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E-mail: rahatbiabd@mail.ru**CONTEMPORARY MUSIC AS AN ECHO OF TIME**

Abstract. This article presents the relationship of basic and fundamental aspects of the evolution of music and the epochal formations of scientific and technical progress. It shows a new perspective on the emergence and development of music ranging from the classical art of J. S. Bach, G. F. Handel, Ch. W. Gluck, F. J. Haydn, W. A. Mozart, L. van Beethoven up to such musical constellations of contemporary classical music and creators of the new tonality and serial technique, such as A. Schönberg, O. Messiaen, K. Stockhausen, P. Boulez, L. Nono and E. Denisov. A unique analogy of music and science has been established in this article. Epoch-creating discoveries of the 20th century, such as the Structure of the Atom, the Theory of Relativity, Quantum Mechanics, etc., which radically changed our perception of the world, reflected in the development of music. If J.S. Bach is the I. Newton of music, K. Stockhausen is A. Einstein. The phenomenon of music is not a chance circumstances, but a manifestation of regularity. It is also a precious and spiritualizing fruit of human expanding horizons and worldview. It is shown that the art of music has evolved, and the phenomenon of music itself remains covariant. A musical form is a principle that reflects the key and unique phenomenon of the outlook of an era.

Keywords: polyphony, sonata, tonality, dialectic, the diffusion of cultures, theory of relativity, quantum mechanics, dodecaphony (twelve-tone system), serialism, space and time.

*Great art is the outward expression
of an inner life in the artist,
and this inner life will result
in his personal vision of the world.*

Edward Hopper

Since ancient times, man as an individual is covariant with respect to the passage of time. In our 21st century which is the age of globalization, all kinds of «tectonic» processes actively influence all spheres of human life promoting the revitalization of the diffusion of cultures. There is a transformation and qualitative transfiguration of human thinking which is particularly evident in the field of science and arts.

«Any changes in the public consciousness of one country invariably involve changes on a planetary scale. In this sense, music is one of the finest arts built on abstract images, but facing the highest level of generalization – it feels these changes more sharply and more precisely than many others would» [1]. It is impossible to overestimate the role of art and culture in the development of social consciousness. For example, many of the works of Charles de Montesquieu, Francois-Marie Arouet (Voltaire) and other great minds, and the greatest works of J. S. Bach, W. A. Mozart are dedicated to the topic of the Divine Gift and Ontologies. They were created several centuries ago and today they continue to be the foundation and driving force behind the enrichment of world treasures.

Art is an integral part of the human being. Man lives, as long as he thinks and creates. In addition, art, science, and philosophy, as well as other symbolic spheres of human activity are inseparable and interrelated. All of them are the ways of man's knowledge of the surrounding world. All of them are different facets of the same nature [2].

The fate of each person has a unique and unprecedented set of circumstances that have never been and that will never occur again! And the fate of an era, its history, and a global history are made up of individual destinies. World history is in fact a series of biographies and their interactions and the interactions of minds!

I believe that every person is born with a certain system of values, which form the basis of ideology and leads him through life. Creation and making music – all of this can be attributed to the function of the mind [3].

In the 10th century AD Abu Nasr al-Farabi in his treatise «On Music», said: «The music of the first kind simply gives pleasure, the second kind of music expresses passion, and the third kind excites our imagination» [4]. In my opinion, this statement is true to this day especially in the aspect of the perception of classical, pop, dance music, and other varieties.

Musical art evolves but the music remains the same phenomenon. The constant of this phenomenon is the physical phenomenon itself – the sound. Overtone scale depends on the sound medium of propagation (e.g., air in this case). The sound is an essential element of music. If in Mathematics, the basic element is the number, in music it is sound. From the general field of physics, sound is known as elastic waves. These elastic waves in the human brain are only identified as sounds, and a person experiences only a limited range of frequencies from 16 Hz to 20 kHz [5-7].

I would like to note that Mathematics is the language spoken by all sciences [3].

Analyzing the history of music, we can see that what is called classical music was born in the period of genesis of classical mechanics by Isaac Newton, understanding Kant and Hegel's theory of dialectics, and the discovery of the heliocentric model of the solar system.

The notion of classical music and classical art in general, as is commonly believed, was confirmed after the French Revolution (July 4, 1789 after the capture of the Bastille). It is this series of events that led to the transformation of the social and political system, not only in France, but also in all countries of Western Europe [8].

