

Music inside of the Pictures and the Process for the Visualization of Music by the Multi-topophonic Composition Technique

The 20th century offered a significant amount of scientific innovations, which influenced the world culture, including music. As a result, a large number of science oriented composers appeared in the world of art, as well as hybrid artists – for example, composer-painters. These and similar events prepare the mankind for so called “United Thinking”, where the intuitive and rational are balanced.

Translation of the idea with the help of multimedia is typical for contemporary art and in order to achieve that, we should use the syncretism of music and visual. Syncretism is also typical for “United Thinking”.

The works of art of the early and contemporary epochs are also the patterns of the syncretic art. The early man used “united thinking”, because of the dominance of intuitive thinking. Today the civilization strives for intensification of intuitive thinking.

The processes mentioned above could be defined as the general reason of the connection of musical and visual arts. Visualization of music has certainly contributed to emergence of syncretism of arts. Fine art and music are very different physical phenomena. As we know, music is a product of the acoustic processes and a visual – of the optical ones. The connection of these two fields of art is possible only metaphorically, by Associative Thinking.

As generally known, the spatial aspect is a main phenomenon of visualization, and the temporal one – of sounding. In my opinion, for rapprochement of these two art fields, it is important to mix the thinking principles of both phenomena. I classified basic facts and ways of appearance of the visual in music and of music – in fine art.

Music	Fine Art
perception of the abstract	perception of the concrete
perception and realization of an idea resolves the time	perception and realization of an idea resolves the space
main source of the expression – dynamic	main source of the expression – static

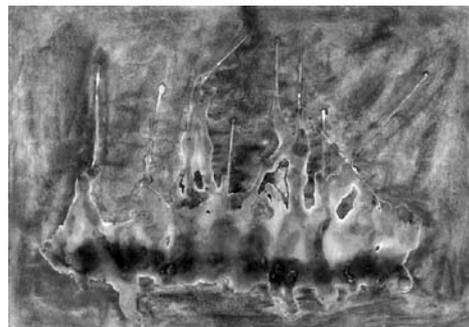
There are two criterions of interrelation between music and fine art:

- a) their connection – it is possible to expose musical symbols in the picture, or to imagine the visual world by musical associational analogies;
- b) their confluence – it can be achieved by syncretism of these art fields; the syncretism here means the mixture of technical methods in different kinds of temporal-spatial phenomena.

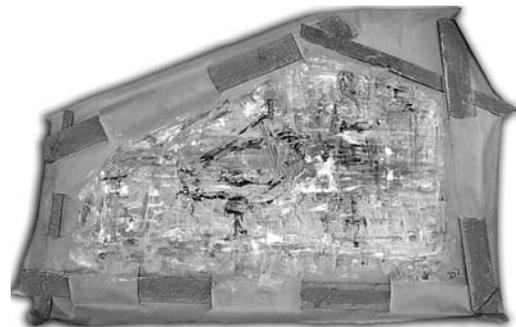
As an example of the **connection of music and fine arts** I could show some paintings from different epochs as well as my pictures (Quartet, Paganini, Chamber Orchestra and Pianist). On these pictures you can see musical symbols (instruments, performers, composers). As for imagination of the visual world by musical associational analogies, we can think of “Carnival of Animals” by Saint-Saëns, or “Fantastic Symphony” by Berlioz, or “Pictures at an Exhibition” by Mussorgsky, etc. All of you have definitely heard this music.



Paganini



Chamber Orchestra



Pianist

The connection between music and visual deepened in the epoch of impressionism and symbolism. This is very important period. Fine art discovers phenomena of the speed, and music expresses light and color by the timbre. Sound-Color Synesthesia could be understood as a manifestation of the **confluence** of music and visual.

The speed (I don't mean the tempo) is a typical method of expression in music, which used to be perceived only as an audio category. But when the technical progress brought a train, people could see the speed. The speed brought tempo into the picture, resulting into disappearance of contours (J. Turner – “Rain, Steam and Speed the Great Western Railway”). At these pictures no contours can be seen, and thanks to that, we feel the speed. At the same time, **rhythm** entered the picture, through indication of **movement** of lights and shadows. This movement was achieved by using the strokes of different forms or directions (Claude Monet – “Train Tracks at the Saint-Lazare Station”, Camille Pissarro – “Boulevard Montmartre Spring Rain”). Monet uses the steam and Pissarro uses the rain to make the contours look vague. The rhythm and the tempo are musical categories and we see that they penetrated the fine art. This could be understood as an example of **influence** of music on fine art. And now I will explain you how this influence transforms itself into a **confluence** of music and fine arts at the example of my pictures and music which is composed in multi-topophonic technique.

