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**THE ‘SOUND’ PHENOMENON PARADIGM AS MUSICAL AND
EDUCATIONAL CHALLENGE**

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Abstract

Sound phenomenon is an object studied in different fields of scientific knowledge: from the formation of Universal structures to a person's inner world. Command of sound's culture (in different epochs, peoples, musical directions, styles and schools) presents different images of the world in its correlation to a human. That is why mastering the culture of sound in performance and composing practices Achieving this aim can only be possible under one condition: the sound phenomenon and worldview are treated in the framework of paradigm approach. That is when models of sound and the outlook reflect common stance in posing problems by the society and understanding the ways of their treatment. This poses the problem of researching sound phenomenon paradigm shift and outlook as a complex process before musical education theory (Glazyrina, 2001).

It is impossible to consider the sound phenomenon in theory of musical training out of context of understandings and attitudes of this or that artistic epoch (direction, style) – artistic and aesthetical concepts, theories of musical training, values and ideals, sound images and so on. However, it should be taken into account that in musical training, culture and art the shift of “sound” paradigms is much more complex than in science. That is why theory of musical training while studying the repertoire of concepts, technologies and teaching methods in the offgoing sequence of sound phenomenon paradigms should focus on their philosophical content.

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1. Introduction

Musical and education aspect of researching the nature of sound phenomenon as a process of mastering the culture of the sound in performance and composing, aural perception are handled in numerous scientific research and educational learning material. Not going into details and just outlining the logic of the gist of the article one can mention, for instance, the works on the ways of phonation and deep amplitude in vocal and choral, as well as in instrumental performance; on the techniques of making sound and timbre tints in conductor's gestures; on making and analyzing space-time organization of musical material in the so-called classical pieces, as well as in those modern opuses where the artist's intention is put into action with the help of musical and unmusical sounds – using everything which is in between and beyond them.

One cannot overestimate the importance and the level of national academic musical training in researching different aspects of sound phenomenon and sound culture formation.

Thereat academic musical training is viewed in the framework of this article as training whose subject matter is conceptually built on the basis of set and yet ever-changing traditions in the field of musical art, as training which is logically structured in the syllabuses of the basic study packages in music (according to their majors) and which is put into practice through tried-and-true learning technologies and teaching methods.

One of the most important factors uniting everything mentioned above into one entity is 'educational framing' of working with the sound in different types of musical activities among trainees.

What is more, this 'educational framing' in academic musical training has always been two-vector: one vector is aimed at training the trainee themselves, the other – at their training for the future musical educational activity with their would-be students.

2. Problem Statement

Initially, Russian academic musical training originated and evolved in the traditions of the natural acoustic culture of sound – as elsewhere in the world. But the threshold of the XXth-XXIst centuries ushered in active expansion of information and communications and musical software technologies. Cautiously and not consistently they started to be interwoven into the subject matter of academic musical training. With this steadily developed the understanding and awareness of the irreversibility of perception of the new sound and of the new perception of the sound.

New technologies have proclaimed the era of electronic music, when, for example, digital sound editing of any acoustic musical instrument or sounds of electronic musical instruments (sampling) or when, for instance, while generating all available for the human ear sounds are being involved (pitched or not). Completely new timbre tints are being constructed (synthesized).

So, now it is undeniable that a new era of digital format sound and music has begun. Although it is worth considering what deeper meaning this "digital page" brings into centuries-old record of musical art, phenomenology and paradigm of sound as musical and educational challenge.

3. Research Questions

Throughout the history of mankind – in different civilizations, cultural and historical epochs, ethnic cultures, aesthetic and musical concepts, scientists' treatises and signature styles, theories and educational

technologies – the interest in exploring and using the sound phenomenon as target setting and search for solution to the problem of reciprocal comprehension of two Universes – the Creation Universe and the Human Universe has never weakened. The present poses yet another facet in the problem concerned: to what extent the paradigms of world order correlate with the paradigms of the sound phenomenon.

The notion of paradigm is rarely used in relation to the phenomenon of sound. Much more often (and especially in musicology) is the term ‘musical and aesthetic paradigm’ or ‘the paradigm of musical aesthetics’. Moreover, music is treated in this context as the art of sound throughout time (Kholopov, 2011).

