
Syncretism and synaesthesia in music – unification of arts and perceptions

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Abstract: Archaeological and ethnological research has revealed that, since antiquity, music had a syncretic nature. Music, dance, and poetry made up a single whole, aiming at expressing human feelings, sensations and perceptions through melody, rhythm, words, and gestures, and accompanying everyday activities that had various functions. Artistic syncretism is doubled by another structural principle – synaesthesia. The brain process that unifies senses and perceptions, synaesthesia is defined as the spontaneous association of several senses and sensations, in response to the action of a single stimulus. People with the so-called *colorful hearing* associate auditory reception with the perception of colorful images. Many artists had this ability that was reflected in their artistic creation. Initially the fusion of music and color was researched by theorists, who tried to create musical instruments that would be able to radiate colours during the musical interpretation. The syncretic and synaesthetic relationship between sound and image is individualized at the beginning of the twentieth century. Starting with the Dadaist and futuristic trends, artists seek and discover new forms of expression that unite the audible and the visual in a single form of representation. At present, the interaction between arts is seen as a fact, common also due to multimedia technology that allows the creation of synthetic, syncretic and synaesthetic ambiances, in which perception takes place at a multisensory level, changing the listener's one-sided perception. The art of sounds plays an essential role in syncretism and synaesthesia in music: in the first case, music participates in defining complex forms of artistic manifestation, and in the second, music generates sensations at the level of several senses. The listener benefits from new forms of artistic expression through which the transfer of the states and feelings of the artist to the listener occurs.

Keywords: syncretism, synaesthesia, coloured audition, Eduard Gruber, Alexander Scriabin, Ginanni Corradini, Arnold Schönberg, Vasily Kandinski, Olivier Messiaen, Iannis Xenakis.

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1. Syncretism and artistic synaesthesia

1.1. Syncretism, the dominant artistic form in the ancient world

The origin of human existence, of material and spiritual values has been a subject of interest of philosophers and a topic of study of scientists since ancient times. In the field of music explorations have been conducted with the help of archaeological and ethnological research aimed at establishing the original musical structures and forms. Investigations revealed that music was syncretic in nature and had the purpose of expressing human feelings and of accompanying everyday activities; it performed various functions: it was used for social communication, education, magic, relaxation. Thus, syncretism became the dominant artistic form of the ancient period.

In the early days of music there were different areas in which primitive man's social manifestations were associated with the universe of sound. In ancient Greece, music, dance, along with poetry were a single, syncretic whole, called by Tatarkievich “triuna horeia” in his work *History of aesthetics* (Tatarkiewicz, 1978, p. 40); this mode of artistic manifestation aimed at expressing human feelings, sensations and perceptions through melody, rhythm, words and gestures.

The term *music* it is defined by researchers in various ways and according to the varied uses that have been given to it; however, its origin and etymology refer to the representation of a syncretic action produced in the educational, ethical, cathartic process: the word *music* originates in the term *mousikè* which means in translation *art of muses*; in Greek and Roman mythology, the muses were the nine daughters of Zeus and Mnemosyne, the goddess of memory.



Fig. 1 The Nine Muses with Apollo, god of music, poetry, Fine Arts and medicine

The term *mousikè* actually indicates the fusion of all arts, since each muse represented a different artistic field (Fig. 1)¹: Calliope (Καλλιόπη) – the muse of epic poetry; Clio (Κλειώ) – the muse of history, Erato (Ερατώ) – the muse of love poetry, of geometry, and of mime;

Euterpe (Ευτέρπη) – the muse of lyrical poetry and of music; Melpomene (Μελπομένη) – the muse of tragedy; Terpsichore (Τερψιχόρη) – the muse of the

¹ Source: the painting *Danza Di Apollo con le muse* (1515-1520) originally attributed to the painter Giulio Romano (1499-1546), then to the artist Baldassarre Tommaso Peruzzi (1451-1536); the work is at the Pitti Palace, Palatine Gallery (Florence).

dance; Thalia (Θάλια) – the muse of comedy and bucolic poetry; Polyhymnia (Πολυμνία) – the muse of eloquence, of holy hymns; Urania (Ουρανία) – the muse of astronomy and of didactic poetry (Rowell, 1983, p. 38).

As in the case of other ancient peoples, the artistic acts on the territory of our country were influenced by sociological, linguistic, religious and psychological factors specific to the Thracian and Dacian people. The research and investigation of the music in the Carpathian-Danube area indicates that the music of the Thracians and Dacians was integrative, manifest as syncretic forms within various social or artistic activities that accompanied organized or spontaneous ceremonies and rituals. There was also an interconnection between the Thracian-Dacian people and the people of Ancient Greece, as they exchanged material and spiritual goods. Thus, their musical values merged, the songs and the general principles of music and aesthetics circulated in both senses.