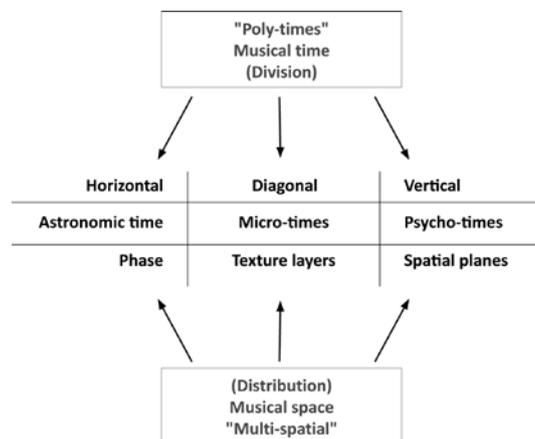
The “multi-topophonic composition technique” emerged in the heart of Meditative Music. The Meditative Music represents the art of composition, where the musical materials with different “psycho-times” are disposed in different space layers. The view of these points, which we use while composing, helps us to see music as a painting with perspective, where we locate musical material (“phono”) in different (“multi”) levels of space (“topo”). They have their own time-dynamics to “live” in this space, as planets in the cosmos, or atoms in the micro world. I think, using this composition technique helps us to “paint” music.

The essence of the “multi-topophonic” composition technique is correlation of multiple times in one or different spaces, which I call “poly-times” or “multi-spatial polyphony”.

Such a meaning of space and time has created new notions, mainly in those three categories, that are necessary criteria for structuring of form and texture. These categories are:

- compositional draft;
- tempo-rhythm and “intonation space”;
- texture and instrumentation.

Compositional draft – represents a plan for distribution of musical material in real time. There are given three directions in the musical space (vertical, horizontal and diagonal) for movement of different kinds of musical times (astronomic time, Psycho-times, Micro-times.)



Compositional draft

Astronomic time moves to horizontal direction in the musical space. It helps to generate distribution in real-time of structurally big and small parts of forms – phases – during horizontal division of works and also to regulate balance of ensemble.

Later, there was revealed tendency for division of musical space into planes in a musical work. Each spatial plane has independent time pulsation, which formatted phenomena of the psycho-time. The psycho-times appear in the different musical spatial planes, so they divide vertical of the musical space and are located on the separate layer in parallel. Each of them has own independent time pulsation.

The micro-times are given an important role for formation of textured layers. Musical material, which has independent indicator for tempo-rhythm, makes own layer with micro-time. If we collect several musical materials with different micro-times, we will be drawing textured layers, where musical materials by own micro-times are moving diagonally.

The second category is **Tempo-rhythm and “intonation space”**.

Tempo and absolute stativity;

Astronomic time regulates unchanged pulsar of tempo. Tempo itself is divided into layers, which are placed in micro- and psycho-times. Making the tempo faster or slower in the layers is done by means of timbre dynamics, rhythmic draft and at the cost of changing durations. We come across to the following ration of tempo in the works – astronomical tempo, then tempo of psycho-times, then tempo of textured layers of micro-times, as a result of which, in the end, we achieve “absolute stativity”.

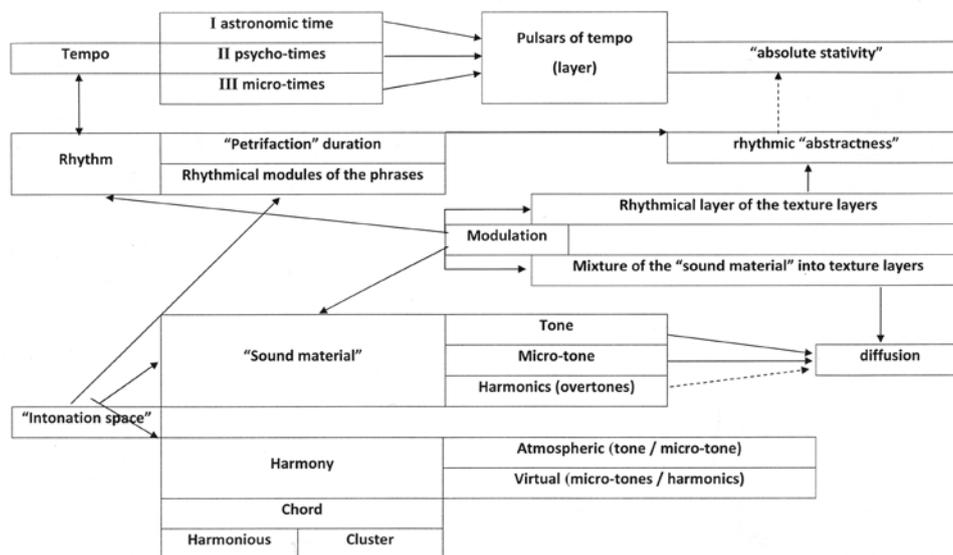
Rhythmic “abstractness” and modulation;

