st century is used insufficiently. The basic forms of work on the development of hearing (dictation and analysis by ear) are implemented under mono-timbral conditions – the piano. A peculiar type of perception – state, auditory contemplation of the qualitative changes and peculiarities of a timbral sounding – is currently shaping in the contemporary music. The main method is the method of auditory analysis of music.

Requirements to the contemporary music dictate the necessity to adopt the attitude to timbre as a compulsory object of learning. Therefore, a topical issue in a sol-fa course is the development of a multi-functional musical hearing, giving priority to such type of hearing as timbre hearing.

The development of timbre hearing provides musicians-professionals a lot of advantages:

- the ability to identify and single out among a group of instruments the timbre of a specific instrument by ear;
- the opportunity to hear one's own performance and understand how the technique of playing affects the timbre of a sound;
- the opportunity to find individualized subtle solutions in the field of sounding, timbre, to create an exquisite sound color;
- development of the ability to create more interesting arrangements at working on note texts when distributing them by voices and instruments.

The prerequisite for a successful development of musical hearing, including timbre, is the process of diagnosing the actual developmental level.

Defining Criteria and Indicators of the Development of Musician's Timbre Hearing

Sensitivity to musical timbre is a constituent part of the intoning hearing, responsible for perceiving all sides of sounding and emotional-semantic aspects of music. The development of timbre hearing must be tightly linked with improving the intoning hearing, with paying due attention to the character of sounding produced by the instrumental timbre combined with other means of expressiveness.

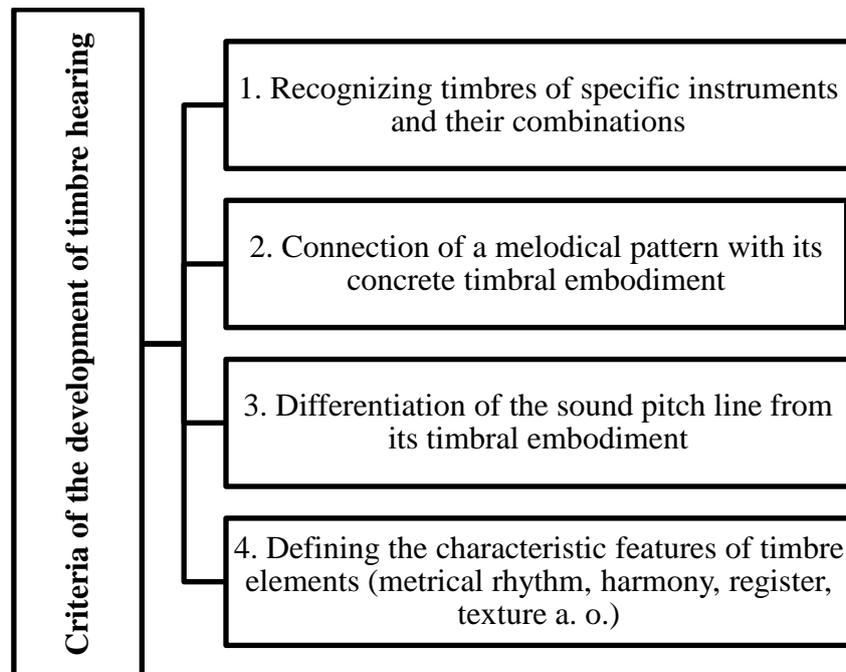


Figure 1 Criteria of the Development of Timbre Hearing

Relying on the theoretical basis of timbre hearing, during this research criteria and indicators of the development of timbre hearing were established. The four criteria that can be attributed to this category are as follows (see Fig. 1).

Three levels of the development of timbre hearing were defined for each criterion: low, average and high, as well as indicators corresponding to each of the levels.

Recognizing Timbres of Specific Instruments

Recognizing timbres implies the skill of distinguishing sounds and instruments, separate sounds, assessing timbres, their characteristic features and peculiar qualities such, for instance, as the skill to distinguish violin from trumpet. This occurs during the process of an auditory analysis of the timbre of a composition fragment provided for this analysis, (e. g, in the theme from the 2nd part of the Sixth symphony by Dmitry Shostakovich the solo instruments – flute and bass clarinet – are distinguished). It should be noted that perceiving timbres of different instruments sometimes causes “contemporary complications”, for instance, if an instrument sounds in a way unusual for it (e. g. a lyrical melody is performed on the trombone).

To recognize timbres of specific instruments and their combinations, three levels and their indicators have been developed (see Table 1).