Every era in art and culture has its own name. It is given to subsequent periods, respectively objective and sometimes subjective factors. For example, Antiquity, the Middle Ages (the longest epoch), Baroque, Renaissance, Rococo, Classicism (the shortest and most concentrated era), Romanticism, and finally, the 20th century, which does not have yet its own name [2, 9].

Worthy of interest is the fact that the epoch of the Middle Ages, or even the era of the Middle Ages, lasted about 10 centuries (as historians say, from September 4, 476, when Romulus Augustus, the Emperor of the Western Roman Empire, abdicated, and until the fall of Constantinople in 1453, discovering America in 1492, the beginning of the Reformation in 1517, or even before the English Revolution in 1640) [10-13].

A classical era in music has gone through half a century (from the middle of the 18th century to the beginning of the 19th century), as is commonly believed, in the work of the five classics – G. F. Handel, Ch. W. Gluck, F. J. Haydn, W. A. Mozart and Ludwig van Beethoven [14]. I also note that composers of the Romanticism era (19th cent.) honored the creativity and personality of Beethoven as the first romantic composer.

Form is a principle that reflects a key and unique phenomenon of epoch of its origin and formation [15-19]. It is no coincidence that a form of fugue is more ancient than the form of sonata, than the sonata principle. Fugue is jogging, running time, it is a fugitive movement in infinity. Fugue was formed in the late Middle Ages and has established itself in the Baroque period, and the top of fugue forms are the fugues of J.S. Bach. The form and the principle of fugue reflect the outlook of the time period. In my opinion, it is concluded that there was no clear division of what is good and what is evil. Essential and significant was only an endless running, a series of chain of events, where one is the result and/or the cause of the other.

It is possible to make a distant analogy between the principle of fugue and the first law of Newton, which in its historical definition says: «Lex I: Corpus omne perseverare in statu suo quiescendi vel movendi uniformiter in directum, nisi quatenus a viribus impressis cogitur statum illum mutare» – «Law I: Every body persists in its state of being at rest or of moving uniformly straight forward, except insofar as it is compelled to change its state by force impressed» (Isaac Newton «Philosophiæ Naturalis Principia Mathematica»). The fugue remains a constant theme that is carried out in different voices, and changes due to the polyphonic receptions of its «condition».

Sonata is the whole world, an obvious reflection and realization of the dialectics in music. For example, primary area – secondary area, legato – staccato piano (quiet) – forte (loud) ...

Sonata as a fugue, more than form, is a principle! Just as there is no form of Rondo, Rondo is a principle [14]. A form for each composition has its own unique form, which depends on the musical material. Sonata is like the world in all its diversity, where there is a thesis and antithesis, where there are two points in the space between them, as is well known, it is possible to conduct only a single line.

Sonata is a kind of reflection or expression in the music of the dialectical law of the unity and struggle of opposites [15-19]. Massing, and in some aspects philosophical principles of the sonata, can be described as the search for and the desire to find, see and understand the fragmentation in unity, and unity in fragmentation. From these points of view the principle of the sonata is comparable with the definition of the third law of Newton: «Lex III: Actioni contrariam semper et æqualem esse reactionem: sive corporum duorum actiones in se mutuo semper esse æquales et in partes contrarias dirigi» – «Law III: To every action there is always opposed an equal reaction: or the mutual actions of two bodies upon each other are always equal, and directed to contrary parts» (it is important to note the well-known fact that Newton's third law does not affect the «Lorentz force»).

The concept of interaction of opposites exists also in fugue theory, but within the framework of a fugue, it does not have the significance that is attached to a secondary area in sonatas. Only fugues by J. S. Bach, anticipating the era of classicism, are in a ratio of dialectical background themes and counterpoints, although traditionally, works by J.S. Bach are usually associated with the Baroque era. It is well known that Bach voice-leading on micro and macro levels, and even in a global sense of harmony is subject, moreover, in a sense, is a tonal plan. On the one hand, it is the highest stage of polyphonic structure, on the other hand, the manifestation and the establishment of harmony as a new centrism in music and composition, the formation of the main formative aspects of tonality. It follows from this that the music of J. S. Bach is not a harmonic polyphony, yet it is a polyphonic harmony!