Definition of tempo-rhythm of work is made by means of psycho-times and regulation the layering of micro-times, what is reflected in change of dynamics and statics in ‘multi-topophonic’ composition technique.

Method of layering psycho-times is based on the principle of rhythmic “abstraction”, which is achieved by means of isolating **sound, phrases or motive links**, i.e. by “**petrification**” of last duration in one layer. This is almost an analogue of a fermata in other dimension. The fermata includes the duration + its half; “**petrification**” duration can be shortened or prolonged. It is not counted; it stays “**abstract**” in its layer. This effect gives possibility to make **Rhythmic modulation**. It is achieved by entrance of new musical material in different textured layer in parallel of the other already sounding musical material. Entrance of new layer has to be made during the time slot among the weakest pulse beats of the already sounding layer’s micro-time pulsation.

“Musical material” Harmony and diffusion;

a) Melody is considered to be an object of time’s materialization – “**intonation space**” with all indicators¹. Here emerges “**sound material**” that fills this “**intonation space**”. “**Intonation space**” with “**sound material**” means creation of musical material, on the basis of which there is built the whole construction of composition. Each “**intonation space**” occupies one textured layer and it is different from other layers by its own “**sound material**”. There are created different **texture layers** in the **spatial planes**.



Tempo-rhythm and “intonation space”

“**Sound material**” consists of **sounding tones, microtones** (quarter, eighth, third, etc. tones) that are difficult to distinguish by ear and **harmonics (overtones)** existing in acoustic space. **Virtual harmony** and **their combinations** are created in the acoustic layers by interaction of **microtones** and **harmonics**. This effect gives possibility to make **modulation – diffusion** of the tones, microtones and harmonics between different layers sounding in parallel.

¹ Height, rhythm, timber spectrum, acoustic location of sound, etc.

b) There are two kinds of harmony in the “multi-topophonic” composition technique: **atmospheric** and **virtual**. Harmony that sounds in objective reality and is received by means of combining **combinations of tone and micro-tone** is an **atmospheric harmony**.

There are two types of **chords** in atmospheric harmony – **harmonious**, the function of which is to develop the harmony line in “intonation space” and **cluster**, which functionally is a sonorous spot where sounds are indicated by means of pitches.

Harmony that sounds in virtual (that can manifest in appropriate conditions) reality is a **virtual harmony** and is received as a result of interaction of **microtones** and **harmonics**.

There are two different kinds of modulation in the “multi-topophonic” composition technique: **rhythmic** and **tone diffusion**.

The third category: **Texture and instrumentation**.

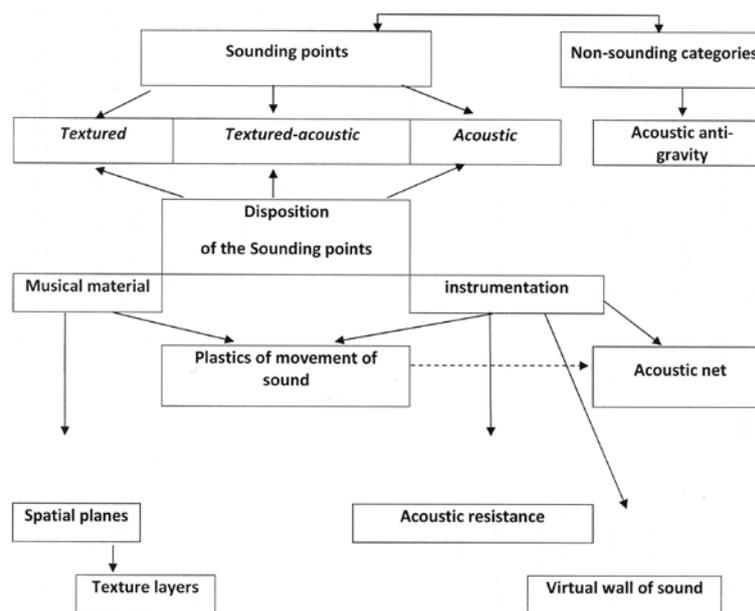
“Multi-topophonic” composition technique offers sounding and non-sounding categories for composing music.