4. Purpose of the Study

What does a model or pattern of the sound phenomenon constitute in its natural basis? What does sound phenomenon paradigm constitute in musical art and musical training? The answer to these questions is closely related to philosophy and outlook.

5. Research Methods

Is it possible to extrapolate both interpretations of paradigm to the phenomenon of sound? It appears it is. And then in the first expansive context the phenomenon of music may be included (in the context of musical art, musical culture, musical training) as some set of generally accepted (in a particular cultural and historical period) in musical and both musical and educational community understanding of the role of music: in a person’s spiritual formation; comprehension of the harmony between macro- and microcosm; comprehension through music of basic values and categories of aesthetics, ethics and morality; comprehension of dialectics of form and content in trends, styles and genres of music; technologies and techniques in intelligence development and emotional space, forming artistic and professionally significant attributes of an individual (Glazyrina & Nezhinskaya, 2015; Glazyrina, 2014; Shkolyar, 2012).

In the second sense it is about methodological perception of comprehension of separate and sometimes unusual for acceptance elements as components of a complete set of the sound phenomenon. Here a parallel is obvious with Stumpf’s theory according to which alongside with the change of any single physical attribute of sound (for example, its vibrations) two other psychological attributes of sound change – timbre and pitch. All this leads to new quality of sound, with no loss in contiguity in perception of the image, that is to say those bright attributes which emerged in traditionally-perceived musical and sound reality making which the pattern and model opens up horizons of new musical and sound reality and brings to the change of the sound paradigm.

In any case, the term paradigm, having emerged within the Sciences, has taken its place in musical culture, musical art, musical training, theory of musical education.

6. Findings

Sound a priori is an integral attribute of the Universe (including a human). But peculiarities of perception and interpretation of every sound-meaningful variety of the world by a human (musical and unmusical sounds) do not remain unchanged: they are evolving together with its views on the world, and vice versa. Thus, the sound phenomenon paradigm and the paradigm of the outlook are co-evolutional: changes in one paradigm are sure to bring about changes in the other one.

This thought was voiced by Th. Kuhn in his logical-methodological scientific best-seller while comparing the paradigm change in science with total change of coordinates in world outlook: ‘when paradigms change, the world itself changes with them’ (Kuhn, 1977, p. 151); ‘though the world does not change with a change of paradigm, the scientist afterward works in a different world.

Rather than being an interpreter, the scientist who embraces a new paradigm is like the man wearing inverting lenses. Confronting the same constellation of objects as before and knowing that he does so, he nevertheless finds them transformed through and through in many of their details’ (Kuhn, 1977, p. 164).

Universe of the worldview meaning is mysteriously connected with the Universe of sound organization’ (Medushevsky, 1993). In this idea by V.V. Medushevsky one can in some way but catch the priority of the worldview over the sound organization. The explanation can be found in the following things.

American historian and philosopher of science Thomas Samuel Kuhn is considered to be the founder of the paradigm theory. In his world-famous monograph he wrote that in its steady use the notion of paradigm means an accepted model or a pattern (Kuhn, 1977, p. 44). That is the meaning which has prevailed till nowadays. Kuhn indicated that he himself was using the notion paradigm in two senses: ‘On the one hand, it stands for the entire constellation of beliefs, values, and techniques, and so on shared by the members of a given community. On the other, it denotes one sort of element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science’ (Kuhn, 1977, p. 228-229).

Sound in its various guises (acoustic, digital, with a pitch range and without it, and so on) and concepts (philosophical, musical and aesthetic, musical and educational, musical and performing, and the rest) has not only been losing the depth of its outlook meaning as people learn more about it, but is rapidly involving a person into it. The musical and aesthetical paradigm of contemporary times embodies in artistic form achievements of the 20th-century science which has changed the attitude of the mankind – ‘theory of relativity, quantum theory, contemporary mathematical, religious and philosophical theories, chaos theory’.

Studies of sound phenomenon in its paradigmatic dimension cannot be an isolated, closed field of scientific knowledge: it is inseparable from understanding worldview paradigm evolution. In the most general terms a human’s focus on the world and their place in it can be reflected with the help of the following global landmarks: cosmocentrism, anthropocentrism, anthropocosmism. In each of them the sound phenomenon serves the function of streamlining the relations of a human with the world: the identity of harmonic proportions of Pythagoras’ musical scale for human music (*Musica humana*) and cosmic world order (*Musica mundana*) (cosmocentrism); aesthetic delight in perfection of a musical thought in a genre-and-style and timbre music palette enriched with new bright colours for a deeper expression and wider variability of spiritual and mental world of a human as a ‘measure of all things’ (anthropocentrism); music as ‘the art of coordination and the harmony of vibrations’, ‘unindividual’ embodiment of the manifestations of the universal cosmic spirit ‘being read’ by a composer (according to K. Stockhausen) (anthropocosmism).