Known types of polyphony include: imitative (when one voice or several voices imitate basic voice) and contrast (the interaction of several voices with different musical material) [20]. Imitative polyphony is an obvious example of consistency theory, where one voice, following another, imitates its material with variation or in its original form. The great Johann Sebastian Bach did not write polyphonic music in the classical sense. Every genius writes in his own style. It is impossible to «fit» all the greatness of genius of a person into a certain «system» because they do great out of time, their creations are for the ages, and will live forever. «Well-Tempered Clavier» (both volumes) by J.S. Bach is a whole picture of the universe in its entire beautiful splendor, which trembles before a descendant of Adam. Bach does not fit into any formation, because, for example, many scholars of Bach agreed that «The Art of Fugue» is the phenomenon of the most sacred things in the treasury of world music where the voices are not just voices, where polyphony is not just technique. In the «The Art of Fugue», it is passed to the image of the Creator. Lines of voices like the Apostles, and the variations are similar to the will of Christ to humanity. Bach is revolutionary in every note. Even if we take the first C-dur fugue from the Well-Tempered Clavier Volume I, the genius lies even in the order of voices' entry – Alto (C), Soprano (G), Tenor (G) and Bass (C). We get fifths symmetry (the temptation to write a «quantum» instead of «fifths»). A fifth of many composers is associated with the image of infinity. Also in the music of J.S. Bach images were found of the cross and great humility.

Contemporary music is a qualitatively new stage in the evolution of music. The 20th century is the century of enormous speeds [2, 9, 14, 21-24].

At the beginning of the 20th century there were epochal discoveries in the world of science, which radically changed our view of the world. For example, the Structure of the Atom by Ernest Rutherford, who opened the door to the microworld, thus opening the gates of the Universe. This was a qualitative leap in the outlook of mankind, and was accompanied by the creation of Albert Einstein's Theory of Relativity, theory of Quantum Mechanics by Niels Bohr, Erwin Schrödinger, Paul Dirac, Max Planck. There were such iconic literary creations as «Das Glasperlenspiel» («The Glass Bead Game») by Hermann Hesse, which radically changed art and poetry. In this period there was a breakthrough in music – Arnold Schönberg discovered Dodecaphony (Twelve-Tone System), and compositions based on Dodecaphony were created.

A simple example – it is possible to make a distant analogy with the discovery of Structure of the Atom and splitting sound (Son Fendu, Multiphonics), and in-depth study of vocal properties. And the

assumption of the possibility of the existence of parallel universes in physics inevitably reflected the expansion of the coordinates of space in music.

So-called Atonal music is also Tonal, because in it, Tonality is redefined. Tonality is a series, and at times («Integral» / Total Serialism by Olivier Messiaen, Pierre Boulez, Karlheinz Stockhausen, Luigi Nono and others) dynamics series, series of methods, of techniques – are new varieties of Tonality [21, 22, 24]. This is clearly manifested in the Orthodox Dodecaphony by A. Schönberg and E. Denisov. According to Y. Kasparov: «... it is one thing not to think about the tone, and the other – really exclude it from a piece of music! And it is impossible in principle! Like any architectural project which takes into account, the gravity and the creation of a musical work is impossible without theses, antitheses, or using a more familiar term for musicians, without the «stable-unstable». Before serialists «stable-unstable» was implemented in two-dimensional space with the coordinates and the pitch of measure-rhythm. Now the law of gravity starts to act in a different coordinate system ... Mozartian lightness is the result of the game with a tonality – when we do not know exactly where we are, and if the abutment in music is compared with gravity, perceive ourselves in a state of near zero gravity» [14]. Y.S. Kasparov gives analysis of the development in the composition «Romantic music» of Denisov, and compares the game with the Tonality of Mozart with the game with Tonality of Denisov, despite the fact that the composition is written by Denisov in Orthodox Dodecaphonic manner and this was an unprecedented case. There is also clear evidence that all music is Tonal, especially Dodecaphony and Serialism! Stability has not been canceled, and in principle cannot be undone! In one form or another, stability in music will always be present!