Music, poetry, dance, painting and architecture – unified in the same artistic expression – are present in the musical theatre of all times, from the Greek tragedy to Richard Wagner's concept of *Gesamtkunstwerk* (*total artwork*) (1813-1883). Wagnerian thinking about the fusion of the arts would influence many of the artists who would follow him, including Skriabin, Schönberg, Kandinski.

1.2. Synaesthesia, a brain process unifying the senses and sensations

Besides artistic syncretism, another structural principle – synaesthesia – present in art, poetry, music and film. The term synaesthesia (συναίσθησις) comes from Greek. It is composed of the words *syn* which means *together* and *aisthesis* which designates *perception, feeling*; the resulting translation is *unified perceptions*. The word synaesthesia has the same root as the term aesthetics (*aisthetikós*, which refers to sensations). Synaesthesia defines an association of sensations coming from several analyzers as a reaction to the action of a single stimulus.

The phenomenon of synaesthetic perception involves the spontaneous association of several senses and sensations: auditory, visual, tactile, gustatory, olfactory and represents a normal brain process which occurs due to neurological connections at the brain level: neurons and synapses of one sensory system intersect with those of another sensory system. For example, in addition to hearing sounds and music just like any other person, people who have the so-called *colourful hearing* associate auditory reception with the perception of colourful images: their subconscious builds and represents the external reality through different associations of sounds and colours. *Colourful audition* is the synaesthetic ability to perceive two different sensations from a single external stimulus: auditory and visual; this phenomenon occurs without a precise symptomatology and in fact constitutes a psychosomatic effect. One

person out of five hundred is endowed with this type of perception; people who manifest synaesthesia are neurologically normal and are involved in various areas of activity (Kalat, 2012, pp. 225-226). Many artists had this innate ability, which was also reflected in their artistic creation; among them were Franz Liszt (1811-1891), Charles Baudelaire (1821-1867), Stéphane Mallarmé (1842-1898), Paul Verlaine (1844-1896), Nikolai Rimsky-Korsakov (1844-1908), Vasily Kandinsky (1866-1944), Alexander Scriabin (1872-1915), Olivier Messiaen (1908-1992) (Ramachandran, Hubbard, 2001, pp. 3-34).

1.3. Colourful audition – first studies and experiments

The synaesthetic analogy between music and colours is observed and signalled since antiquity by Aristotle: “colours can be linked with musical harmonies for their pleasant arrangements” (Aristotle, *apud* Bainbridge Bishop, 1893, p. 1). Experiments about and theoretical attempts to correlate the musical auditory sensation with the visual sensation, colours and painting, to create works in which each sound corresponds to a colour or a combination of colours, have existed since the 18th century. During this period, the pictorial value of musical titles and themes was discovered, the study of the effects that the relations between colours and timbre combinations have on the human soul was initiated.

Initially the fusion of music and colour was researched by theorists, who tried to create musical instruments that would be able to radiate colours during musical performance. The manufacturing of such instruments continued throughout the entire 19th century with the intention of finding a scientific correspondence or presenting the creator's intuitive association between sounds and colours. Mostly such instruments were organs that produced music and colours, or keyboards that directly created colour without emitting sounds. The period of peak experimentation was the first half of the 20th century. The themes of creation emerging from artistic realizations reflect the need to escape from reality itself in order to produce art that is not imitative, mimetic, but represents genuine human thoughts, feelings, the freedom of the subconscious, the spiritual essence of reality, the desire and will to seek and express what belongs to the ego.

Starting from the synaesthetic analogy described by Aristotle, research in optics is initiated. In 1646 Jesuit Priest Athanasius Kircher (1602-1680) develops a system of correspondences between musical intervals and colours, as did the French doctor and philosopher Marin Cureau de la Chambre (1594-1669). Mathematician, physicist and astronomer Isaac Newton (1643-1727) is the first to publish a work concerning the parallelism between the colours of the spectrum and the musical notes of the diatonic scale in his treatise *Opticks* (1704). Newton is the one who argued that light has no colour, this materializes only in our brain, as it was later proved that sounds exist only in our minds being in fact psychological phenomena (Levitin, 2010, pp. 28-29). Newton

graphically represented the spectrum as a circle divided into seven differently coloured parts. His correspondences between colours and the notes in the musical scale were as follows: Red – *Do*, Orange – *Re*, yellow – *Mi*, green – *Fa*, Blue – *Sol*, indigo – *La*, purple – *Si*. Many supporters of the sound-colour relation were inspired by Newton's studies and, in agreement or contrary to his vision, proposed their own scheme of correspondence between the two components: David Gottlob Diez, Lorenz Cristoph Mizler, Louis Bertrand Castel (Peacock, 1888, pp. 397-406).