So, the co-evolution in the change of sound paradigm and its philosophical content is obvious. Still, the change of paradigm in the phenomenology of sound in musical art, education and training has its own differences from the change of paradigms in natural science, analyzed in full detail by Th. Kuhn. Here are some of them.

The first difference is connected with the rejection of an old paradigm due to the introduction of a new one. Kuhn's statement can serve as an example here: 'When, in the development of a natural science, an individual or group first produces a synthesis able to attract most of the next generation's practitioners, the older schools gradually disappear. In part their disappearance is caused by their members' conversion to the new paradigm. But there are always some men who cling to one or another of the older views, and they are simply read out of the profession, which thereafter ignores their work. The new paradigm implies a new and more rigid definition of the field. Those unwilling or unable to accommodate their work to it must proceed in isolation or attach themselves to some other group'.

The analysis of the mentioned above quotation in the context of musical culture, art and training gets us to reflect about the following philosophical thesis: 'unity in diversity and diversity in unity' as form and content in art and culture, as well as the necessary condition of familiarizing a personality with spiritual values. In this regard it is impossible to imagine the change of sound paradigms in culture and art as the process of mutual elimination, that is, when a new sound phenomenon paradigm entirely replaces the previous paradigm. Art and culture are formed and are developing in the environment of an open and never-ending dialogue of epochs, ideas, meanings, images and intonations. That is why dialogueness as one of the most important bases in sound paradigms (which are understood as the new understanding of a sound, the new quality of it) does not only deny but, on the contrary, highlights the new colours in the process of perception and understanding of world images through sound. Using an example of philosophical paradigms – it's like return to the cosmo, but on a new spiral of the understanding of the world, attitude to the world, world view: from cosmocentrism – through anthropocentrism – and once again back to the cosmos in anthropocosmism.

The second difference is connected, on the one hand, with the understanding of the role of tradition in evolutions and revolutions of scientific paradigms, and, on the other hand, paradigms in art, culture and musical education and training. Th. Kuhn performing historical analysis logically comes to the conclusion about the destructive role of scientific revolutions within the development of 'the normal science', the traditions-based science: 'And when it does-when, that is, the profession can no longer evade anomalies that subvert the existing tradition of scientific practice-then begin the extraordinary investigations that lead the profession at last to a new set of commitments, a new basis for the practice of science. The extraordinary episodes in which that shift of professional commitments occurs are the ones known in this essay as scientific revolutions. They are the tradition-shattering complements to the tradition-bound activity of normal science'.

This Kuhn's thought in the field of the Humanities requires reinterpretation. A lot of research papers, education publications and popular editions are dedicated to the analysis of traditions in art, culture, musical education and training (it seems impossible within this article to give fundamental analysis of scientific papers of such kind). The authors stress the fundamental role of cultural traditions and point out that different peoples and ethnic groups traditions of sound culture are somewhat of tenets of the cultural environment, the solid foundation of culture and outlook, the prevailing factor in the development of culture, the potential for cultural self-development, mechanism of intergenerational retransmitting of culture. That is why the change of sound paradigms in the culture of different peoples and generations can't be accompanied by devastating processes and denial of cultural heritage but, vice versa, is based upon the consistency of spiritual experience of age-old traditions and modern cultural innovations. To prove this it

is appropriate to give one more Kuhn's remark indicating the consistency in the paradigm change process: 'Since new paradigms are born from old ones, they ordinarily incorporate much of the vocabulary and apparatus, both conceptual and manipulative, that the traditional paradigm had previously employed. But they seldom employ these borrowed elements in quite the traditional way. Within the new paradigm, old terms, concepts, and experiments fall into new relationships one with the other'.