Sounding categories were determined by creation of **acoustic points**. Later there were established scores for **locating instruments** and **compositional draft**.

Thus, there exist two kinds of understanding of sounding points in the “multi-topophonic” composition technique: textured and acoustic points.

1. **Textured** means development of musical material in independent spatial layers of the composing part of works. This creates a texture, peculiar to this composing technique; It has stable character.
2. **Acoustic** means defining-distribution of location of musical material in an environment (building) where music will sound. It has **spatial/changeable** character.

Later the two kinds of understanding of points have merged and there were created points made sound by means of **textured-acoustic** parameters.



Texture and instrumentation

a) **Plastics of movement of sound, Acoustic net and virtual wall of sound;**

Unique continuous movement of atoms has become the basis of idea of distribution of musical material in **different points of acoustic space**. Autonomy of points in the **acoustic space** determines emergence of **planes of musical space**. Division of musical space into planes – **Acoustic plastics** – is called trajectories of the movement of microtones or harmonics in **acoustic layers**; their nod I call **acoustic net**. In general, multi-topophonic music is static in the work; activating of dynamic processes takes place inside the musical material. Listeners follow inner **acoustic plastics** and “holo” effect is created. That is why musical stativity is not felt so sharply by listeners. **Virtual harmony** is created by means of **acoustic plastics**, which is a result of interaction of sound harmonics that exist in **atmospheric harmony**. As a result there is created **virtual acoustic wall** visibility of which we provoke by means of light of trajectory of movement of tones.

Acoustic resistance or **Acoustic friction** means conditions of simultaneous sounding un-mixing of different timbre colors put through one spatial condition.

b) Non-sounding categories and acoustic anti-gravity.

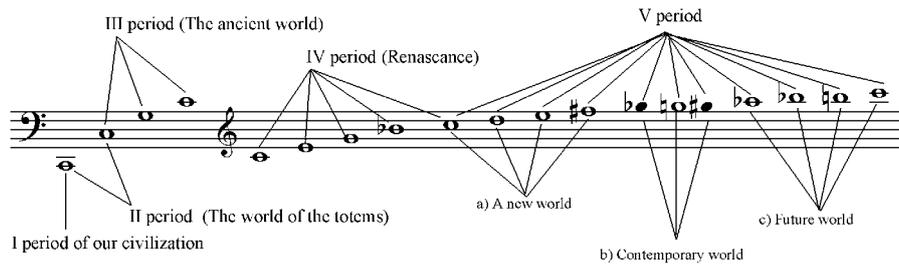
Pseudo-timbre dramaturgy creates a tool, peculiar for building up a **virtual wall**, as well as opportunity for destroying it too. The latter reveals the opportunity for using non-sounding categories in musical composition, which organically merge with other elements creating a form. We can bring an example of perception of music by means of light and color, where illusion of sound is created with rhythmic combination of lights in the complete darkness. Listeners experience **acoustic anti-gravity**, while being in the field area of the sound of works, sounding on the background of temporary silence. This maintains the ability to continue listening to music and, at the same time, rhythmic draft of colorful lights helps to provoke this.

Thus, “multi-topophonic” composition technique is one of the rings in the chain of development of musical life. It is one of the demonstrations of syncretic thinking in art, where despite of dominance of music, different spheres of art also actively take part in the whole creative processes.