The first recorded attempt at colourful music was by French mathematician Louis Bertrand Castel (1688-1757) who, between 1725-1735, designed *the ocular harpsichord*. The instrument functioned as a traditional harpsichord, yet it was different since each musical note corresponded to a colour that was projected when a key was pressed so that the sounds were “painted” in the colours assigned to them. The goal stated by the inventor of the coloured harpsichord was that a deaf man could enjoy the beauty of music through colours and a blind man could appreciate colours through sounds. He presented the idea of a color music and the project of his harpsichord in two writings, one of which appeared in the magazine *Mercure de France* (1725) and a second one in *Journal de Triomphe* (1736) (Franssen, 1991, pp. 15-77). Castel returned to this topic in the text *L'optique des couleurs*, published in Paris (1740) and translated into German with the title *Die auf lauter Erfahrungen gegründete Farben-Optica* (1747). His organ became famous in 1738, when the philosopher Moses Mendelssohn (1729-1786) used this instrument to illustrate human passions by means of colourful spirals and serpentine (Wilfred, 1947, pp. 248-249).

In his work *Introduction to the Theory of Nature* (1754), Johann Andreas Segner (1704-1777) states that, in various respects, sound presents analogies with light and one can come to the conclusion that sounds are the same as colours. Swiss mathematician and physicist Leonhard Euler (1707-1783) explains the difference between fundamental colours referring to the different speed of air vibration. While Newton assumed that light is made up of particles, Euler describes light as an undulating motion, similar to that of sound. Based on this theory, Euler declares that purple is the lowest note, red the most acute note, while white is unstructured noise. Starting from these statements Castel's ocular harpsichord becomes credible (Erxleben, 2005, p. 298).

Bainbridge Bishop (1837-1905) built several instruments with the aim of making a mechanism that would simultaneously produce music and shades of colour, since raw “colours are barbaric” (Bishop, 1893, p. 8). In his youth he had studied Fine Arts and, as he was passionate about the harmony of colours, his passion was transferred to the idea of coloured music. He patented a coloured organ (1877) which consists of a coloured glass pane, located at the



Fig. 2 Patented coloured organ by Bainbridge Bishop (1877)

top of the instrument, made of small windows that lit due to the removal of several shutters actuated by pressing the organ flaps. (Bishop, 1893, p. 5) (Fig. 2)² He publishes *The Harmony of Light* (1893), a small treatise in which he describes his experiments and ideas on the correspondence between musical notes and colours.

The English painter Alexander Wallace Rimington (1854-1918) invented, in 1895, an instrument built from a resonance box endowed with openings covered with colored glass, to which he added an electric arc. The openings could be closed or opened by means of a mechanism operated by a keyboard, which projected colours onto a white screen (Thomas, 1947, p. 249).

1.4. Romanian Edward Gruber, pioneer of synaesthesia research in the world

On the territory of our country is remarkable the concern for the phenomenon of synaesthesia, respectively for the colorful audition, of Eduard Gruber (1861-1896) (Fig. 3)³, professor at *Alexandru Ioan Cuza University* from Iasi (Romania), psychologist, aesthetician and literary critic, friend of Ion Creanga and Mihai Eminescu. The first Romanian researcher of synaesthesia, Gruber was born in Iasi, his father being Iosef Gruber, a German architect, and his mother a Romanian from the Coroi family, a relative of Prince Alexandru Ioan Cuza; he was married to Virginia, the second daughter of Ștefan and Veronica Micle. He studied at the *Faculty of Letters and Philosophy* within *The University of Iasi* (1870-1884); he studied philosophy with Constantin Leonardescu and psychology, pedagogy and aesthetics with Constantin Dimitrescu-Iasi. He continued his studies in Paris (1886) and Leipzig (1888-1889).



Fig. 3
Eduard Gruber

He is involved in practical psychology through experiments such as hypnosis and trances; his subject was Nicolae Beldiceanu (1844-1896), a Romanian poet, prose writer and archaeologist (Georgescu, 2011, p. 13). Beldiceanu was endowed with the so-called *colourful audition* which in his case consisted of the correspondence between letters, words, on the one hand,

² Source: Bishop, *The Harmony of Light* (1893).

³ Source: Central University Library (BCU) *Mihai Eminescu*, Iasi, Digital Library.

and visual perception of colours mainly on the other; to these sensations were added generated by gustatory, olfactory and tactile perception.