Taking the mentioned above quote on the track of sound suggests that experiments with sound in musical pieces (in terms of interpretation, sound-producing and deep amplitude, new techniques of composing, digital technologies, etc.) bring about new 'images' of sound and, consequently, precede the appearance of new sound paradigms. This is evidenced by observations of the sound paradigm evolution made by Kholopov (2011) on the example of musical trends of 'the second wave of avant-garde':

- 'sonorism (= music of sonorities, when a unit of a material is not a single sound but a group of them);
- electronic music (EM), where there are no sounds of natural instruments, or sounds of nature and music operates with sounds of electric generators. Sounds are initially not connected with "the laws of nature";
- concrete music (CM), material of which are the sounds of life (for example, the noise of forest, the sound of falling water drops, birds' singing, etc.)'.

Thus, sound paradigms should be considered in a complete way, when they are all represented in one civilizational spiral of musical art as an artistic form of reflection of the reality, and their change is due to the constants of the previous paradigms, laws of musical art and the understanding of a human's place in the world order.

The third difference (from the ones mentioned in the article) of a natural science paradigm from a paradigm in culture and art is connected with the choice of tools for a new paradigm and its compliance with the new vision of problems and their solutions. For this we should again address Th. Kuhn: 'The significance of crises is the indication they provide that an occasion for retooling has arrived'. What is meant by the tools of paradigm? The answer can be found in Kuhn's: 'In learning a paradigm the scientist acquires theory, methods, and standards together, usually in an inextricable mixture. Therefore, when paradigms change, there are usually significant shifts in the criteria determining the legitimacy both of problems and of proposed solutions'. Thus, Kuhn attributes theory, methods, criteria and standards to the tools.

Are these tools adequate for the solution to the problems in researching sound phenomenon paradigms? It is adequate in the conceptual part, in theories and criteria because it is impossible to consider the sound phenomenon as musical and educational as well as philosophical problem out of paradigm context of this or that artistic epoch (school, style) – its artistic and aesthetic concepts, theories of musical education, criteria and levels maturity of values and ideals in the field of musical culture, sound images and pitch range, and so on, as well as ways and methods of their implementing in musical art, culture and education.

But as for the standards of the paradigm the answer to the question about the commonality of the paradigm tools is not that unambiguous for the both domains – the domain of a natural science and the domain of musical education. On the one hand, the mentality of each generation is accustomed to well-established sound 'formats' (standards). Using terminology by B.V. Asafev (1973), – this is 'the epoch's

intonation fund' with their inherent multi-parameter characteristics of the musical sound: dynamics, texture, the prevailing genre foundation and so on.

On the other hand, the modern society is developing under the conditions of standardization in education (Federal State Educational Standards, Federal State Requirements, and so on). But the processes of implementing these standards into the sphere of scientific knowledge and in the field of humanitarian knowledge are not identical to each other and each has their own specifics. The harmony of standards in the scientific knowledge paradigm was pointed out by Th. Kuhn in the cited above quotation. As for standards in humanitarian knowledge (in musical culture, art, training and education in particular) not everything here is unambiguous. The analysis of the sound phenomenon as musical and educational problem can't be covered at length by the usage of standards of this or that paradigm. It is connected with the fact that the value and unique character of artefacts of musical culture and art, as well as the results of pedagogical influence in the system of musical training are located outside the framework of standards because the nature of creativity is alien to regulation, unification and standardization. The change of paradigms in art, culture and musical education and its 'decoration' is much more complicated than in science: unlike negation and/or radical poles shift in science we see layering of meanings and contexts in art which are not mutually exclusive but mutually complementary and mutually enriching. That is where the unique character of comprehending the sound phenomenon and the culture of sound shaping lies.

7. Conclusion

So, worldview paradigms and sound phenomenon paradigms have been changing throughout the history of the mankind. Their interdependence is premised on the nature and laws of art as an artistic form which reflects the dialectics of the world. But the answer to the question about the primacy and/or priority of this or that paradigm is controversial: sometimes it happens that a worldview paradigm change triggers the shaping of a new musical and aesthetical sound paradigm, and sometimes it happens that new characteristics of musical pieces boost reinterpretation of worldview foundation of the science and the way of life. In any case the theory of musical training in studying the repertoire of concepts, technologies and teaching methods in the offgoing sequence of sound phenomenon paradigms should focus on their philosophical content, on the worldview "filter". That is why we can quote S. Gubaidullina (2009) as the "teaching motto" and as the outcome of all our reflections: 'the meaning of our actions lies not in creating news over and over again ... not generators should be switched on but the filters'.

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