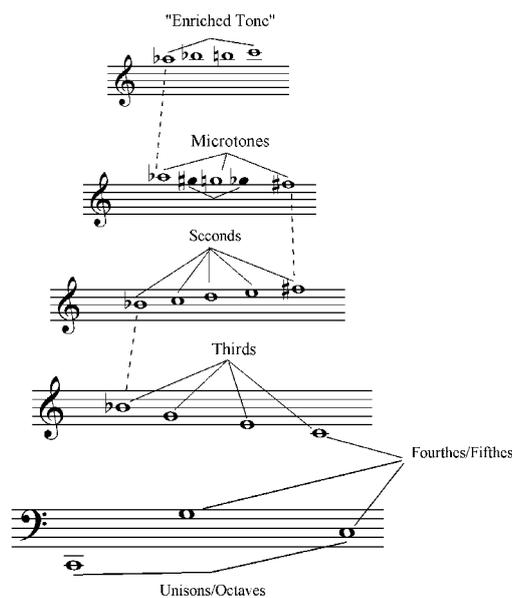
“Multi-topophonic” composition technique was naturally born in the epochal informative field and is concurrent with objective reality. From its turn, it attempts to answer humankind questions raised in modernity from the aesthetic-artistic points. Therefore, parallel is drawn with science and other spheres of culture, in order not to be out of the general context of development of the humankind, which leads us to “united thinking”.

In the end, I would like to touch philosophical, global aspect of the role of music in the universe.

In the epoch of Genetics and Atomic Physics the musical thinking reflects the most important achievements of these spheres, for example, a hypothesis on the musical genes and genetic codes inside overtones. I realized that the visualisation of music is included in the row of the overtones; we can see relationships between the overtones and their location in the space (perspective) and time (acceleration). It is like a retrospective of our civilization’s tempo-rhythm – time is accelerating, because the space is getting denser.



The overtones' location in the time and their acceleration



The overtones' location in the space and density of space in perspective

The interest in the atom comes from ancient world philosophers and it's continued till today. David Bohm, the physicist of University of London, for example, believes that objective reality does not exist, that despite its apparent solidity the universe is at heart a phantasm, a gigantic and splendidly detailed hologram (Super-hologram). The hologram contains a lot of atoms, which send the mystical signals. Every signal is transmitted by any frequency wave.

Thus, if we say, that music contains all kinds of frequency waves, it means, that the first reality (Super-hologram) exists as music, and our objective reality is created by visualization of this music.

References

- Chabashvili E., 2011. *For the Concept of Multi-topophonic Composition Technique*. Thesis (PhD). Tbilisi State Conservatoire.
 Talbot M. *The Holographic Universe*, [online]. Available from: <http://www.tobyjohnson.com/michaeltalbot.html>
Пространство и Время в музыке (сборник трудов, выпуск 121), 1992. Москва, Российская академия музыки им. Гнесиных.

Santrauka

Muzika paveiksluose ir muzikos vizualizacijos procesas multitopofoninėje komponavimo technikoje

XX amžius pateikė nemažai mokslinių naujovių, kurios darė įtaką pasaulinei kultūrai, kartu ir muzikai. Todėl meno pasaulyje atsirado daugybė kompozitorių–mokslininkų bei daugiaplanių menininkų, pavyzdžiui, kompozitorių–dailininkų. Tokie ir panašūs reiškiniai parengė žmoniją vadinamajam vieningam mąstymui (vieningas mąstymas – tai intuityvus mąstymo intensyvinimas derinant intuityvumą ir racionalumą).

Dailė ir muzika yra skirtingi fiziniai fenomenai. Kaip žinome, muzika yra akustinio proceso produktas, o vaizduojamieji menai – optinio. Šių dviejų meno šakų sąsaja galima tik metaforiškai, pasitelkus asociatyvųjį mąstymą. Tačiau pagrindinius faktus ir būdus, kaip vaizdiniai pasireiškia muzikoje, o muzika – vaizdiniuose, galima suklasifikuoti.

Atradimų genetikos srityje ir atominės fizikos epochoje muzikinis mąstymas atspindi svarbiausius šių sričių laimėjimus. Straipsnyje apžvelgiama hipotezė, liečianti muzikinius žanrus ir genetinius kodus. Paaiškėjo, kad muzikos vizualizavimas yra susijęs su obertonų sekomis; galima pastebėti sąsajas tarp obertonų ir jų padėčių erdvėje (perspektyva) bei laike (akceleracija). Tai lyg mūsų laikų tempo–ritmo retrospektyva: tempas didėja, nes traukiasi erdvė.

Kaip žinoma, erdvinis aspektas yra pagrindinis vizualizavimo veiksnys, o laiko aspektas – garso. Mano nuomone, šių dviejų meno sričių sugretinimui svarbu suderinti abiem šioms sritims būdingus mąstymo principus. (Pavyzdžiui, kinestezinis menas atskleidžia vieną iš būdų, kaip muzika gali daryti įtaką dailei, o Johno Cage'o „4,33“ „virtualus skambėjimas“ įkūnija atvirkštinį procesą, t. y. kaip vaizduojamasis menas gali daryti įtaką muzikai.)