The initial results of Gruber's research on synaesthesia, namely the case study of Beldiceanu, is presented at the first congress of psychology, called *Congrès International de Psychologie et Physiologie* (August 6-10th, 1889, Paris); the event was also considered the first scientific symposium on synaesthesia (Jewanski *et al.*, 2020, p. 1). At this important event, among more than 200 participants from 20 countries, there were personalities of the time including Sigmund Freud, Wilhelm Wundt, Alfred Binet, Jean-Martin Charcot, Auguste-Henri Forel, Oscar Vogt, Claude Bernard (Pierron, 1954, pp. 398-399). At 26, Gruber stands out for his original presentation of the phenomenon of coloured audition. He studied synaesthesia in depth and gave the presentation *L'audition colorée et les phénomènes similaires* on the occasion of the second edition of the Congress of psychology, *The International Congress of Experimental Psychology* in London (August 1892). In the newspaper *Times* he was dubbed *the Jassy scholar* for the novel method by which he conducted experiments on synaesthesia.

As he was interested in literature and arts, he produces the first work of psychoaesthetics and the psychology of art, under the title *Style and thinking (attempt of literary psychology)*, at the *University of Iasi* (1888, Publishing House of the Şaraga Brothers Schools Bookstore, Iasi). In October 21st 1893 he establishes the first laboratory of Experimental Psychology at the same higher educational institution. He is the first Romanian to receive a doctoral degree under the coordination of William Wundt at *University of Leipzig*, with the thesis *The specific brightness of colours* (1893). Gruber is considered the founder of experimental psychology in Romania.

2. Syncretism and synaesthesia represented in the creation of artists of the 20th century

The syncretic and synaesthetic relationship between sound and image is outlined at the beginning of the 20th century. Artists seek and discover new forms of expression that unite the auditory and the visual in a single form of representation; the Dadaist and futurist movement are some of the movements through which music, literature, the fine arts break the connection with the art of the past. Composers suggest a visual space beyond the sound, while photographic and cinematic image makers seek a sound space beyond the image.

2.1. Alexander Skriabin

Under the influence of the experiments and research of Castel, Bishop and Rimington, the Russian composer and pianist Alexander Skriabin (1872-1915) composes the symphonic poem *Prometheus, Le Poemme du feu*, op. 60

(1909), for *clavier à lumière*, orchestra, piano soloist and choir. The painting of the legendary Prometheus (Fig. 4)⁴ created by Jean Delville (1867-1953)⁵ becomes one of the sources of inspiration in the realization of his poem, as he was fascinated by the colour and symbolism in this work.



Fig. 4 Jean Delville –
Prometheus (1907)

Skriabin's synaesthetic ability, namely coloured hearing, enhances his artistic inventiveness and triggers his desire to make his own-coloured perceptions visible through a syncretic creation. Coloured visions mix with his own feelings, that become another source of inspiration. Sergei Rachmaninov recounts the meeting between Rimsky-Korsakov and Skriabin while he was working on *Prometheus*. Rimsky-Korsakov agreed with Skriabin's colourful impressions in relation to sounds, but not all of them coincided with his own representation: his C was white, while Skriabin's was red. However, their common chromatic point was D represented as yellow (Cook, 2004, p. 35). To put into practice his own synaesthetic perceptions Skriabin designs a tool called *clavier à lumières*, which was made by Yevgeny Murzin, a photographer and professor of Electromagnetics at the *Technical School* of Moscow. The organ, which contained 12 coloured light bulbs, was designed to emit lights, culminating in a powerful white light.

The work *Prometheus* is the first composition in the world to include *Light* (*Luce*) in its score; the piece has an esoteric and programmatic meaning. Skriabin orders the tonalities using the order of the colors in the solar spectrum as a model thus obtaining a system through the association of tonality and colour (Constantinescu & Boga, 2007, p. 202); then he assigns each relationship a certain sentiment according to its own synaesthetic experiences. The colours acquire new meanings as they are associated with various themes in the poem. Within the grandiose poem, *Light* becomes the unifying element between the stage and the spectators, who are bathed in the colourful projections. The audience is assigned the role of a space where the lights are projected, thus becoming a moving scenographic ensemble. This contributes to enhancing the suspense and exalting the listeners; the feeling is generated by the tumultuous musical flow and the intensity and rhythmicity of the rays of coloured light.

⁴ Source: *The Royal Library of Belgium*, Brussels.

⁵ Skriabin was friends with members of the *Theosophical Society* from Belgium and especially with the painter Jean Delville. Since 1908 he had attended the meetings of the *Theosophical Society* and collaborated with Delville and with writer Émile Sigogne.

After Delville listened to *The poem of fire*, Scriabin asked him to draw a new work hypostatizing Prometheus as the cover of his score. While the painting of Prometheus triggered an overflow of sounds, moving from the image to the music, the artistic route would be now the other way around: from music to image. Thus, a painter, Delville, and a musician, Scriabin, collaborated in a syncretic and synaesthetic unification of sound and images by creating paintings that become sounds and sounds that become paintings. The frontispiece of the score is considered a true manifesto because it contains theosophical allusions and esoteric symbols (Bowers, 1996, p. 60).