Table 1 Level Indicators of the Criterion “Recognizing Timbres of Specific Instruments and Their Combinations”

Criterion	Indicators	Level
Recognizing timbres of specific instruments and their combinations	a) Difficulties in recognizing timbres of instruments; b) Errors in combination of instruments	Low
	a) Correctly recognized timbres of instruments; b) Errors in combination of instruments and partially in their horizontal alternation	Average
	Precisely recognized timbres and a correct combination and alternation of them	High

Connection of a Melodic Pattern with Its Concrete Timbral Embodiment

Sounds of the same pitch and loudness but performed on different instruments, in different voices or on the same instrument but by different techniques of playing are distinguished one from the other by their timbres. Perceiving timbres usually evokes various associations that can be compared to the sensations from objects and phenomena. The timbre of a sound might be

bright, soft, warm, cold, deep, sharp, satiated, metallic etc. Purely auditory definitions are also used: e. g. sonorous, dull, nasal. Connecting a melodic pattern with its concrete timbral embodiment helps a performer or a composer to select means of performing according to the instrument the specific theme refers to.

The technique of instrument playing may influence melodiousness: we know specific melodic formulas of brass instruments producing military and hunting signals. These timbral-intoning formulas include typical features of sounding, the timbre of instruments. There are a lot of such stereotyped patterns – those of flute and violin resonances, horn signals based on French-horns, a great number of trumpets etc.

To determine the connection of a melodic pattern with its concrete timbral embodiment the level indicators were developed (see Table 2).

Table 2 Level Indicators of the Criterion “Connection of a Melodic Pattern with Its Concrete Timbral Embodiment”

Criterion	Indicators	Level
Connection of a melodic pattern with its concrete timbral embodiment	The connection between the melodic pattern and its concrete timbral embodiment is not manifested	Low
	The connection between a melodic pattern and its concrete embodiment is partially manifested	Average
	A precise connection between a melody and its timbral embodiment	Low

Differentiation of a Sound Pitch Line From Its Timbral Embodiment

Timbre is a quality of the sound as such, while musical pitch is a quality that characterizes a sound in its relation to other sounds. Only after the pitch is disconnected, i. e. separated from timbre, it is possible to intone the sound by voice or play it on a musical instrument. Timbre may be felt as a peculiar, different from the pitch, quality which can be opposed to the pitch (a change of timbre without changing pitch and vice versa). B. Teplov maintains that only after the musical pitch has been separated from the initial timbre-pitch complex, timbre itself becomes a special musical quality (Teplov, 1947). Consequently, the differentiation of a sound pitch line from that of timbre may contribute to improving timbre hearing. Table 3 shows the indicators of this criterion.

Table 3 Level Indicators of the Criterion “Differentiation of a Sound Pitch Line From Its Timbral Embodiment”

Criterion	Indicators	Level
Differentiation of a sound pitch line from its timbral embodiment	Differentiation of a sound pitch line from timbre is not manifested	Low
	Differentiation of a sound pitch line from its timbral embodiment is partially (in some places of the musical fragment under analysis) indicated	Average
	Differentiation of a sound pitch line from its timbral embodiment is correct	High

Defining the Specific Features of Timbre Elements

There are different ways of producing sounds on musical instruments which, in turn, affect the color of sounding (e. g. *con sordino, col legno*). Instruments sounding in the utmost registers of the range, the change of timbre in every sound also add color to the musical material. Vital components are also rhythmic patterns (dotted rhythm, triplet swinging, a. o.) and harmony (dominance of diatonic consonant or dissonant chromatic harmonies). The fourth criterion “Defining the specific features of timbre elements” is aimed at identifying the character of sounding and acoustic features (articulative, register, dynamic, textural), which implies the development of various sides of timbre hearing. Differentiating of instruments occurs on the basis of separating a specific timbre from a musical context by ear (see Table 4).

Table 4 Level Indicators of the Criterion “Defining the Specific Features of Timbre Elements (metrical rhythm, harmony, register, texture a. o.)”

Criterion	Level	Indicators
Defining the specific features of timbre elements	a) Defining of the sounding timbre (timbres) of the instrument (instruments) is not established; b) Some elements: register, texture, rhythmic pattern, a. o. are partially indicated	Low
	a) Timbres of some instruments are partially defined; b) Some timbral acoustic features are partially indicated	Average
	a) Defining of the sounding timbre (timbres) of the instrument (instruments) is precise; b) Different acoustic features are indicated precisely enough	High

The given criteria and their level indicators have been developed to diagnose the actual level of the development of timbre hearing, which will help the teacher to organize correctly learners' musical-practical activities in future.

The development of timbre hearing must be tightly linked with improving a complex musical hearing, with paying attention to the character of sounding created by the instrumental timbre in unity with other means of musical expressiveness.

Conclusion

1. During the process of diagnosing the developmental level of timbre hearing, which requires a close interaction between a teacher and a student, the use of the designed level indicators in correspondence with four criteria contributes to identifying achievements and issues of the development of musician's timbre hearing and provides the opportunity to determine the direction of its further development.

2. The basic conditions for the development of musician's timbre hearing are:

- active listening to sounds of the world around us;
- developing the skill of differentiating timbre from a sound pitch;
- recognizing timbres of specific instruments and combinations, as well as their expressiveness;
- attention to the character of sounding and ability to define its quality by acoustic timbral characteristics.

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