Straipsnyje mėginama analizuoti naują *multitopofoninę komponavimo techniką*, kuri atsirado kaip meditacinės muzikos komponavimo pagrindas. Meditacinei muzikai taikomas toks komponavimo metodas, kai psichologiniu ir laiko atžvilgiu skirtinga muzikinė medžiaga išdėstoma skirtinguose erdviniuose lygiuose. Šio komponavimo principo požiūriu galima pažvelgti į muziką kaip į paveikslą su perspektyva, kuriame muzikinė medžiaga (*fono-*) išdėstoma keliuose (*multi-*) erdvės (*topo-*) lygiuose. Šie lygiai turi savo laiko dinamiką ir išsidėsto erdvėje panašiai kaip planetos išsidėsto kosmose arba atomai mikropasaulyje. Mančiau, kad, naudojant tokią komponavimo techniką, muziką galima „tapyti“.

Muzikos vizualizavimas neabejotinai lėmė meno sinkretizmo atsiradimą. Norėčiau pristatyti keletą paveikslų, sukurtų pagal muzikinius principus, ir panagrinti keletą sinkretinio žanro muzikos kūrinių, tokių kaip simfonija–paroda, opera–paroda, hologramų teatras ir pan.

Eka Chabashvili. III symphony Ukuniti ukunisamde

First category. Compositional draft

I Phase (7 min.) "The creation of the World"

Cross's Time	1.30min 1.05 min	25'	1 min	50sec 30' : 20'	1.40min 1.30min	50sec 40' : 10'	25sec 20' : 5'	45sec
Cross's score 7 day	The day and The night: „ღის იღებს ზღორჯეო“		The sky and the land;	Water and Plant;	The Stars;	The Fish; The Bird;	The Animal	The Human
Pyramid Time	(pause) 1.15min 1.05 min	10' : 15' : 30'	45sec 30' : 15' : 10'	45sec 15' : 20' : 10'	1.30sec	40sec 30' : 10' : 20'	30sec 5' : 45'	50sec
Pyramid 8-times	1	2	3	4	5	6	7	8
Sphere 2-times	Sphere							
Cube 3-times	Sphere							
Cube Time	(pause) 1.05 min 1.05 min	25'	1.55 min 1 min	2.30 min 1 min	2.30 min 1.30min	1.30 min 20' : 25'	1.30 min 25'	45'