2.2. Ginanni Corradini

The futurist brothers Ginanni Corradini, known as Arnaldo Ginna (1890-1982), and Bruno Corra (1892-1976) (Sica, 2018) came up with the idea of colour-inspired chromatic music while studying Byzantine mosaics in Ravenna. They expressed their ideas through their writings *Arte dell'avvenire* (*Art of the future*) (1910) and *Musica Chromatica* (1912), in which they stated that through colours one can structure a musical work by composing chords and coloured chromatic motifs with the possibility of expressing feelings and states of mind through both colour and sound. Starting from the idea of translating the temperate musical scale using the language of colour, they divided each of the seven colors of the solar spectrum into four shades. 28 bulbs were colored in as many colours thus obtained, which were connected to 28 keys of a piano. Thus, works by Mozart, Mendelssohn and Chopin were “translated” into colour. Their innovative ideas about image and music were later translated into the field of cinema resulting in abstract experimental films: *Canto Di primavera* (in which Mendelssohn's music is mixed with Chopin's), *Accordo di colore*, *Studio di effetti tra quattro colori* (Berghaus, 2000, p. 402).

2.3. Serghei Prokofiev, Dmitri Šostakovici

Composer Sergei Prokofiev (1891-1953) also took part in the process of consolidating the binomial music – cinematographic image. Prokofiev in collaboration with Russian director Sergei Eisenstein created artistic representations of the relationship between image and music in certain cinematographic sequences. The musical illustration of the scene of the battle on ice in the film *Alexander Nevsky* (1938) is famous; here cinematic construction and musical structure intertwine in a unique masterpiece combining sound and image. The film's soundtrack was regrouped by the composer and, the following year, became *Cantata Alexander Nevsky, op. 78* for symphony orchestra, mixed choir, and mezzo-soprano.

The mixture of music and film was also approached by composer Dmitri Shostakovich (1906-1975). A complex musician, he transposes his philosophical ideas and his own feelings by illustrating a multitude of

cinematic creations (about 37), such as *Novyi Vavilon (New Babylon, 1929)*, *Maxim's trilogy: Iunost'maksima (Maxim's youth, 1935)*, *Vozvrashchenie Maksima (The Return Of Maxim, 1937)*, *Vyborgskaya storona (On the side of Vyborg, 1939)*; then follow the productions *Prostye liudi (Simple people, 1956)*, *Piat'nochei, piat'nochei (Five days, five nights, 1961)*, *Gamlet (Hamlet, 1964)*, *Korol'lir (King Lir, 1964)* (Riley, 2005, pp. 141-148). In the film *Zlatie gori (Golden mountains, 1931)* Shostakovich and director Sergei Yutkevich “apply for the first time the principle of the counterpoint between sound and image and boldly introduce leitmotifs of noise and music” (Boeriu *et al.*, 1989, p. 144).

With the advent of surrealist cinema, interesting forms of interaction between sound and image develop. For example, in the surrealist film *The Dreams that money can buy (1947)* by the dadaist painter and experimental film director Hans Richter, the music of John Cage, Darius Milhaud, Edgard Varèse add to the genuine avant-garde structures, which through cinema acquire the spatial-temporal dimension specific of music.

2.4. Arnold Schönberg

Arnold Schönberg (1874-1951), creator of the dodecaphonic trend in music, is the composer who “destroyed a system (tonalism) and restructured and redefined a new systemic organization (atonalism)” (Lerescu, 1994, p. 27); he was “the theorist and initiator of the expressionist use of the sound space evaded the impositions the tonal system” (Donose, 1988, p. 39). The inventor of *Klangfarbenmelody* (sound-colour-melody) (Haimo, 2009, p. 331), of the sequence of “sound colours”, got to meet the great exponents of the artistic trends of the early twentieth century – Skriabin, Debussy, Mahler, Webern, Berg, Reger. He was familiar with Skriabin's experiments in music and colour and was concerned, in turn, with the relation between sound and color. He composed an important piece of the expressionist musical theater: *Die glückliche Hand (Happy hand), op. 18* (9 September 1910 – 18 September 1913) (Balan, 1974, pp. 241-242) (Iliuț, 1997, p. 141), a drama on his own libretto, in one act and four scenes. The composer's intention was to present his own music through dramatic means, in which the plot is not born only as the musical unfolding of gestures and movement, but also through lights and colours that create unique images. Along with the music, they define the characters and the dramatic situations in which they are placed. The work can be defined as “a symphony of timbres” because each musical phrase is intended for a colour, the purpose of the composer being to create sensations similar to sounds through shapes and colours. The score bears indications on what colour should be used which accompany the musical performance by projecting them onto a white screen. According to Schönberg, the addition of colour had to be done contrary to what film art would normally achieve: the

image did not have to be similar to music, a phenomenon that would later appear in the creation of Varèse and Xenakis.