Tonality has been redefined in contemporary music because composers' spatial thinking has changed, and «Tonality» in contemporary music can be compared with Albert Einstein's Theory of Gravity, where massive bodies curve space time! And in contemporary music musical material sets new principles of formation and organization of space and time in music! Exceptionally bright, this aspect is reflected in the Sonoristics and Spectral Music, where the main coordinate of musical space-time is the timbre! Timbral techniques and sound effects have become the foundation of contemporary compositions [14, 23], and already they seem to bend space time to the music! It is known that «harmony is a communication system which forms elements» [25]. And contemporary music is highly harmonious!

So, by analogy with physics: «If Johann Sebastian Bach is the Isaac Newton of music, Karlheinz Stockhausen is its Albert Einstein!» [26].

Time is the greatest phenomenon. Time flies, and waits for no-one. Time sets its requirements and its laws, which cannot be circumvented. And in my opinion, contemporary music expresses and confirms the times in which we live! And I think for that reason that the appearance of contemporary music is not an accident, but rather regularity!

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ЗАМАНАУИ МУЗЫКА УАҚЫТТЫҢ ЖАҢҒЫРЫҒЫ

Аннотация. Жұмыста музыка эволюциясы мен дәуірлік ғылыми-техникалық прогрестің іргелі, негізгі аспектілерінің өзара байланысы қарастырылған. И. С. Бах, Г. Ф. Гендель, К. В. Глюк, Ф. И. Гайдн, В. А. Моцарт, Л. Ван Бетховен сынды классиктер шығармашылықтарынан бастап, қазіргі заманғы академиялық музыка және жаңа тональност пенсериялық техника құрушылары, заманауи музыка шоқ жұлдыздары А. Шёнберг, О. Мессиаен, К. Штокхаузен, П. Булез, Л. Ноно, Э. Денисов кедейін музыканың тууымен дамуына жаңа көзқарас ұсынылған. Музыка және ғылым дамуының бірегей аналогиясы тағайындалған. Біздің дүниетанымымызды түбегейлі өзгерткен атом құрылымы, салыстырмалық теория, кванттық механика және т.б. сияқты XX ғасырдың дәуірлік жаңалықтары музыка дамуында кең-ауқымды әсерін тигізді делінген. Егер И. С. Бах - музыкадағы И. Ньютон болса, онда К. Штокхаузен – А. Эйнштейн. Музыка феномені кездейсоқтық жағдай емес, заңдылықтар көрінісі, аса құнды, рухтандыратын, кеңейтілген адамзат ой-өрісінің туындысы, дүниетанымының жемістері. Музыка өнері ғажаби дамып, және музыка феномені ковариант болып қалатыны көрсетілген. Ал музыкалық құрылым дәуірдің түйінді және бірегей дүниетаным құбылыстарын қайым-қайта көрсететін қағида.

Түйін сөздер: полифония, соната, тональност, диалектика, мәдениеттер диффузиясы, салыстырмалық теория, кванттық механика, додекафония, сериализм, кеңістік және уақыт.

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СОВРЕМЕННАЯ МУЗЫКА КАК ЭХО ВРЕМЕНИ

Аннотация. В работе рассматривается взаимосвязь фундаментальных, основополагающих аспектов эволюции музыки и эпохальных пластов научно-технического прогресса. Представлен новый взгляд на появление и развитие музыки начиная с творчества классиков И. С. Баха, Г. Ф. Генделя, К. В. Глюка, Ф. И. Гайдна, В. А. Моцарта, Л. ван Бетховена вплоть до таких музыкальных созвездий современной академической музыки и создателей новой тональности и серийной техники, как А. Шёнберг, О. Мессиаен, К. Штокхаузен, П. Булез, Л. Ноно, Э. Денисов. Установлена уникальная аналогия развития музыки и науки. Эпохальные открытия XX века, такие как структура атома, теория относительности, квантовая механика и др., в корне изменившие наше мироощущение, отразились и на развитии музыки. Если И. С. Бах - это И. Ньютон в музыке, то К. Штокхаузен - это А. Эйнштейн. Феномен музыки - не обстоятельство случайности, а проявление закономерности, драгоценные, одухотворяющие плоды человеческого всё расширяющегося кругозора, мировоззрения. Показано, что музыкальное искусство эволюционирует, и сам феномен музыки остаётся ковариантным. А музыкальная форма есть принцип, который отражает в себе ключевые и уникальные явления мировоззрения эпохи.

Ключевые слова: полифония, соната, тональност, диалектика, диффузия культур, теория относительности, квантовая механика, додекафония, сериализм, пространство и время.