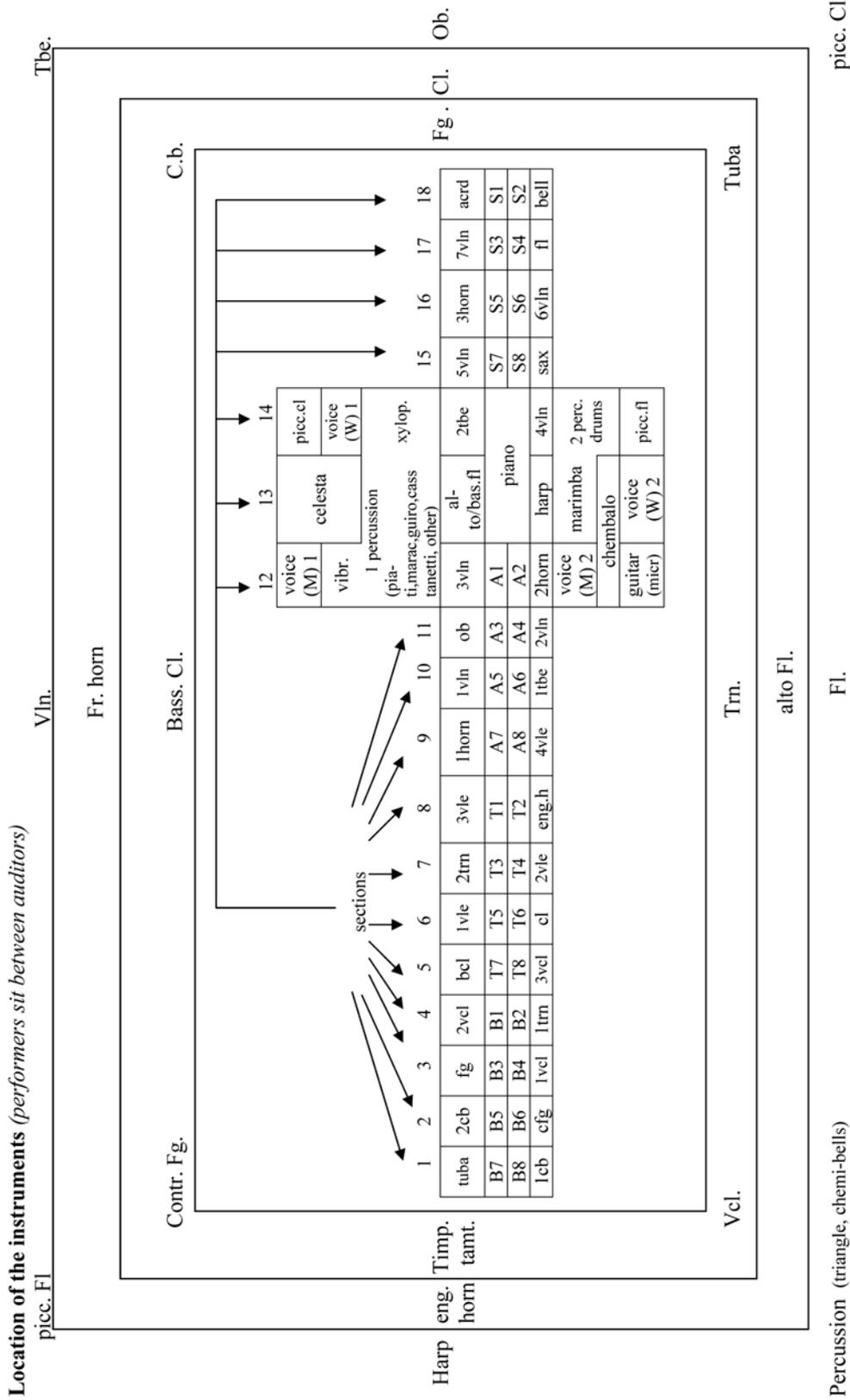
II Phase (3 min.) "SAMEBA"

III Phase (5 min.) "OTKHTAVI"

Coda (2.30min.) "ERTARSI"

Cross's Time	1 min	33 sec	1.07min	20 sec	2 min	1.30 min 10' : 20' : 1min	1 min 20' : 40'	30 sec	2.30min
Cross's score	The Father	The Son	The Holy Ghost		Matthew	Luke	Mark	John	ERTARSI
Pyramid Time	1min 3' : 30' : 1.07min	3min 1.37min			2.10 min 1min	1.40 min 1min : 20' : 40'	1.10 min 40' : 30'	55sec	1.35min
Pyramid 5-times	8 (Tip above)	9 (Tip below)			10 (Left)	11 (Middle)	12 (Right)	13 (Big in the middle)	pause
Sphere 2-times	Sphere								
Cube 4-times	Sphere								
Cube Time	1min 3 : 16 : 11 : 35 : 28 : 7	2.40min 4a	2.30min 4b	2.30min 21 : 1.18 : 2 : 20 : 18 : 2 : 21 : 31 : 2 : 2 : 12 : 3 : 1 : 9 : 3 : 7 : 3 : 9 : 1 : 35 : 7 : 55 : 8 : 3 : 19	2.30min 2.30min	2.30min 2.30min	2.30min 2.30min	30sec 30sec	1min 1min

Third category. Instrumentation



The balconies **20 instruments** (lower-8, middle-4 (motion), upper-8) 3 fl, 2 ob, 3 cl, 2fg./ 1 horn, 1 trumpet, 1 trombone, 1 tuba/ 1 timp., tamt, 1 perc./ 1harp/ 1vln, 1vce, 1cb. Cross_ 3 fl, 2 ob, 3 cl, 2fg, 1sax./ 3 horn, 2 trumpet, 2 trombone, tuba/ 3 perc (xilop, vibr; marimba, drums, bells etc.);/ 1 harp, 1 guitar;/ 1 piano, 1 celesta, 1 chembalo, 1 accordion/ 2 voice (M), 2 voice (W), coro 32(8+8+8+8);/ 14 vln (7pult), 8 vlc(4pult), 6 vce (3pult), 4cb (2pult). **96 instruments** (11+8+3+2+4+(4+32)+22(14+8+6+4))

ALL (80 (20+60) instruments + 36 voice) = 116 performers