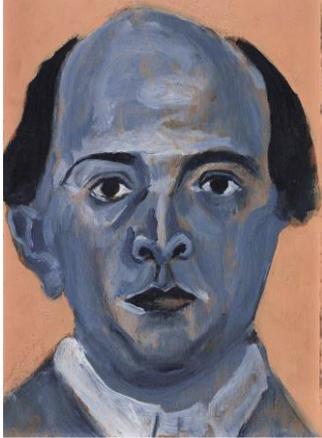


Fig. 5
Arnold Schönberg –
Blaues Selbstporträt
(Blue self-portrait) (1910)

Schönberg's compositional work creatively combined with the expression of his artistic ideas through his own paintings (Fig. 5)⁶. On the occasion of the 65th anniversary of the composer, a concert with his music was performed at *County Museum of Art* from Los Angeles (1950). The event was to be accompanied by the display of some of his paintings, which never happened, but thus the American public learned that the musician had been a painter for many years. This novelty resulted in the composer being interviewed on the topic, and so Schönberg's testimony of his connection to painting remained as a legacy. The composer confessed that he was not adept at expressing his feelings and emotions through words, so they poured out through music and painting. He stated that painting “was the same as composing music. For me it was a way of expressing myself, of revealing emotions, ideas and other feelings, and maybe that's the way to understand these paintings or not to understand them. The same happened in my musical pieces. They were understood or misunderstood. I was expressing myself in the same way I did through music” (*Schoenberg as a painter, interview with Halsey Stevens*, Sony Classical, Track 24 = 6:23). His paintings belong to Modern Art as they dissolve the values of traditional image. The departure from the aesthetics of traditional painting and the refusal to use expressive means in classical music are achieved in opposition to the originality of the representation and the spontaneity of the feelings expressed through colour.

In addition to his self-portraits and pictorial visions, Schönberg creates scenography sketches, such as those for *Die glückliche Hand*, in which an important role is played by chromatic effects, which translate sounds into visual language. These are the expression of the correspondence between sound and color, which Scriabin theorized in *Prometheus*.

2.5. Vasili Kandinski

With the same intentions as Schönberg, the Russian painter Vasily Kandinsky (1866-1944) suppresses in his painting obvious references to natural objects by discovering to the senses the idea hidden deeply behind the form of the matter. Kandinski is one of the important artists who merged image with music. In 1911 he met and made friends with Arnold Schönberg and in

⁶ Source: *The Arnold Schönberg Centre*, Vienna.

the same year together with Franz Marc, August Macke, Alexei von Jawlensky, Marianne von Werefkin, Robert Delaunay, Paul Klee, they founded the group *Der blaue Reiter (The Blue Rider)*, to which the composer will also adhere. This group of expressionist artists “make themselves known through the search for new dimensions and meanings of art, in their common aspirations to achieve a synthesis of the arts” (Iliuț, 1997, p. 124). Kandinski's ideal – the synthesis of all arts – was in fact the total opera that, in the previous century, Wagner had drawn the general lines of through his melodramas. From among Wagner's works, the opera *Lohengrin* marked him deeply by offering him the revelation of music.

Kandinski wanted to remove the analytical descriptions because he believed that the mind that continuously analyzes the artistic process could not experience the synaesthetic phenomenon. He wanted art and creativity not to be an abstract fact, but to become a synaesthetic sensory experience. Kandinski merged the image with the music by illustrating the connection between sound and colour and by naming his paintings with musical terms: *Compositions, Improvisations*. In Kandinski's conception, colours find a correspondent in a certain state of mind, an instrument and a different musical sonority.

His stage works *Der grüner Klang (The Green Sound)*, *Schwarz und Weiss (Black and White)*, *Violetter Vorhang (The Purple Curtain)* prove that Kandinski is an extravagant trailblazer in the audiovisual field. His manuscripts are accompanied by sketches of multimedia music sheets describing the work as a chorus in four voices: colour, movement, instrumental music, and voice. The denouement of his stage compositions is the piece *Der gelbe Klang (The Yellow Sound)*, in which he exploited the connection between colour, light, dance, and sound. This work aroused a wide debate and initiated a new theatrical genre. Events succeed in random purposeless manner, there is no predetermined action; human voices do not convey conceptual messages; sounds remain inarticulate or intertwine with short or repeated poetic incantations, from one scene to the next; words are used to create an atmosphere that enhances the soul's receptiveness (Kandinski, 1967, p. 208).

In 1928 at *Friedrich Theatre* from Dessau, Kandinski completed the production of a performance inspired by the work of the Russian composer Modest Mussorgsky (1839-1881), *Paintings from an exhibition* (1874). In turn, Mussorgsky drew his inspiration for the creation of this famous work from the paintings and drawings of his friend, Victor Hartmann, a painter and architect. Kandinski created a different stage space for each painting through a series of moving curtains and backstage devices with a simultaneous change of lights and colour. The scenes and geometric shapes suggest the titles of the pieces by Mussorgsky.

2.6. Olivier Messiaen

Olivier Eugenio Charles Messiaen (1908-1992), composer, organist and ornithologist, was a significant composer who syncretically and synaesthetically combined various tendencies. His music was influenced by both the musical tradition of the previous centuries and the avant-garde of the 20th century; this, however, did not prevent him from creating his own musical language. His artistic autonomy results from the modal, rhythmic and timbre experiments that represent the mark of his musical poetics. Messiaen describes his synaesthetic ability thus: “the phenomenon of natural resonance is analogous to that of complementary colors in the sense that one acts on the ear and the other on the eyes. When I listen to music, I see in my mind combinations of colours that correspond to combinations of sounds, so it is understandable that colours interest me as much as sounds” (Messiaen, 1994, p. 62). He accurately singles out the authors of colorful music, which he lists in the following order: Debussy, Wagner (in whose compositions there are “dark, violent, wild colours” (Messiaen, 1994, p. 62), Mussorgsky, Stravinsky, Monteverdi, Chopin, Mozart. Messiaen describes complex colour combinations detailing the Chromatics of his modes, as in the case of the second mode. As an Octatonic scale, mode 2 has the following structure: 1 (semitone), 2 (Tone), 1, 2, 1, 2, 1, 2 and three transpositions (from C, C#, D, noted as [M2₁] [M2₂] [M2₃]) (Ex. 1) (Duțică, 2003, p. 9).



Ex. 1 Olivier Messiaen – Mode 2 [M2₁]

In Messiaen's description, the first transposition has the following chromatic: “blue-violet stones mottled with small gray, cobalt blue, intense Prussian blue cubes illuminated by a little violet-purple, gold, ruby-red and purple, black and white stars. the blue-violet hues are predominant” (Messiaen, 1994, p. 64). The second transposition of the mode is described by the composer equally painstakingly, in surprisingly different colours: “golden and silver spirals along a brown background and ruby red vertical lines. Gold and brown are predominant” (Messiaen, 1994, p. 64). Third transposition: “light green and foliage green, with blue, silver and reddish orange spots. Green is predominant” (Messiaen, 1994, p. 64). As Messiaen states, these amazingly detailed representations are the colour descriptions of what he perceives synaesthetically when he perceives those sounds.

2.7. Iannis Xenakis

Iannis Xenakis (1922-2001)⁷ was a composer, mathematician, engineer and architect; he collaborated with his masters Honegger, Milhaud and Messiaen, with the architect Le Corbusier, blending his multifaceted knowledge from various fields. The result was a syncretic artistic creation in which the arts combine creatively with the exact sciences. Xenakis achieves a transfer between sciences and arts by applying in his complex works mathematical formulas, probability theory, Markov chains, principles and concepts from the field of physics, from assisted computer and processed computer art projects. Starting from mathematical calculations he created important multimedia events including those the composer called *polytopes*, which are music and light shows.

Together with Le Corbusier (1887-1965) and Edgard Varèse (1883-1965), Xenakis created the first multimedia installation⁸ – the Philips Pavilion and *Poème électronique* (1958) – an important artistic event due to the syncretic connection between architecture, music and visual arts (Filimon, 2011, pp. 387-391). Xenakis' contribution to this ambitious multimedia project consists in the creation of the architectural component and in the composition of a section of the audio component; both creations were the result of mathematical calculations. Starting from the hyperbolic paraboloid, Xenakis created an innovative architecture that is the right framework for the technical, acoustic and stylistic requirements of the pavilion. “For music Le Corbusier chose Edgar Varèse, one of the greatest contemporary composers, the explosive precursor of the timbre, rhythm and sound discourse disintegration (eight minutes of music). For the music in the two-minute interlude, Le Corbusier turns to me.” (Xenakis, 2010, p. 116), Xenakis declared. Thus, Varèse composes *Poème électronique* succeeded and followed by Xenakis' composition, *Concret PH* – a short but crucial piece (two minutes and 45 seconds), which works as a Prelude and Interlude, as well as a summary of future soundscapes. The piece *Concret PH* is a performance of electroacoustic music, in which graphic constructions with sonic representations are combined in a *crescendo* of sound intensity and density. For the pavilion, Varèse, a pioneer of electronic music, creates an all-electronic composition, one of his most famous works, which has remained in the history of music. Both compositions highlight the dynamics of coloured lights and the film⁹ designed by Le Corbusier, all

⁷ Giannis Klearchou Xenakis was born in Braila, Romania, to a Greek family; his father was Klearchos Xenakis, a businessman from Evia (Euboea, Greece).

⁸ The multimedia project was initiated at the request of the Philips Company, which asks architect Le Corbusier to make a pavilion representing the Netherlands at *Expo World*, 1958, in Brussels, in which the Dutch company could promote their products.

⁹ Le Corbusier's film illustrates the mankind's past and future history of humanity through abstract and symbolic images; the film frames include images from the *Natural Sciences*

designed to create a syncretic cumulation that unfolds inside the pavilion made by Xenakis. The architectural forms generated by the use of hyperbolic paraboloids inside the pavilion outline an abstract mathematical space that provides the right framework for a novel sound and for the projection of the images/film designed by Le Corbusier. With the help of the advanced technical means available in the pavilion, the recorded audio traverses space through complex sonic trajectories. The combination of the architectural component, with the sound component and the visual component gave the pavilion an interdisciplinary avant-garde identity where all three contribute to a memorable experience. This resulted in an audio component as avant-garde and bizarre as the architecture of Xenakis and the images of the film made by Le Corbusier.

2.8. Interaction between arts

The interaction between the arts is currently a real fact, frequently occurring also due to advanced technology that allows the creation of synthetic, syncretic and synaesthetic ambiances, such as cinema and multimedia productions, in which perception takes place at a multisensory level, altering the listener's unilateral perception: one listens with the eyes, one looks with the ears: “musical Multimedia (or in other words, spectacular music) is part of those artistic groups that were founded within the Bauhaus movement and are based on the desiderata of integration into a totality of audiovisual art ultimately addresses all the sensory analyzers of the spectator” (Angi, 2004, p. 305). In multimedia productions, in addition to sound effects, the perception value of each component is cumulated. Multimedia presentations have become an instrument of advertising and an important educational support.

Given the possibilities of digital production of music and images, creation of audio and video structures is unlimited, as is the case of generative art. This new type of art is achieved through the use of systems defined by means of programming algorithms or mathematical, mechanical or random processes, which participate in the creation of architectural, visual, musical works of art. Algorithms are described by means of a program running on the computer (*generative software*). The artist establishes a set of templates and rules which he then combines based on a random or semi-random pattern, inspired by the system used as the generating element (Pearson, 2011).

The Mozart's work, *Musikalisches Würfelspiel* (1757), the game of musical dice, is an early example of a hazard-based generative system¹⁰: the composer used the dice to decide which musical phrase, already written, would continue the musical piece. A contemporary example of generative art is the

Museum, the *Anthropology Museum*, the *Museum of Folk Traditions* of Paris, as well as personal works.

¹⁰ This type of musical game, based on dice, was very popular in the 18th century.

video creation *Sinestesi Analogico Generative* performed by Claudio Castelli, music composed by Ugo Altamore – *Evolution* (2006, 2018 remastered HD), in which the author combines futuristic music with video installations and 3D graphics making a series of moving pictures¹¹.

3. Conclusions

The syncretic and synaesthetic relationship between sound and image is outlined at the beginning of the 20th century. Composers suggest a visual space beyond sound, while photographic and cinematic image makers seek a sonic space beyond the image. At present, the interaction between arts is seen as a fact, common also due to multimedia technology that allows the creation of synthetic, syncretic and synaesthetic ambiances, in which perception takes place at a multisensory level, changing the listener's one-sided perception.

The art of sounds plays an essential role in syncretism and synaesthesia in music: in the first case, music participates in defining complex forms of artistic manifestation, and in the second, music generates sensations at the level of several senses. In both cases multisensory perceptions are triggered that amplify the message of the art creator. Thus, the listener benefits from new forms of artistic expression through which the transfer of the states and feelings of the artist to the listener occurs.

In his works, as assisted by new technologies, the artist desires to reflect his own states and feelings, the turmoil of everyday reality, which changes the process of compositional creation. Structural mutations lead to deconstruction, suppression and recreation of classical patterns. On the other hand, the return to the ancient conception of the fusion of arts leads to a syncretic and synesthetic interaction between various fields and disciplines with psychosomatic implications on the creator of contemporary art and on the listener.

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¹¹ *Sinestesi Analogico Generative*, <http://www.cgitalia.it/2006/10/30/cortometraggio-arte-digitale-sinestesi-analogico-generativa/>

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